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VICE PRESIDENT  
NUCLEAR ENERGY  
13011 260-4455

August 9, 1991

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant  
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318  
Response to NRC Bulletin 89-01, Supplement 2, "Failure of Westinghouse  
Steam Generator Tube Mechanical Plugs"

Gentlemen:

As requested in the subject letter, we are providing information in response to NRC Bulletin 89-01, Supplement 2. This Supplement requires that licensees, (a) determine the accuracy of Reference 4 of the Supplement (Westinghouse Reports WCAP-12244 and WCAP-12245, "Steam Generator Tube Plug Integrity Summary Report," May 1991) with respect to mechanical tube plugs supplied by Westinghouse installed in our Steam Generators, and (b) implement an action plan to ensure that these plugs will continue to perform their intended design function. We plan to take the actions described in Attachment (1) which meet the requirements of NRC Bulletin 89-01, Supplement 2.

Per our phone conversation on July 29, 1991 with members of your staff, the required submittal date for this bulletin has been extended to August 9, 1991. This extension was necessary to include revisions to Table 2 of Reference 4 of the Supplement. The revised pages of Table 2 that reflect corrected information for Calvert Cliffs Units 1 and 2 are included in Attachment 2.

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ATTACHMENT (1)

RESPONSE TO NRC BULLETIN 89-01, SUPPLEMENT 2  
"FAILURE OF WESTINGHOUSE STEAM GENERATOR  
TUBE MECHANICAL PLUGS"

The following information provides our response to NRC Bulletin 89-01, Supplement 2. The items are numbered to match the Actions Requested in the Supplement to the Bulletin.

1. We have reviewed the information contained in Reference 4 of NRC Bulletin 89-01, Supplement 2. We have identified several discrepancies in the information provided in Table 2 of Reference 4 (Westinghouse Reports WCAP-12244 and WCAP-12245, "Steam Generator Tube Plug Integrity Summary Report," May 1991).

Due to extended outages on Calvert Cliffs Units 1 & 2 during 1989, 1990 and 1991, and a Hot Leg Temperature slightly lower than shown in Table 2 of Reference 4, the column entitled "Year to Replace Plugs" has been updated. Attachment (2) shows the revised copy of Table 2 with the corrected information.

2.
  - (a) For Calvert Cliffs Units 1 and 2, there are currently no plugs installed whose estimated lifetime does not extend to the next refueling outage. We will take remedial action during refueling outages to repair/replace any Westinghouse Mechanical Tube Plug manufactured from Inconel 600 prior to the end of its estimated lifetime, in accordance with Attachment 2 (revised Table 2 from Reference 4 of the Supplement). Each heat of Inconel 600 tube plugs installed in Calvert Cliffs Steam Generators is being tracked for repair/replacement.
  - (b) The dates in the columns entitled "Remain EFPD to MIN." have been revised in Attachment (2) to reflect corrections noted in Actions Requested, Item 1.
  - (c) Plugs fabricated from heat number NX-5222 are installed in Calvert Cliffs Unit 1 Steam Generators. These plugs are scheduled to be repaired/replaced during the 1992 Refueling Outage.
  - (d) The use of Westinghouse mechanical tube plugs fabricated from Inconel 600 has been discontinued at Calvert Cliffs.
  - (e) If for any refueling outage some unforeseen reason causes Baltimore Gas & Electric Company to change its plan to satisfy Items 2(a) through 2(d), an alternative plan for ensuring plug integrity, with appropriate technical justification, will be submitted to the NRC at least 30 days before the end of the refueling outage.
  - (f) We have reviewed the various repair/replacement methods available for ALARA considerations. We will use robotic manipulators for the repair/replacement of the Steam Generator tube plugs where possible.

