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VPNPD-96-033

10 CFR 50.54(f)

May 22, 1996

Document Control Desk  
US NUCLEAR REGULATORY COMMISSION  
Mail Station P1-137  
Washington, DC 20555-0001

Gentlemen:

DOCKETS 50-266 AND 50-301  
RESPONSE TO NRC BULLETIN 96-01  
CONTROL ROD TEST DATA FROM UNIT 1 OUTAGE U1R23  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

In response to Bulletin 96-01, we submit the following control rod data from tests conducted during Unit 1 outage U1R23. As discussed in our April 3, 1996, response to the Bulletin, we committed to submit this data within 30 days of completing the control rod testing conducted during the outage. Refueling outage U1R23 was completed April 23, 1996. Completed tests included:

- (1) **End-of-Cycle (EOC) Rod Drop Testing** of Unit 1 rodded fuel assemblies was completed on March 30. The drop time for each control rod was less than the maximum limit of 2.2 seconds established in Technical Specification 15.3.10.E.1. Recoil was evident on all control rods. (Note that these results were generally reported to the NRC in our letter, VPNPD-96-019, dated April 3, 1996. Specific test data was not included.)
- (2) **Beginning-of-Cycle (BOC) Control Rod Drag Force Testing** of Unit 1 was performed on April 11. This is the routine test conducted on the rodded fuel assemblies of the refueled core. Drag force testing is conducted over the vessel with the drive shafts latched. Test results for all assemblies in the core were acceptable. This data is reported in Attachment 1, "PBNP Drag Test Results". One fuel assembly (#BB-11) was close to the Westinghouse guideline for maximum drag force in the thimble tube region. This assembly has relatively low burnup, and would not be considered susceptible to high burnup rod insertion problems. Westinghouse was consulted concerning this fuel assembly. They advised us that it is not unusual to occasionally observe low burnup fuel assemblies with drag forces comparable to those measured in BB-11. The assembly was therefore considered acceptable, pending results of the BOC control rod drop tests.
- (3) **BOC Control Rod Drop Tests.** Cold rod drop testing was performed April 20 and hot rod drop testing was performed April 22. The drop time for each control rod was less than the maximum limit of 2.2 seconds established in Technical Specification 15.3.10.E.1. This data is reported in Attachment 2, "Point Beach Unit 1 Cycle 24". Recoil was evident on all control rods.
- (4) **EOC Drag Force Tests on Discharged Assemblies.** On May 4, a crew of Westinghouse technicians performed drag force tests in the Spent Fuel Pool (SFP) on the five high burnup discharge fuel assemblies from U1C23. Eight other high burnup assemblies were selected by Westinghouse and also tested in the

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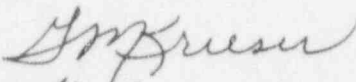
SFP. The results of the five U1C23 discharge assembly tests are included with the BOC drag force test results in Attachment 2. Three of the five fuel assemblies (# Y-11, Z-11, and Z-12) had thimble tube drag forces in excess of Westinghouse guidelines. Westinghouse will be evaluating these and the other tests they performed as part of their investigation and Westinghouse Owners Group (WOG) investigation of the incomplete rod insertions identified in the Bulletin.

We also enclose a core map of rodded fuel assemblies for Unit 1 Cycle 24 (Attachment 3), as requested in the Bulletin.

We continue to evaluate the operability of all rodded fuel assemblies using this information and that made available to us from the WOG. To date, all rodded fuel assemblies installed in our operating cores meet our existing test acceptance criteria, and therefore are considered operable. Our evaluation of test data does not indicate any basis for revising the existing acceptance criteria or developing new criteria. We look forward to the evaluation and guidance that may result from your review of data and the continuing WOG investigation.

Please contact us if there are any questions.

