

This job illustrates the impact that good ALARA practices have on many Maintenance concerns. The foreman summarized, *"I think the crew feels good about this job and feel that they have accomplished a lot. At times, things were frustrating, but we kept on. These guys are professionals, they are good mechanics. I always try to let them be mechanics, and to give them all the support I can to make their job easier. They know what to do. If some questions need to be answered, we get together and talk over the situation. Together we can find the answers."*

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good support from the Site Services personnel in the decontamination efforts, once disassembly efforts were completed.

The Predictive Analysis Group had diagnosed bearing failure and excessive thrust on the pump; these findings were confirmed by the team upon disassembly. Tech manuals were referred to at each step of the disassembly process. This method helped to identify and correct discrepancies. The bearings were dry. This prompted the team to look for root causes. Two possibilities for this condition were oil leaks or improper oil levels. As found inspections ruled out the possibility of oil leaks. One maintenance engineer worked with the team on troubleshooting the existing level condition. The position of the oilers were found to be 1-1/8" lower than manufacturer's recommendations. It was also determined that the internals for adjusting the oil level were missing. Correcting this condition reduced the risk of future bearing failure. All overhaul work was performed in the Refurb building. The entire rotating assembly was disassembled. Disassembly, cleaning, and inspection was performed in a non-radiation area, as was the machining of the mechanical seals.

The crew foreman stated, *"My crew was concerned about what the end product would be. They looked at the parts that could be reused. Working in the Refurb Building allowed us to take time to inspect, clean, and rework parts. This cut down on radwaste (from the old parts) and saved the company money on new parts. We reused all of the original parts except for the shaft sleeve and the bearings. On the rotating assembly, we reused the impeller and the shaft sleeve and made a new shaft. A safety-related rotating assembly is fairly expensive. We didn't need or use one. We could take the time to see what was really needed. My crew was concerned with lowering exposure and doing a job that would last. Reducing radwaste, saving manhours, reducing down time, and saving money were the extra benefits."*

The test run on the pump went well with no oil leaks, low vibration readings, and with correct oil levels. Radiation exposure for the entire job was only .336 person-rem, well under target goal of 1 rem.

Maintenance has assessed the bottom line and has looked critically at how expensive failures can be. Consider the following cost expenditure comparison.

Previous Pump Repaired

1.856 person-rem	23,200*
2,157 man hours	44,123.93
Material cost	47,597.44
Total:	\$114,921.37

Second Pump Repaired

.336 person-rem	4,200*
664 man hours	14,464.34
Material cost	7,126.30
Total:	\$25,790.64

*Virginia Power places value of \$12,500/rem or \$12.50/mrem.

N194. Repairing the Spent Fuel Coolant Pump at Surry: Operational Details of a Job

Mechanical maintenance was assigned the task of repairing the Spent Fuel Coolant Pump located in the 7' elevation of the Fuel Building. Crew members walked the job down to get a better understanding of the work location, actual component conditions, and allowed for the planning of materials and support personnel. One team member had recently been involved in the complete overhaul and reassembly of an identical pump located in the same area, and many problems had been encountered which led to a significant maintenance failure. The crew was intent on profiting from that experience. The ALARA awareness and experience of that team member proved to be a valuable asset in his team's approach to the job at hand.

A crew member stated, *"Before we even started the job, we went through our ALARA pre-job briefing. We found out a lot of information through working with the ALARA group on the past exposure history of the previous pump. We went over the HP survey maps of the area. We would tell from the last ALARA history what kind of tools and scaffolding were needed, which prevented rework. From the beginning, we all concentrated on reducing our dose and doing a better job. We were shooting for doing the job in less than one rem, and we received a lot of support from the ALARA group."*

The crew concentrated on (1) removing the pump from the area and performing maintenance in the Refurb Building. Dose rates to work it in place were about .750 person-rem and general area readings and contamination levels were very high; (2) maintaining ownership of the pump from start to finish.

States the worker, *"Work on the previous pump was passed around to different crews. This affects a lot of things like exposure and the quality of the job. It's hard to have ownership when you work a job for 2 hours and pass it on. Everyone can still have the same objective -- to do it right -- but everyone doesn't have the same train of thought...on how to accomplish it. I think you lose a lot by joint jobs like that."*

There was some initial resistance with removing the pump and transporting it to the Refurb Building. Performing the task in this manner required more than one RWP. Support personnel preferred that the pump be decontaminated and worked in place. Also, contamination levels exceeded set guidelines for entering the Refurb Building. Barriers were met when the crew attempted to work the job differently. Equipment can't enter the Refurb Building unless contamination levels are less than 55,000 dpm/100 cm².

"There was a lot of misunderstanding about our intent. Everyone seemed to be locked on how this job had been done in the past. We really thought that we had a better way, and didn't give up on what we wanted and needed to reduce our exposure. We heard a lot of "We've never done this before." We've learned from this, that we need to communicate better with other departments, to show them a more detailed plan of what we need," states the worker.

Strong Maintenance Management support allowed the team to set up a lay-down pad in one area of the Refurb Building. There the pump was disassembled and individual parts were transported to the TTI decontamination trailer.

There were problems getting the rotating element inside the decontamination booth. TTI did not have lifting devices for rigging. The crew's RWP for working the job was removed due to holes found in the decontamination tent used. This was an unanticipated hold up. The crew received