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April 24, 1996

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 1
BV-1 Docket No. 50-334, License No. DPR-66
Response to NRC Bulletin No. 96-01:
Control Rod Insertion Problems

Attached is the Duquesne Light Company report summarizing the data and documenting the results for Beaver Valley Power Station Unit No. 1 Fuel Cycle 11 end of life measurements of the control rod drop times and drag forces for all rodded fuel assemblies. This report is being submitted to satisfy the Required Response (3) of NRC Bulletin 96-01: Control Rod Insertion Problems.

Based on the evaluation of the data obtained for control rod testing at the end of Cycle 11 at Beaver Valley Power Station Unit No. 1, no difficulties were encountered with control rods failing to insert completely on a scram signal. Operability of control rods in fuel assemblies with burnup of 44399 MWD/MTU was demonstrated.

If you have any questions concerning this response, please contact Mr. Roy K. Brosi at (412) 393-5210.

Sincerely,

Sushil C. Jain

Attachment 300105

c: Mr. L. W. Rossbach, Sr. Resident Inspector
Mr. T. T. Martin, NRC Region I Administrator
Mr. D. S. Brinkman, Sr. Project Manager

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DELIVERING QUALITY ENERGY

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF BEAVER)

Subject: Beaver Valley Power Station, Unit No. 1
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Before me, the undersigned notary public, in and for the County and Commonwealth aforesaid, this day personally appeared Sushil C. Jain, to me known, who being duly sworn according to law, deposes and says that he is Division Vice President, Nuclear Services of the Nuclear Power Division, Duquesne Light Company, he is duly authorized to execute and file the foregoing submittal on behalf of said Company, and the statements set forth in the submittal are true and correct to the best of his knowledge, information and belief.

Sushil C. Jain

Subscribed and sworn to before me
on this 24th day of April, 1996

Tracey A. Baczek
Notary Public

Notarial Seal
Tracey A. Baczek, Notary Public
Shippingport Boro, Beaver County
My Commission Expires Aug. 16, 1997
Member, Pennsylvania Association of Notaries

DUQUESNE LIGHT COMPANY
Nuclear Power Division

ATTACHMENT 1

Beaver Valley Power Station Unit 1
Cycle 11 End of Life Control Rod Testing

Rod Drop Testing

On March 23, 1996, Control Rod Drop Time measurements were performed for all 48 rods in the core. Drop times were measured from the beginning of voltage decay on the stationary gripper coil to entry into the dashpot region and from entry into the dashpot region to rod bottom. Each trace was also checked for rod bottom recoil to ensure all rods reached the rod bottom position. All drop times to dashpot entry were within the Technical Specification limit of 2.7 seconds and all rods demonstrated varying degrees of recoil (2 to 6 bounces).

During the test the dashpot entry time could not be exactly determined for four rods in Control Bank D (core location B8, K6, F10, and K10). The dashpot entry time could not be measured due to an electrical anomaly in the RPI coil stack. This anomaly did not prevent the determination of total rod drop time. The total rod drop time for each rod was measured and found to be less than the Technical Specification limit. All rods demonstrated rod bottom recoil to varying degrees. The rods with the least number of bounces (2) were in core locations M10, J9, and G9. Rods J9 and G9 were located in assemblies with a burnup of approximately 44399 MWD/MTU and their rod drop times to rod bottom increased 0.02 seconds from the Beginning of Life (BOL) test. Rod M10 was located in an assembly with a burnup of approximately 35128 MWD/MTU. Its rod drop time to rod bottom increased 0.03 seconds from the BOL test. The assemblies in core locations M10, J9, and G9 were not reloaded into the core for Cycle 12. A summary of the BOL and End of Life (EOL) drop tests are listed below.

	Time to dashpot			Time to rod bottom		
Test	Average	Fastest	Slowest	Average	Fastest	Slowest
BOL	1.22	1.18	1.35	1.74	1.68	1.83
EOL	1.25	1.17	1.38	1.73	1.67	1.86

All rod drop times for the EOL test with the corresponding assembly burnups are listed in Table 1.

Control Rod Drag Test

Control rod drag tests were performed from April 1 through April 2, 1996. All 48 rods were drag tested by withdrawing the control rod approximately ten feet out of the assembly and reinserting it. During this time the initial dead weight, maximum weight during withdrawal, and minimum weight during insertion were measured using a spring scale and recorded.

