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From: Anthony Markley
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Date: Fri, Aug 6, 2004 4:17 PM
Subject: Fwd: MS-2 Broke Fuel Pin

This is provided for your information. This is provided to the Fuel and Aging/Materials distributions.

It was reported in the Region I call today that Millstone 2 had experienced a broken fuel pin in which a 14 inch segment broke off the top of a fuel pin while it was being placed into a container in the spent fuel pool.

Discussion with the resident provided the following addiitonal information:

Following a refueling outage and a cycle in which multiple fuel leakers were anticipated, the licensee initiated an aggressive effort to identify the root cause of the fuel leaks. Following a fuel sipping operation, eleven leakers were identified, nine of which were located near the baffle plates. Of these leakers, 10 came from thrice burned assemblies and one came from a twice burned assembly.

While trying to extract the fuel pins, additional flaws were noted. In one pin a 270 degree circumfrential crack was identified and a decision to leave this pin in place was made. A 90 degree circumfrential crack was identified on a second pin and the decision was made to move this pin to container. While this second pin was being placed in the container, a 14 inch segment (in the grapple) broke off and the lower portion of the pin fell into the container. The fuel's manufacturor is believed to be Siemens-Framatome.

The failure mechanism is believed to be grid-rod fretting with subsequent water intrusion causing hydriding and circumfrential cracking.

The residents, Max Schneider and Silas Kennedy, can be reached at 860-701-3471 or 860-447-370.

They have FAXed me a copy of the licensee's recovery plan which can be found in my office at O-12D9 on a chair. If decide that you want a copy, please make one and and leave the original for someone else to copy. (I will return to the office on Wednesday, 8/11.)

CC: Anthony Markley; Anthony McMurtray; Brett Rini; Bruce Boger; C. Vernon Hodge; Charles Petrone; Frank Costello; Jack Foster; Jack Foster; Kathy Gray; Michael Case; Richard Laura; Ross Telson; Samuel Lee; Sharon Green; Silas Kennedy; Terrence Reis

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Broken Fuel Pin - Millstone 2

On 8/5/2004, the Millstone RPM, Eric Laine, called informing me of an incident which occurred at approximately 0800 (8/5/2004). During removal of a fuel pin from a spent fuel assembly in the Unit 2 Spent Fuel Pool (SFP), the pin broke into two pieces. The top portion is about 14 inches in length and is secured in the Fuel Handling Machine Removal Tool. The lower portion remains in the Fuel Handling Basket (Fuel Pin Inspection Holder). All material is contained in the SFP. There is no indication that fuel pellets fell out of the pin. There were no indications of deteriorating radiological conditions - general area dose rates remained unchanged, no upscale deflection in airborne monitoring instrumentation, grab air samples showed no indications of noble gas or iodine. The Reactor Operations Fuel Group (lead-Bill Hoffner) and the fuel inspection contractor, Frametome, are developing a plan to recover the broken pieces and inspect for possible fuel pellets in the SFP.

The fuel assembly being inspected was one of eleven that had been identified as leaking (during power operations) and subsequently removed from the reactor during the past outage. The licensee suspects that the fuel pin fractured from circumferential cracking in the cladding.