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February 25, 1981

In reply, please refer to LAC-7383

DOCKET NO. 50-409

Mr. James G. Keppler
Regional Director
U. S. Nuclear Regulatory Commission
Directorate of Regulatory Operations
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: DAIRYLAND POWER COOPERATIVE
LA CROSSE BOILING WATER REACTOR (LACBWR)
PROVISIONAL OPERATING LICENSE NO. DPR-45
REPORTABLE OCCURRENCE NO. 81-03



- References:
- (1) LACBWR Technical Specifications, Section 3.9.2.b.(2).
 - (2) LACBWR Technical Specifications, LCO 4.2.2.22.a.3.
 - (3) LACBWR Technical Specifications, Section 4.2.2.22.f.

Dear Mr. Keppler:

In accordance with Reference (1), this is to notify you of conditions leading to operation in a degraded mode permitted by a limiting condition for operation.

Reference (2) established the limitations for the gross alpha activity of the reactor coolant system.

Reference (3) established sampling analysis and reporting requirements in the event the gross alpha activity of the reactor coolant system exceeded specified limits.

An analysis of a reactor coolant system sample taken at the inlet to the primary purification system cation exchanger at 0138 hours on February 2, 1981, while the plant was at 22% Reactor Rated Thermal Power, indicated that the coolant gross alpha activity exceeded the limiting condition for operation ($\leq 5.0 \times 10^{-6} \mu\text{Ci/gram}$). The as-found gross alpha activity value was $5.46 \times 10^{-6} \mu\text{Ci/gm}$. The sample was also analyzed for gross β - γ activity and iodine activity. See Attachment 1 for these results and the Additional Information required by Reference 3.

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Mr. James G. Keppler
Regional Director

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A second sample was taken approximately 4 hours (4 hours and 17 minutes) after the first, which was approximately 3 hours after the first sample had been analyzed. The alpha activity was 1.79×10^{-7} $\mu\text{Ci/ml}$, well within the Technical Specification limit. Therefore, the additional sampling for gross β - γ and iodine activities was no longer required and the reactor did not have to be shut down. A third sample was taken at 0709 as a precaution. The alpha activity was 1.27×10^{-7} $\mu\text{Ci/ml}$. This sample was also analyzed for iodine activities as a confirmatory measure. These results are also reported in Attachment 1.

The observed increase in alpha activity was not considered attributable to fuel failures. This is supported by the relatively low β - γ and iodine activities measured. The increase in iodine activities between the 0138 and 0709 samples reflects the power increase.

The samples were taken during the power escalation for the commencement of Cycle 7. The contribution to the temporary indicated increase in gross alpha activity of the reactor coolant system came from residual irradiated fuel material which entered the system as a result of degraded fuel pin cladding primarily experienced during Cycle 4 and to a much lesser degree during Cycle 5 and subsequent handling of the irradiated fuel assemblies during refueling. Handling of core components during refueling and later operation of the forced circulation pumps resulted in the more general distribution of suspended alpha bearing material in the coolant.

The reactor scram and tripping and restart of the forced circulation pumps on February 1, 1981, caused resuspension of alpha emitting material previously deposited at various points in the primary system. This effect has been witnessed in the past. (Refer to RO 80-05, 80-06 and 79-10). In addition, the primary purification system had been shut down for approximately five hours after the scram and had only been operating for several hours prior to the first sample being taken. The two subsequent samples provide evidence that the relatively high alpha activity was a temporary condition and that operation of the primary purification system reduces the alpha-emitting material suspended in the primary coolant. Therefore, no further corrective action was considered necessary.

A Licensee Event Report (Ref. Appendix A, Regulatory Guide 1.16, Revision 4) is enclosed.

Mr. James G. Keppler
Regional Director

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February 25, 1981

If there are any questions concerning this report, please contact us.

Very truly yours,

DAIRYLAND POWER COOPERATIVE



Frank Linder, General Manager

FL:LSG:af

Enclosures

cc: Director, Office of Inspection and Enforcement (30)
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Director, Office of Management Information and (3)
Program Control
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC Resident Inspectors

ATTACHMENT 1ACTIVITY ANALYSES AND ADDITIONAL INFORMATIONGross Beta and Gamma Activity:

0138, 2/2/81	6.92 x 10 ² μCi/ml
1110, 2/2/81	.324 μCi/ml

Iodine Activity:

0138, 2/2/81	I-131	6.222 x 10 ⁻⁵ μCi/ml
	I-133	1.175 x 10 ⁻³ μCi/ml
	I-135	<7.958 x 10 ⁻⁴ μCi/ml
0709, 2/2/81	I-131	5.454 x 10 ⁻⁴ μCi/ml
	I-133	5.758 x 10 ⁻³ μCi/ml
	I-135	1.507 x 10 ⁻² μCi/ml

Alpha Activity:

0138, 2/2/81	5.46 x 10 ⁻⁶ μCi/ml
0555, 2/2/81	1.79 x 10 ⁻⁷ μCi/ml
0709, 2/2/81	1.27 x 10 ⁻⁷ μCi/ml

Additional Information:

- 1) Reactor power history starting 48 hours prior to sample in which limit was exceeded.

0200, 1/31/81.....26%
 0250, 1/31/81.....Commenced power reduction to ~ 0%.
 0300, - 0700, 1/31/81.... ~.2%
 0800 - 2100, 1/31/81.... ~.1%
 2200 - 2400, 1/31/81.... .1 - 21%
 0000 - 1100, 2/1/81..... 21% - 28%
 1134, 2/1/81.....Reactor Scram
 1543, 2/1/81.....Reactor Critical
 2100 - 2200, 2/1/81..... .3% - 20%
 2200, 2/1/81 - 0138, 2/2/81.....20% - 22%

- 2) Fuel burnup by core region: See attached figure.