The rod with the highest measured drag was rod M10 which had a drag of 65 pounds in the dashpot region and 45 pounds in the non-dashpot region. This rod would have required further evaluation since it exceeded the acceptance criteria for reactor reassembly of $\pm$ 40 pounds in the non-dashpot region. As stated before, the assembly in position M10 was not reloaded into the core for Cycle 12. Rods G7 and F4 had the next highest values of 45 pounds in the dashpot region. These values were within the acceptance criteria of $\pm$ 100 pounds in the dashpot region. Drag measurements are listed in Table 1.

Attachment 1
Response to NRC Bulletin 96-01

Table 1.
Beaver Valley Power Station Unit 1
Cycle 11 EOL Rod Drop and Drag Test Results

Core Location	Assembly ID	Assembly Burnup (MWD/MTU)	Drop Time to Dashpot (sec.)	Dashpot to Rod Bottom (sec)	Total Drop Time (sec)	Dead Weight (lbs)	Maximum Weight (lbs)	Drag (lbs)
G7	L27	44399	1.26	0.43	1.69	440	485	45
J7	L23	44399	1.24	0.45	1.69	450	480	30
G9	L22	44399	1.25	0.45	1.70	440	475	35
J9	L26	44399	1.28	0.44	1.72	450	490	40
F2	J59	42046	1.24	0.51	1.75	450	465	15
K2	J57	42046	1.26	0.43	1.69	450	465	15
F14	J53	42046	1.26	0.53	1.79	440	470	30
K14	J51	42046	1.34	0.48	1.82	450	470	20
B6	J56	41680	1.38	0.44	1.82	440	460	20
P6	J54	41680	1.22	0.45	1.67	450	485	35
B10	J52	41680	1.29	0.46	1.75	440	470	30
P10	J58	41680	1.24	0.46	1.70	450	470	20
G3	L49	40540	1.22	0.49	1.71	440	470	30
J3	L51	40540	1.26	0.43	1.69	450	470	20
G13	L50	40540	1.24	0.44	1.68	450	465	15
J13	L45	40540	1.22	0.51	1.73	455	470	15
C7	L47	40388	1.22	0.51	1.73	440	460	20
N7	L48	40388	1.17	0.53	1.70	450	480	30
C9	L52	40388	1.24	0.43	1.67	440	455	15
N9	L46	40388	1.22	0.46	1.68	445	470	25
H6	M57	35809	1.24	0.48	1.72	450	470	20
F8	M39	35809	1.25	0.48	1.73	445	470	25
K8	M33	35809	1.26	0.46	1.72	440	480	40
H10	M45	35809	1.25	0.48	1.73	450	480	30
F4	M21	35166	1.24	0.46	1.70	435	480	45
K4	M19	35166	1.21	0.49	1.70	450	470	20

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Table 1.
Beaver Valley Power Station Unit 1
Cycle 11 EOL Rod Drop and Drag Test Results

Core Location	Assembly ID	Assembly Burnup (MWD/MTU)	Drop Time to Dashpot (sec.)	Dashpot to Rod Bottom (sec)	Total Drop Time (sec)	Dead Weight (lbs)	Maximum Weight (lbs)	Drag (lbs)
F12	M16	35166	1.24	0.48	1.72	440	470	30
K12	M32	35166	1.24	0.48	1.72	440	470	30
D6	M28	35128	1.26	0.50	1.76	440	460	20
M6	M29	35128	1.24	0.45	1.69	445	475	30
D10	M27	35128	1.24	0.46	1.70	440	465	25
M10	M18	35128	1.24	0.62	1.86	455	520	65
F6	N06	17130	1.28	0.47	1.75	450	465	15
K6	N21	17130	<1.73*	N/A*	1.73	450	470	20
F10	N19	17130	<1.74*	N/A*	1.74	445	470	25
K10	N05	17130	<1.75*	N/A*	1.75	450	460	10
E5	N20	16669	1.24	0.48	1.72	440	465	25
L5	N14	16669	1.23	0.49	1.72	450	460	10
E11	N09	16669	1.24	0.50	1.74	445	475	30
L11	N10	16669	1.24	0.47	1.71	450	470	20
H2	N38	15051	1.26	0.48	1.74	450	460	10
B8	N48	15051	<1.79*	N/A*	1.79	440	470	30
P8	N37	15051	1.26	0.55	1.81	450	480	30
H14	N43	15051	1.26	0.47	1.73	450	470	20
D4	N02	14274	1.26	0.50	1.76	440	470	30
M4	N01	14274	1.26	0.46	1.72	450	480	30
D12	N04	14274	1.24	0.58	1.82	440	470	30
M12	N03	14274	1.24	0.52	1.76	450	480	30

*Unable to determine Dashpot entry time due to trace anomaly.