

N289. Browns Ferry Nuclear Plant Unit 2 Cycle 6 Chemical Decontamination Proven Success

By the end of July 1993, Browns Ferry Nuclear Plant (BFN) are at 82% of the overall site goal with 75% of the fiscal year expended. With unit 2 back on line, the exposure to fiscal year ratio is expected to even out by the end of the year. The focus of attention for exposure accrual has shift back on unit 3.

Chemical decontamination project was accomplished during the U2C6 outage in support of the AS Low As Reasonably Achievable (ALARA) concept. There were those who were quite skeptical of the successfulness of chemical decontamination to appreciably lower work area radiation dose rates. However, as proven by post outage exposure data, this effort successfully lowered the radiation exposure required to complete outage work in the drywell and reactor water clean-up (RWCU) rooms within the reactor building.

The RWCU system decontamination was initiated with chemical injection on 2/23/93 and ended with chemical clean up on 2/26/93. A three-step process known as LOMI-AP-LOMI (i.e., Low Oxidation State Metal Ion and Alkaline Permanganate Oxidation) was utilized. The entire RWCU system flow path was decontaminated with the exception of the demineralizes.

The results:

- 10 pounds of metal oxides removed
- 11 Curies of radioactivity removed
- average contact decontamination factor (DF)=20
- average general area DF=6
- average pre-decontamination contact does rate=304 mr/hr
- average post-decontamination contact does rate=41 mr/hr
- average pre-decontamination general area dose rate=78 mr/hr
- average post-decontamination general area dose rate=17 mr/hr

The Reactor Recirculation (RECIRC) system and Residual Heat Removal (RHR) system piping within the drywell was decontaminated. The process initiated with chemical injection on 2/28/93 and ended with chemical clean up on 3/4/93. A three- step LOMI-AP-LOMI process was utilized.

The results were

- 41 pound of metal oxides removed
- 108 Curies of radioactivity removed
- average contact DF=70 (RECIRC); 29 (RHR)
- average general area DF=8 (RECIRC & RHR)
- average RECIRC pre-decon contact dose rate=388 mr/hr
- average RHR pre-decon contact dose rate=192 mr/hr
- average RECIRC post-decon contact dose rate=18 mr/hr
- average RHR post-decon contact dose rate=42 mr/hr

- average pre-decon general area dose rate=24 mr/hr
- average post-decon general area dose rate=7 mr/hr

The total estimated person-rem savings as a result of the project was 595. The estimated project cost required to complete the decontamination was \$2.2 million. Based on this data, the net estimated benefit for completion of the project in support of U2C6 outage tasks was \$6.0 million.

Taken from, "Unit 2 Cycle 6 Chemical Decontamination Proven a Success," Browns Ferry Nuclear Plant Racon News, p.1, July 1993. For further information call Mike Scarboro (Editor) at 205/729-3400.