ATTACHMENT 1 - ACTIVITY ANALYSES AND ADDITIONAL INFORMATION - (Cont'd)

- 3) Cleanup flow history starting 48 hours prior to sample in which limit was exceeded:

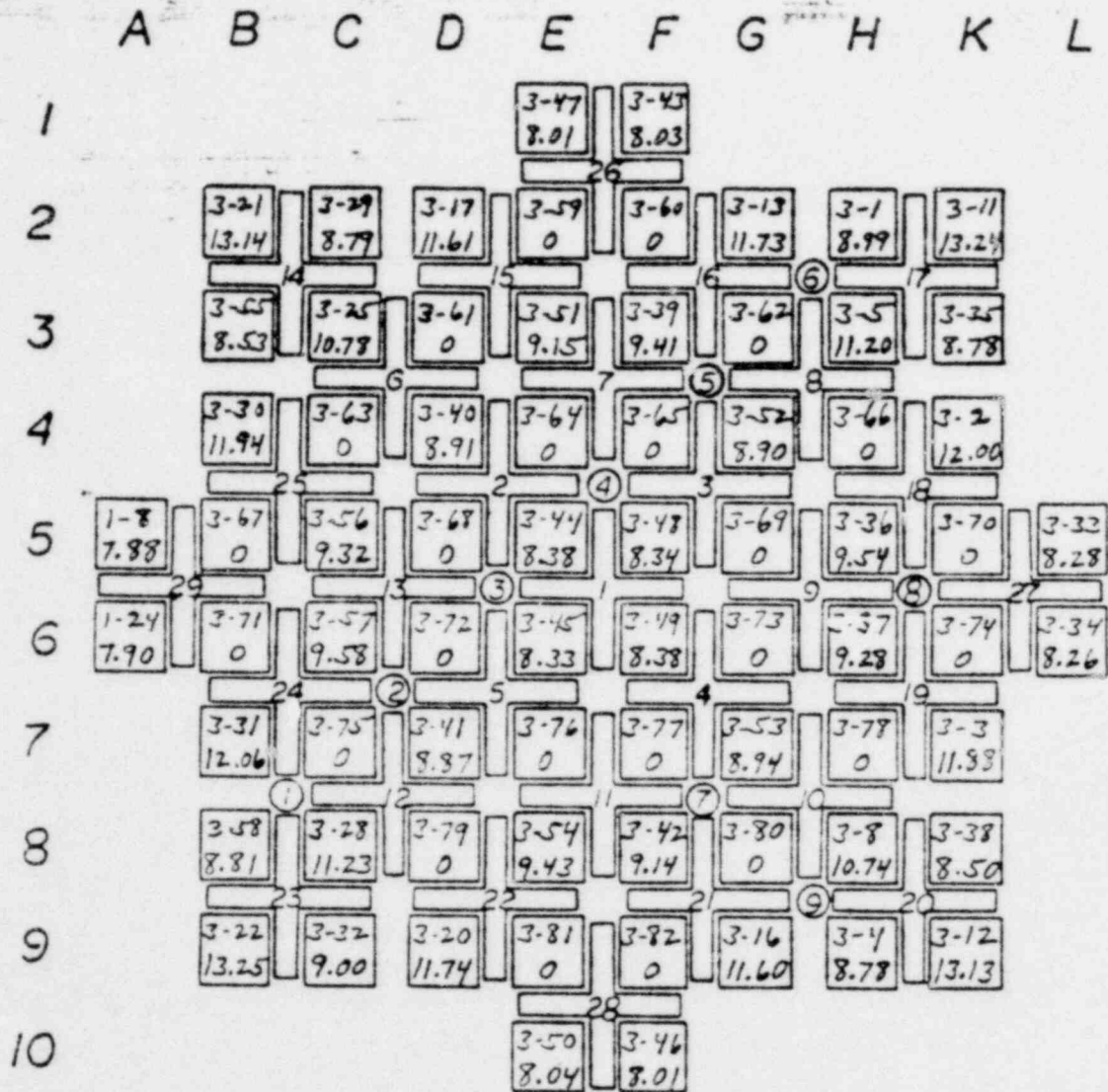
0100-2300, 1/31/81	45 gpm
2400, 1/31/81	44.5 gpm
0100-0600, 2/1/81	44 gpm
0700-1100, 2/1/81	44.5 gpm
1200-1700, 2/1/81	Shutdown
1800-2100, 2/1/81	46 gpm
2200, 2/1/81 - 0200, 2/2/81	45.5 gpm

- 4) Off-gas level starting 48 hours prior to sample in which limit was exceeded:

0000, 1/31/81 - 0000, 2/1/81	No Off-Gas Generated
0000-0800, 2/1/81	50 Ci/day
0800-2400, 2/1/81	No Off-Gas Generated

- 5) Gross alpha activity level starting with the last sample taken prior to sample in which limit was exceeded:

0036, 1/26/81	5.65×10^{-7} $\mu\text{Ci/ml}$
0138, 2/2/81	5.46×10^{-6} $\mu\text{Ci/ml}$
0555, 2/2/81	1.79×10^{-7} $\mu\text{Ci/ml}$
0709, 2/2/81	1.27×10^{-7} $\mu\text{Ci/ml}$



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PLANT
NORTH

IN CORE FLUX MONITORS ○

Fuel Assembly Number

Average Exposure (GWD/MTU)

xxx
yyy

LACBWR Reload Configuration for Cycle 7.
The BOC Core Average Exposure is 6,528 MWD/MTU.