March 31, 1989

Docket No. 50-293

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> Mr. Ralph G. Bird Senior Vice President - Nuclear Boston Edison Company Pilgrim Nuclear Power Station RFD#1, Rocky Hill Road Plymouth, Massachusetts 02360

Dear Mr. Bird:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - GENERIC LETTER (GL) 88-01: NRC POSITION ON IGSCC IN BWR AUSTENITIC STAINLESS STEEL PIPING

REFERENCE: TAC Number 69153

By letter dated August 4, 1988, you responded to G.L. 88-01 which provided 13 new staff positions in relation to intergranular stress corrosion cracking (IGSCC) near welds in BWR piping. The staff, with the assistance of its contractor, Viking System International (VSI), is evaluating your submittal.

In order to complete our evaluation, we request that you provide the general and specific information requested in attachments A and B, respectively, within sixty days from reciept of this letter. To expedite our review, we request that you send a copy of your response directly to our contractor:

> Dr. Armand A. Lakner Director, Safety and Reliability Viking Systems International 101 Chestnut Street Gaithersburg, MD 20877

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by:

Daniel G. McDonald, Senior Project Manager Project Directorate I-3 Division or Reactor Projects I/II

8904060384 890331 PDR ADOCK 05000293 PDR ADOCK 05000293 Enclosures: As stated cc w/enclosures: See next page DISTRIBUTION: Docket File, NRC & Local PDRs, PDI-3 r/f, GLainas, BBoger, MRushbrook, DMcDonald, OGC, EJordan, B.Grimes, ACRS (10), RWessman,

JWiggins, Rgn.I, RClark, CYChen, TMcLellan **FPILGRIM LTR TAC 691537**

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OFFICIAL RECORD COPY

Mr. Ralph G. Bird Boston Edison

cc:

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Mr. K. L. Highfill Station Director Pilgrim Nuclear Power Station RFD #1 Rocky Hill Road Plymouch, Massachusetts 02360

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Ms. Elaine D. Robinson Nuclear Information Manager Pilgrim Nuclear Power Station RFD #1, Rocky Hill Road Plymouth, Massachusetts 02360

Charles V. Barry Secretary of Public Safety Executive Office of Public Safety One Ashburton Place Boston, Massachusetts 02108

ATTACHMENT A

GENERAL QUESTIONS/REQUESTS

Reviews of several licensee submittals has shown that most (although not all) of the submittals commonly lack certain information that is needed for evaluation of the submittals. Thus, this general list of questions and requests has been prepared for submission to each of the licensees. For those portions of this attachment for which the requested information was supplied (in the detail requested herein) in the original submittal, the utilities may reference the relevant pages or tables in the original submittal and supply only the requested information that was not provided. However, if the information requested concerning any of the items herein was not provided in the original licensee submittal, an omission of that information from the response to this RAI will be construed as an endorsement of the applicable NRC Staff position.

Item 1. Position on NRC Staff Positions

Generic Letter ES-01 states on page 3:

"Pursuant to 10 CFR 50.54(f), you, as a BWR operating reactor licensee or construction permit holder, are requested to furnish, under oath or affirmation, your current plans relating to piping replacement, inspection, repair, and leakage detection. Your response should indicate whether you intend to follow the staff positions included in this letter, or propose alternative measures."

The staff positions outlined in Generic Letter 88-01 include positions on: (1) Materials. (2) Processes. (3) Water Chemistry. (4) Weld Overlay. (5) Partial Replacement. (6) Stress Improvement of Cracked Weldments. (7) Clamping Devices. (8) Crack Evaluation and Repair Criteria. (9) Inspection Method and Personnel. (10) Inspection Schedules. (11) Sample Expansion. (12) Leak Detection. (13) Reporting Requirements.

Please supply information concerning whether the licensee: (1) endorses these positions, (2) proposes alternate positions, exceptions, or provisions, and (3) is considering or planning to apply them in the future. Please describe any alternate positions, exceptions, or provisions that are proposed.

Please supply this information using a table such as that illustrated in the example shown in Table 1.

Responses to NRC Staff Positions

	Licensee Response*			Licensee Has/Will**		
Staff Position	Accept	Accept with Provisions	Requests Alternate Position	Applied in Past	Consider for Future Use	

- 1. Materials
- 2. Processes
- 3. Water Chemistry
- 4. Weld Overlay
- 5. Partial Replacement
- Stress Improvement of Cracked Weldments
- 7. Clamping Devices
- 8. Crack Evaluation and Repair Criteria
- 9. Inspection Method and Personnel
- 10. Inspection Schedules
- 11. Sample Expansion
- 12. Leak Detection
- 13. Reporting Requirements

** Answer with "yes" or "no", as appropriate, in each column for each of 13 NRC Staff Positions.

Answer with "yes", "check mark" or "X" in appropriate column for each of the 13 NRC Staff Positions. List and explain each provision and/or alternate position (or reference original submittal if it contains the listing and explanation). Use separate page(s) if needed.