Sincerely,



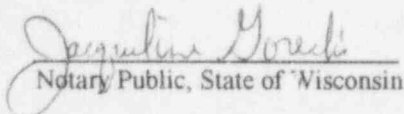
Bob Link  
Vice President  
Nuclear Power

GDA

Attachments

cc: NRC Resident Inspector  
NRC Regional Administrator  
Public Service Commission of Wisconsin (Attn: Paul Kitzenbel)

Subscribed and sworn to before me  
on this 22nd day of May, 1996.

  
Notary Public, State of Wisconsin

My Commission expires 10-27-96.

# PBNP Drag Test Results

Fuel Assembly	Cycle, BOC or EOC	Burnup, MWD/MTU	Static wt. lbs	Guidetube out drag	Guidetube in drag	Dashpot out drag	Dashpot in drag	Guidetube avg. drag	Dashpot avg. drag
BB-09	24, BOC	17140	474.6	17.1	34.1	13.7	34.1	25.6	23.9
BB-10	24, BOC	17195	471.2	6.8	17.1	6.4	29.7	12.0	18.1
BB-11	24, BOC	17130	478.0	23.9	54.6	27.3	61.4	39.3	44.4
BB-12	24, BOC	17164	474.6	6.9	30.7	14.7	41.0	18.8	27.9
BB-21	24, BOC	14249	471.2	4.7	18.0	13.7	29.9	11.4	21.8
BB-24	24, BOC	14117	471.2	13.4	27.3	12.8	34.3	20.4	23.6
BB-25	24, BOC	14108	471.2	6.6	23.4	3.4	27.3	15.1	15.4
BB-28	24, BOC	14092	471.2	11.3	23.9	13.7	27.3	17.6	20.5
BB-29	24, BOC	15330	471.2	6.8	16.4	18.7	27.3	11.6	23.0
BB-30	24, BOC	15324	471.2	5.9	16.2	0.0	24.1	11.1	12.1
BB-31	24, BOC	15455	471.2	13.7	22.3	6.8	30.7	18.0	18.8
BB-32	24, BOC	15404	471.2	13.7	23.9	13.7	36.1	18.8	24.9
CC-01	24, BOC	0	471.2	6.8	13.7	3.4	27.3	10.3	15.4
CC-02	24, BOC	0	471.2	8.0	13.7	3.0	27.2	10.9	15.1
CC-03	24, BOC	0	471.2	6.9	17.1	3.4	24.6	12.0	14.0
CC-04	24, BOC	0	471.2	6.8	16.1	3.4	23.9	11.5	13.7
CC-05	24, BOC	0	474.4	13.9	18.8	2.2	30.5	16.4	16.4
CC-06	24, BOC	0	474.6	9.0	17.7	-3.4	24.6	13.4	10.6
CC-07	24, BOC	0	471.2	6.8	15.9	2.9	27.3	11.4	15.1
CC-08	24, BOC	0	471.2	3.9	10.2	6.8	29.8	7.1	18.3
CC-09	24, BOC	0	471.2	6.8	21.9	16.7	23.9	14.4	20.3
CC-11	24, BOC	0	464.4	13.6	7.6	6.8	17.1	10.6	12.0
CC-12	24, BOC	0	471.2	6.8	13.7	3.4	23.9	10.3	13.7
CC-14	24, BOC	0	476.5	1.5	22.4	-5.3	29.2	12.0	12.0
CC-19	24, BOC	0	464.4	25.4	23.9	23.2	20.5	24.7	21.9
CC-20	24, BOC	0	471.2	6.8	16.3	6.8	23.9	11.6	15.4
CC-21	24, BOC	0	474.1	8.7	13.1	0.5	26.8	10.9	13.7
CC-24	24, BOC	0	464.4	12.7	7.9	13.6	20.5	10.3	17.1
Y-11	23, EOC	51957	not avail.	70.0	70.0	90.0	90.0	70.0	90.0
Y-14	24, BOC	42806	464.4	13.6	10.5	9.2	17.1	12.1	13.2
Z-09	23, EOC	42146	not avail.	10.0	30.0	42.0	45.0	20.0	43.5
Z-10	23, EOC	42415	not avail.	5.0	8.0	22.0	25.0	6.5	23.5
Z-11	23, EOC	42005	not avail.	66.0	70.0	75.0	78.0	68.0	76.5
Z-12	23, EOC	42344	not avail.	42.0	45.0	55.0	75.0	43.5	65.0
Z-13	24, BOC	40583	464.4	37.5	31.6	30.7	37.7	34.6	34.2
Z-18	24, BOC	40265	471.2	13.7	30.5	17.1	40.4	22.1	28.8
Z-24	24, BOC	40484	468.0	19.7	23.6	23.7	27.5	21.7	25.6
Z-28	24, BOC	40382	474.6	20.3	47.5	17.1	47.8	33.9	32.5