ATTACHMENT (2)

REVISED TABLE 2

WESTINGHOUSE ALLOY 600 MECHANICAL PLUG INFORMATION

Table 2: Westinghouse Alloy 600 Mechanical Plug Information

INSTALLATION DATA					TEMPERATURE DATA						PLUG DATA		EFPD DATA					STATUS					
Std Plant Alpha	Plug Inst Date	No. of Plug	Plug Heat No.	SAG #	HL or CL	Previous Cycle (°F) (A)		New Cycle (°F) (A)		Total Scaling Factor (B)		Plug Size (in)	Min. Lig. (mils)	Initial EFPD to MIN (C)	Ref. Calc. Date (D)	EFPD Mult. Factor (E)	EFPD to Ref. Date (F)	Remain. EFPD to MIN (G)	Year to Repair Plugs (G)	Notes	Plugs Re-paired	Plugs Re-mov-ed	J/S Joint Type (H)
						HL	CL	HL	CL	Prev.	New												
CCAL1	05-88	26	5222	12	HL	596.0	548.0	596.0	548.0	3.7	3.7	3/4	4.71	829	06/30/91	0.70	402.0	427	1992	-	-	-	EX
CCAL1	05-88	42	5222	11	HL	596.0	548.0	596.0	548.0	3.7	3.7	3/4	4.71	829	06/30/91	0.70	402.0	427	1992	-	-	-	EX
CCAL1	07-89	1	6323	12	HL	596.0	548.0	596.0	548.0	3.9	3.9	3/4	4.71	881	06/30/91	0.70	189.0	692	1993	-	-	-	EX
CCAL1	07-89	1	6323	12	HL	596.0	548.0	596.0	548.0	3.9	3.9	3/4	4.71	881	06/30/91	0.70	189.0	692	1993	-	-	-	EX
CCAL1	09-89	1	6323	12	HL	596.0	548.0	596.0	548.0	3.9	3.9	3/4	4.71	881	06/30/91	0.70	177.0	704	1993	-	-	-	EX
CCAL1	06-90	3	6323	12	HL	596.0	548.0	596.0	548.0	3.9	3.9	3/4	4.71	881	06/30/91	0.70	177.0	704	1993	-	-	-	EX
CCAL1	06-90	9	6323	11	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1726	4332	2005	-	-	-	EX
CCAL1	06-82	11	2387	12	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1726	4332	2005	-	-	-	EX
CCAL1	06-82	15	2387	11	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1363	4694	2006	-	-	-	EX
CCAL1	11-83	3	1989	11	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1363	4694	2006	-	-	-	EX
CCAL1	11-83	2	1989	12	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	980	5077	2008	-	-	-	EX
CCAL1	05-85	6	1989	12	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	980	5077	2008	-	-	-	EX
CCAL1	05-85	13	1989	11	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	980	5077	2008	-	-	-	EX
CCAL1	05-85	1	2387	12	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	937	5120	2008	-	-	-	EX
CCAL1	07-85	1	2387	11	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	937	5120	2008	-	-	-	EX
CCAL1	07-85	2	2387	12	HL	596.0	548.0	596.0	548.0	28.3	28.3	3/4	4.71	6401	06/30/91	0.70	402	5999	2013	-	-	-	EX
CCAL1	05-88	42	5222	11	CL	596.0	548.0	596.0	548.0	28.3	28.3	3/4	4.71	6401	06/30/91	0.70	402	5999	2013	-	-	-	EX
CCAL1	05-88	27	5222	12	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	189.0	6612	2016	-	-	-	EX
CCAL1	09-89	1	6323	12	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	189.0	6612	2016	-	-	-	EX
CCAL1	07-89	1	6323	12	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	177.0	6624	2016	-	-	-	EX
CCAL1	06-90	9	6323	11	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	177.0	6624	2016	-	-	-	EX
CCAL1	06-90	3	6323	12	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1726	45034	2164	-	-	-	EX
CCAL1	06-82	15	2387	11	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1726	45034	2164	-	-	-	EX
CCAL1	06-82	11	2387	12	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1363	45397	2165	-	-	-	EX
CCAL1	11-83	2	1989	12	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1363	45397	2165	-	-	-	EX
CCAL1	11-83	3	1989	11	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	980	45780	2167	-	-	-	EX
CCAL1	05-85	6	1989	11	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	980	45780	2167	-	-	-	EX
CCAL1	05-85	6	2387	11	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	980	45780	2167	-	-	-	EX
CCAL1	05-85	7	2387	12	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	937	45822	2167	-	-	-	EX
CCAL1	07-85	1	2387	11	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	937	45822	2167	-	-	-	EX
CCAL1	07-85	4	2387	12	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	937	45822	2167	-	-	-	EX

