



Commonwealth Edison
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Downers Grove, Illinois 60515

February 20, 1991

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Document Control Desk

Subject: Dresden Nuclear Power Station Unit 3
Extension of ABB-Atom/EPRI/CECo
Control Rod Demonstration Program
NRC Docket No. 50-249

- References:
- (a) D. Crutchfield (NRC) letter to D. Farrar (CECo),
Safety Evaluation for Amendment 74 to the Dresden
Unit 3 Operating License, dated March 9, 1984.
 - (b) B. Siegel (NRC) letter to T. Kovach (CECo),
"EPRI/ABB-Atom Control Rods for Dresden Unit 3
Cycle 12 Operation", dated March 1, 1990.
 - (c) ASEA-Atom Report UR 87-102, Revision 1, ASEA-Atom
Control Rods for BWR 2/3/4/5/6 Service Life
Recommendations, dated April 15, 1987.

Dr. Murley:

Commonwealth Edison Company (CECo), ABB-Atom (formerly ASEA-Atom), and EPRI have jointly participated in a control rod demonstration program at Dresden Unit 3 since the beginning of Cycle 9. Dresden Unit 3 is currently scheduled to complete Cycle 12 operation (fourth cycle of the demonstration program) on March 30, 1991. At this time, CECo is planning to extend the control rod demonstration program at Unit 3 through Cycle 13 (a fifth consecutive cycle), which is scheduled to begin on June 8, 1991.

The program originally involved the irradiation of eight (8) ABB-Atom lead test control rods (four all-B4C control rods (CR-70 design) and four B4C control rods with hafnium tips (CR-82 design)) for three consecutive 18-month cycles in control cell locations. The original program was reviewed and approved by your staff in the Reference (a) letter.

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Near the end-of-Cycle 11 operation (third cycle of the demonstration program), CECo and ABB-Atom determined that all of the lead test control rods were capable of operating for an additional 18-month cycle without exceeding their design service lifetimes, provided that the results of scheduled inspections following Cycle 11 operation were acceptable. During the inspections following Cycle 11 operation, three of the eight test control rods were found to have some crack indications (AA103, AA106H and AA107H). Following evaluation, and discussions with your staff, CECo reinserted the five unaffected control rods (AA101, AA102, AA104, AA105H, and AA108H) and one of the control rods with minor crack indications (AA103) for a fourth cycle (Cycle 12) of irradiation. Control rods AA102 and AA103 were placed in non-control cell locations for Cycle 12. This program extension, for a fourth consecutive cycle, was approved by your staff in Reference (b).

CECo and ABB-Atom have projected the end-of-Cycle 12 exposures for the six test control rods (see Attachment 'A'). Based on these exposures, it has been determined that the six test control rods are capable, subject to satisfactory inspection results, of operating for another 18-month cycle without exceeding their design service lifetimes defined in the Reference (c) ASEA-Atom Report. CECo is not planning to relocate the six test control rods during the upcoming Unit 3 refueling outage; therefore, the control rods will remain in the same core locations for Cycle 13 (see Attachment 'B').

The ABB-Atom test control rods were originally high worth control rods (i.e., their initial worth was 6% to 9% greater than an original equipment control rod), which necessitated separate modeling in the cycle design analysis for the first three cycles (Cycles 9 through 11) of the demonstration program. For Cycle 12 (fourth cycle of the demonstration program), CECo determined that the test control rods were of equivalent worth (within $\pm 5\%$) to an original equipment control rod. This determination was based on projected end-of-Cycle 11 control rod exposures and control rod worth calculations performed by ABB-Atom. As a result, the six test control rods utilized in Cycle 12 were modeled as standard worth control rods in the cycle design analysis. Similarly, CECo has determined for Cycle 13 (fifth cycle of the demonstration program) that the six test control rods will again be of equivalent worth to an original equipment control rod. This determination is based on the projected end-of-Cycle 12 control rod exposures and control rod worth versus depletion information supplied to CECo by ABB-Atom in conjunction with the previously performed control rod worth calculations (at the end-of-Cycle 11). Therefore, the six test control rods will be modeled as standard worth control rods in the Cycle 13 design analysis.

Consistent with previous cycles, CECo and ABB-Atom are planning to perform visual and dimensional inspections on the six test control rods at the end-of-Cycle 12 (scheduled to be performed in April 1991). CECo will notify your staff of any unacceptable inspection results. Additionally, spare control rods are available for Cycle 13 operation in the event of unacceptable inspection results.

Please contact this office should further information be required.

