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Techniques and Accomplishments of the Post Irradiation Examination Program at the Spallation Neutron Source

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During operation several components at the Spallation Neutron Source (SNS) are exposed to high energy radiation that alter mechanical and physical properties, which limits their useful lifetime. Components are also occasionally removed from service due to leaks or another failure mechanisms that prohibit reliable operation. The SNS maintains a rigorous post irradiation examination (PIE) program, and have developed a wide array of capabilities to sample and inspect irradiated components after service. Techniques developed include remote sampling of components, videoprobe inspection, remote identification of leak locations, high-resolution hot-cell photography, and non-contact topography characterization. These techniques have provided invaluable information on component performance to design engineers and management, which have facilitated improved component designs and more predicable operation. This presentation will outline the PIE techniques utilized at the SNS and summarize some of the impacts the results have had on operation of the SNS.

Primary author: Dr MCCLINTOCK, David (Oak Ridge National Laboratory)

Presenter: Dr MCCLINTOCK, David (Oak Ridge National Laboratory)

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