## POINT BEACH UNIT 1 CYCLE 24

Fuel Type: Westinghouse OFA PWR 14X14  
Control Rod Type: AG(80)/IN(15)/CD(5)

PB1 - CYCLE 24 (~4-23-96 thru 3-29-97)							
CORE LOCATION	BANK*** LOCATION	F/A ID	RCCA ID	CURRENT BURNUP <sup>1</sup>	PROJECTED EOL BURNUP <sup>2</sup>	BOL COLD ROD DROP TIMES**	BOL HOT ROD DROP TIMES**
B6	SDA	CC11	R86	182	13,916	1.499	1.510
B8	SDA	CC14	R129	173	13,792	1.559	1.570
C5	CBA	CC02	R136	215	16,224	1.512	1.550
C7	CBD	BB32	R104	15,622	27,709	1.755	1.740
C9	CBA	CC04	R147	221	16,277	1.663	1.610
D4	CBC	BB10	R146	17,384	33,452	1.495	1.570
D10	CBC	BB09	R89	17,333	33,465	1.327	1.570
E3	CBA	CC05	R84	212	16,217	1.583	1.570
E5	SBB	BB25	R100	14,335	29,814	1.520	1.570
E9	SBB	BB24	R140	14,343	29,848	1.624	1.610
E11	CBA	CC06	R504*	222	16,217	1.568	1.570
F2	SBA	CC24	R25	181	13,784	1.544	1.570
F6	CBB	Z28	R96	40,539	52,917	1.686	1.680
F8	CBB	Z18	R125	40,416	52,777	1.631	1.610
F12	SBA	CC12	R124	188	13,875	1.542	1.530
G3	CBD	BB31	R105	15,677	27,761	1.502	1.570
G7	CBC	Y14	R131	42,952	53,967	1.642	1.590
G11	CBD	BB30	R92	15,547	27,625	1.524	1.530
H2	SBA	CC19	R137	176	13,679	1.542	1.570
H6	CBB	Z13	R108	40,740	53,162	1.692	1.630
H8	CBB	Z24	R97	40,635	52,979	1.635	1.610
H12	SBA	CC20	R91	182	13,922	1.534	1.550
I3	CBA	CC07	R99	220	16,251	1.566	1.570
I5	SBB	BB28	R85	14,325	29,870	1.603	1.610
I9	SBB	BB21	R106	14,482	29,965	1.581	1.590
I11	CBA	CC01	R95	228	16,237	1.574	1.570
J4	CBC	BB12	R132	17,367	33,509	1.574	1.610
J10	CBC	BB11	R94	17,332	33,363	1.571	1.590
K5	CBA	CC08	R130	232	16,239	1.663	1.590
K7	CBD	BB29	R87	15,555	27,575	1.781	1.700
K9	CBA	CC03	R102	221	16,149	1.522	1.550
L6	SBA	CC09	R143	183	13,768	1.598	1.590
L8	SBA	CC21	R101	181	13,853	1.505	1.530