Table 2- Westinghouse Alloy 600 Mechanical Plug Information

INSTALLATION DATA					TEMPERATURE DATA						PLUG DATA		EFPD DATA					STATUS				T/S Joint Type (H)	
Std Plant Alpha	Plug Inst Date	No. of Plug	Plug Heat No.	S/G #	HL or CL	Previous Cycle (°F) (A)		New Cycle (°F) (A)		Total Scaling Factor (B)		Plug Size (in)	Min. Lig. (mits)	Initial EFPD to MIN (C)	Ref. Calc. Date (D)	EFPD Mult. Factor (E)	EFPD to Ref. Date (F)	Remain EFPD to MIN (C)	Year to Repair Plugs (G)	Notes	Plugs Re- posi- ed		Plugs Re- mov- ed
CCAL2	05-87	41	3513	21	HL	596.0	548.0	596.0	548.0	2.9	2.9	3/4	4.71	648	03/15/89	0.70	553.0	95	< Ref	-	41	-	EX
CCAL2	05-87	20	3513	22	HL	596.0	548.0	596.0	548.0	2.9	2.9	3/4	4.71	648	03/15/89	0.70	553.0	95	< Ref	-	20	-	EX
CCAL2	06-89	12	6323	21	HL	596.0	548.0	596.0	548.0	3.9	3.9	3/4	4.71	881	06/30/91	0.70	35.0	846	1993	-	-	-	EX
CCAL2	06-89	10	6323	22	HL	596.0	548.0	596.0	548.0	3.9	3.9	3/4	4.71	881	06/30/91	0.70	35.0	846	1993	-	-	-	EX
CCAL2	11-82	1	2387	22	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1618	4439	2005	-	-	-	EX
CCAL2	11-82	1	2387	21	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1618	4439	2005	-	-	-	EX
CCAL2	05-84	4	1989	21	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1236	4822	2007	-	-	-	EX
CCAL2	05-84	2	1989	22	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	03/15/89	0.70	1236	4822	2007	-	-	-	EX
CCAL2	10-85	9	2387	21	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	06/30/91	0.70	1010.0	5047	2010	-	-	-	EX
CCAL2	10-85	4	2387	22	HL	596.0	548.0	596.0	548.0	26.7	26.7	3/4	4.71	6057	06/30/91	0.70	1010.0	5047	2010	-	-	-	EX
CCAL2	05-87	38	3513	21	CL	596.0	548.0	596.0	548.0	22.1	22.1	3/4	4.71	5001	03/15/89	0.70	553.0	4448	2005	-	-	-	EX
CCAL2	05-87	20	3513	22	CL	596.0	548.0	596.0	548.0	22.1	22.1	3/4	4.71	5001	03/15/89	0.70	553.0	4448	2005	-	-	-	EX
CCAL2	06-89	10	6323	22	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	35.0	6766	2016	-	-	-	EX
CCAL2	06-89	12	6323	21	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	35.0	6766	2016	-	-	-	EX
CCAL2	07-89	3	6323	21	CL	596.0	548.0	596.0	548.0	30.0	30.0	3/4	4.71	6801	06/30/91	0.70	35.0	6766	2016	-	-	-	EX
CCAL2	11-82	1	2387	22	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1618	45141	2164	-	-	-	EX
CCAL2	11-82	1	2387	21	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1618	45141	2164	-	-	-	EX
CCAL2	05-84	2	1989	22	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1236	45524	2166	-	-	-	EX
CCAL2	05-84	4	1989	21	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	03/15/89	0.70	1236	45524	2166	-	-	-	EX
CCAL2	10-85	9	2387	21	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	06/30/91	0.70	1010.0	45750	2169	-	-	-	EX
CCAL2	10-85	4	2387	22	CL	596.0	548.0	596.0	548.0	206.4	206.4	3/4	4.71	46760	06/30/91	0.70	1010.0	45750	2169	-	-	-	EX