Respectfully,

Milton H. Richter

M.H. Richter
Nuclear Licensing Administrator

Attachments: A - Control Rod Exposures for Demonstration Program
B - Control Rod Location Map, Dresden Unit 3 Cycle 13

cc: A.B. Davis - Regional Administrator, Region III
B.L. Siegel - NRR Project Manager
D.E. Hills - Senior Resident Inspector, Dresden

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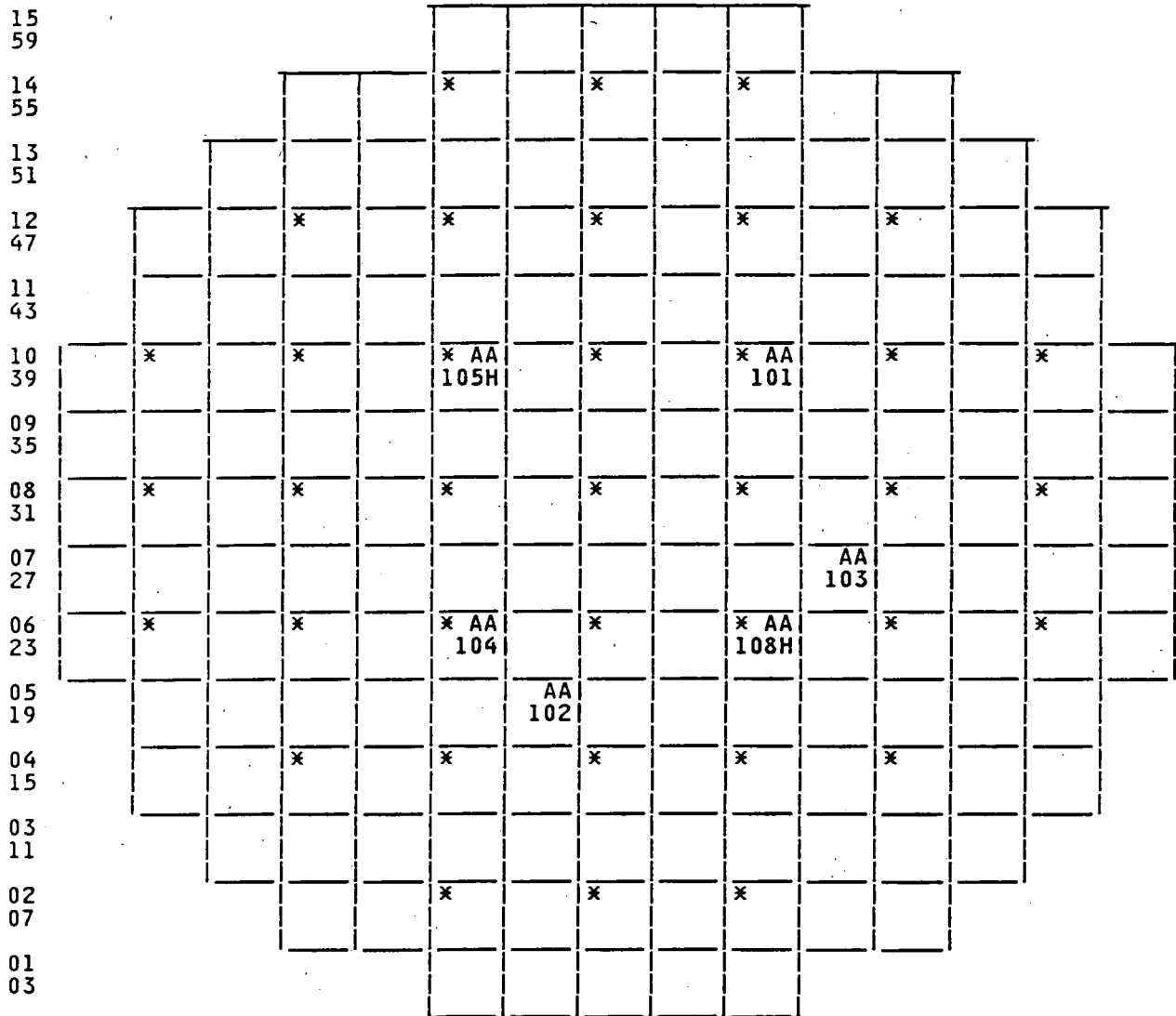
ATTACHMENT A

CONTROL ROD EXPOSURES FOR DEMONSTRATION PROGRAM

D3 Core Location (column/row)	Control Blade ID	Control Blade Type	Projected EOC12 Exposure (snvts)	Design Lifetime (snvts)
38/39	AA101	CR-70	Q 1 2.68	4.85
			u 2 2.56	4.85
			a 3 1.76	4.85
			r 4 0.43	4.55
t e r				
26/19	AA102	CR-70	Q 1 2.28	4.85
			u 2 2.15	4.85
			a 3 1.48	4.85
			r 4 0.39	4.55
t e r				
42/27	AA103	CR-70	Q 1 2.28	4.85
			u 2 2.15	4.85
			a 3 1.47	4.85
			r 4 0.38	4.55
t e r				
22/23	AA104	CR-70	Q 1 2.67	4.85
			u 2 2.56	4.85
			a 3 1.76	4.85
			r 4 0.44	4.55
t e r				
22/39	AA105H	CR-82	Q 1 2.34	5.15
			u 2 2.24	4.85
			a 3 1.74	4.85
			r 4 0.58	4.55
t e r				
38/23	AA108H	CR-82	Q 1 2.35	5.15
			u 2 2.26	4.85
			a 3 1.74	4.85
			r 4 0.58	4.55
t e r				

ATTACHMENT B
 CONTROL ROD LOCATION MAP
 UNIT: DRESDEN 3 CYCLE: 13

* = CONTROL CELL CORE LOCATION



A 02 B 06 C 10 D 14 E 18 F 22 G 26 H 30 J 34 K 38 L 42 M 46 N 50 P 54 R 58