

LICENSEE EVENT REPORT

LER 79-25/1T

CONTROL BLOCK: [][][][][][][][] (1)

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

[0][1] [V][T][V][Y][S][I] (2) [0][0]-[0][0][0][0][0]-[0][0] (3) [4][1][1][1][1] (4) [][] (5)

CON'T
REPORT SOURCE [L] (6) [0][5][0][0][0][2][7][1] (7) [1][0][0][3][7][9] (8) [1][0][1][7][7][9] (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

[0][2] [0][3] See attached sheet [0][4] [0][5] [0][6] [0][7] [0][8] [0][9]

SYSTEM CODE [R][C] (11) CAUSE CODE [E] (12) CAUSE SUBCODE [B] (13) COMPONENT CODE [F][U][E][L][X][X] (14) COMP. SUBCODE [Z] (15) VALVE SUBCODE [Z] (16)

LER REPORT NUMBER (17) [7][9] EVENT YEAR [][] (21) SEQUENTIAL REPORT NO. [0][2][5] (24) OCCURRENCE CODE [0][1] (28) REPORT TYPE [T] (30) REVISION NO. [0] (32)

ACTION TAKEN [X] (18) FUTURE ACTION [X] (19) EFFECT ON PLANT [Z] (20) SHUTDOWN METHOD [Z] (21) HOURS [0][0][0][0] (22) ATTACHMENT SUBMITTED [Y] (23) NPRD-4 FORM SUB. [Y] (24) PRIME COMP. SUPPLIER [N] (25) COMPONENT MANUFACTURER [G][0][8][0] (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

[1][0] [1][1] See attached sheet [1][2] [1][3] [1][4]

FACILITY STATUS [H] (28) % POWER [0][0][0] (29) OTHER STATUS [NA] (30) METHOD OF DISCOVERY [C] (31) DISCOVERY DESCRIPTION [Fuel Assembly Inspection] (32)

ACTIVITY CONTENT [Z] (33) [Z] (34) AMOUNT OF ACTIVITY [NA] (35) LOCATION OF RELEASE [NA] (36)

PERSONNEL EXPOSURES NUMBER [0][0][0] (37) TYPE [Z] (38) DESCRIPTION [NA] (39)

PERSONNEL INJURIES NUMBER [0][0][0] (40) DESCRIPTION [NA] (41)

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LOSS OF OR DAMAGE TO FACILITY TYPE [Z] (42) DESCRIPTION [NA] (43)

PUBLICITY ISSUED [N] (44) DESCRIPTION [NA] (45)

7910230627

NRC USE ONLY

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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES

As previously reported in RO 79-25/1P, October 3, 1979, evidence of lower end plug (LEP) wear was discovered on the water rods associated with two assemblies while performing refuel outage inspections of 8x8R fuel. Examination of fuel rods located in the general area of the water rods revealed no indication of end plug wear.

The wear is thought to be due to flow excitation of the water rod LEPs by cross flows within the lower tie plate (LTP) flow volume. In the 8x8R design, the LEPs extend into the LTP internal flow volume; in 8x8, they did not. Wear does not appear to be present either on fuel rods, which fit into a tapered recess in the LTP, or in 8x8 water rods which have the shorter LEPs.

The chief concern associated with this discovery is capture rod LEP wear. Should the capture rod LEP wear to approximately 38% material loss, the square end plug would be worn sufficiently to permit possible rotation. Potential could exist then for a loss of positive spacer positioning. To our knowledge, however, no rotational driving force is present.

The observed wear on the several R5 (Reload 5 8x8R Bundles) water rods inspected ranges from about 2.5 to 13% material loss. These R5s have experienced approximately 9 1/2 months of full flow core residence. Two additional data points, one at 30 months service (LTA6), and one at 26 months service (LTA7) show about 15% and 39% loss respectively. It is to be noted that the LTA-7 water rod was observed to be worn to the point of freedom to rotate. However, grid spring markings on this water rod indicated that no rotational movement had, in fact, occurred.

Analysis of the data would predict that a typical water rod LEP would be worn to potential for rotation (~38% wear) somewhere in excess of 40 months service. With a conservative continuous, or linear wear model, the average R5 water rod will accumulate less than 20% wear by EOC7.

It is concluded that few if any R5 water rods will be worn to the potential for rotation by EOC7 and therefore there are no consequences or potential consequences to the health and safety of the public.

CAUSE DESCRIPTION AND CORRECTIVE ACTION

A special test procedure has been developed which modifies four 8x8R fuel bundles such that the water rod is replaced in each bundle with a special capture rod, thereby, leaving the modified bundle with two capture rods. The special capture rods were modified to the extent of having a shorter end plug to eliminate the flow-induced excitation and wider spaced grid retaining tabs to allow insertion of the special rod. A longer upper end plug will preclude the lifting of the special rod from the LTP once the upper tie plate is attached. These four bundles, two of which were previously irradiated, will be loaded in the core for operation during Cycle 7. An inspected program will be developed for implementation at EOC7; action will be taken as deemed necessary.

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