\*CHROME TIPPED

\*\*TIME TO DASHPOT (SECONDS)

\*\*\*SB=SHUTDOWN BANK, CB=CONTROL BANK

<sup>1</sup>CURRENT BURNUP BASED ON APRIL, 1996 PBBURN DATA.<sup>2</sup>PROJECTED EOL BURNUP IS AN ESTIMATE CALCULATED BY USING U1C23 BURNUP DATA AT A GIVEN CORE LOCATION, AND COMPENSATING FOR THE LENGTH OF CYCLE 24, WHICH IS SCHEDULED TO BE 8 DAYS SHORTER THAN CYCLE 23.

PBNP UNIT 1 CYCLE 24 CURRENT AND PROJECTED EOL\* BURNUP  
(FOR RODDED F/A's ONLY)

	1	2	3	4	5	6	7	8	9	10	11	12	13	
A														A
B						CC11/R26 182 13,916		CC14/R120 173 13,792						B
C					CC02/R138 215 16,224		BB32/R104 15,822 27,709		CC04/R147 221 16,277					C
D				BB10/R146 17,384 33,452						BB09/R80 17,333 33,465				D
E			CC05/R84 212 16,217		BB25/R100 14,335 29,814				BB24/R140 14,343 29,848		CC08/R504 222 16,217			E
F		CC24/R25 181 13,784				Z28/R96 40,538 52,917		Z18/R125 40,416 52,777				CC12/R124 182 13,675		F
G			BB31/R105 15,677 27,791				Y14/R131 42,952 53,967				BB30/R92 15,547 27,625			G
H		CC18/R137 176 13,879				Z13/R108 40,740 53,162		Z24/R97 40,635 52,975				CC20/R91 182 13,822		H
I			CC07/R90 220 16,251		BB28/R85 14,325 29,870				BB21/R106 14,482 29,955		CC01/R95 228 16,237			I
J				BB12/R132 17,367 33,509							BB11/R94 17,332 33,363			J
K					CC06/R130 232 16,239		BB25/R87 15,555 27,575		CC03/R102 221 16,149					K
L						CC09/R143 183 13,758		CC21/R101 181 13,853						L
M														M

X	FUEL ASSEMBLY / ROCA ID
Y	CURRENT BURNUP (BASED ON END OF APRIL, 1990 PBURN DATA)
Z	PROJECTED EOL* BURNUP (COLORS BASED ON THIS NUMBER)

FUEL TYPE:
SEE ATTACHED SHEET

PROJECTED EOL* BURNUP
>40K
<40K, >40K
<40K, >30K
<30K, >20K
<20K

\*PROJECTED EOL BURNUP IS AN ESTIMATE CALCULATED BY USING U1C23 BURNUP DATA AT A GIVEN CORE LOCATION, AND COMPENSATING FOR THE LENGTH OF CYCLE 24, WHICH IS SCHEDULED TO BE 8 DAYS SHORTER. U1C24 FIRST PRODUCED POWER ON 4-23-96.



POINT BEACH NUCLEAR PLANT : UNIT 1 AND 2

FUEL TYPE:

WESTINGHOUSE, PWR, RECONSTITUTABLE, 14 X 14, OFA

MATERIALS:

TOP NOZZLE	304 SST
BOTTOM NOZZLE	304 SST
SPRING SET	INCONEL - 718
GUIDE THIMBLE	ZIRCALOY - 4
INSTRUMENT TUBE	ZIRCALOY - 4
GRID ASSEMBLY	INCONEL - 718 (TOP AND BOTTOM GRIDS)
GRID ASSEMBLY	ZIRCALOY - 4 (MIDDLE GRIDS)
ADAPTOR PLATE	304 SST
NOZZLE INSERT	304 SST
LOCK TUBE	304 SST

GUIDE TUBE INNER DIAMETER:

ABOVE DASHPOT	0.492"
BELOW DASHPOT	0.4465"