ATTACHMENT A (continued)

Item 2. Inservice Inspection Program

Generic Letter 88-01 requests on page 3:

"Your current plans regarding pipe replacement and/or other measures taken or to be taken to mitigate IGSCC and provide assurance of continued long-term integrity and reliability."

"An Inservice Inspection Program to be implemented at the next refueling outage for austenitic stainless steel piping covered under the scope of this letter that conforms to the staff positions on inspection schedules methods and personnel, and sample expansion included in this letter."

The information pertaining to the pipe replacement and other mitigating actions as well as the Inservice Inspection Program provided in most of the licensee submittals were either incomplete or did not provide the background data that is needed to evaluate the ISI Program such as (1) reasons/justification for IGSCC classification of welds, (2) methods, personnel qualification, schedules and identities of welds inspected, and (3) results of previous inspections, and/or identities of welds to be inspected during future inspections.

Thus, the following information is requested:

- A listing of all welds by system, pipe size, configuration (e.g., pipe to elbow, pipe to valve, etc.), drawing number (piping ISO with weld I.D.), location (i.e., inside or outside of containment, etc.), weld I.D. number, and IGSCC classification (i.e., IGSCC Category A, B, C, D, E, F and G).
- 2. Reason/justification for the classification of each weld, using such information as (a) weld history such as heat sink welding (HSW), (b) pipe and weld metal compositions or material identities to show either conforming material or non-conforming material, (c) mitigating treatment(s) applied such as solution heat treating (SHT), stress improvement (IHSI or MSIP).
- 3. Identity of welds to be inspected during past and future refueling outage. Include (a) dates and results of previous inspections, (b) flaw characteristics including orientation (axial or circumferential), maximum length, maximum depth, repairs and/or mitigating treatments applied.

Please supply this information in tabular form using formats such as that illustrated in Tables 2 and 3.

History of Welds and Prior Mitigating Actions/Treatments*

			Material**								
IGSCC	Weld		Dia.	Casting		Treatment***					
Categ	System	Number	Configuration	Inch	Forging, Pip	e Weld	SHT	HWS	CRC	SI	0.L.

Notes:

- * List each weld separately, using one or more lines as required.
- ** For material: identify as non-conforming or conforming as appropriate concerning whether it conforms with the NRC Staff position on resistant materials. If conforming, identify the material type (e.g., Type 316 NG).
- *** For treatment: list "X" under appropriate column(s) if weld was treated using indicated technique, i.e., solution heat treated (SHT), heat sink welded (HSW), corrosion resistant clad (CRC), stress improved (SI), or overlayed (O.L.). For SI, add explanation of method used, i.e., whether by induction heating or mechanical, whether pre and/or post treatment inspection was applied using methods and personnel qualified under NRC/EPRI/BWROG coordination plan, and whether treatment was applied within two years of service date. Also add explanation and justification of any overlays that were not standard (per NRC Staff position).

Inspection Schedules

					_Inspected/	To Be	Inspec	ted/Flav	s Found
ICSCC		Weld	Dia.		Pa	st		F	uture
Categ	System	No.	Inch.	Configuration	R.O. #X-2 R.	0.#X-	I Flaw	R.O. X	R.O.#X+1

Instructions:

- Under the heading, "Inspected/To BE Inspected," use as many columns as required to describe the following:
 - (a) All previous inspections that were conducted (per NUREG O313, Revision 2, page 5.2) using methods and personnel qualified under NRC/EPRI/BWROG coordination plan as upgraded in September, 1985.

plus

- (b) A sufficient number of future inspections to demonstrate that the schedules will follow the NRC Staff positions as given in Table 1 in Generic Letter 88-01.
- 2. Replace R.O.# (X-2, X-1, X, X+1) with actual refueling outage numbers. Indicate dates inspections were/will be performed.
- 3. List each weld within the scope of Generic Letter 88-01.
- Place an "X" or other appropriate symbol under the appropriate column for each refueling outage for which that weld was inspected or will be inspected.
- 5. Indicate with "yes" under column marked "flaw" if a flaw indication was found. Attach a statement for each flawed weld giving the orientation (axial or circumferential), the dimensions (maximum length and depth), and describing any repairs made.

ATTACHMENT A (continued)

Item 3. Welds Covered in Licensee Submittal

Generic Letter 88-01 (on page 2) states:

"This Generic Letter applies to all BWR piping made of austenitic stainless steel that is four inches or larger in nominal diameter and contains reactor coolant at a temperature above 200°F during power operation regardless of Code classification. It also applies to reactor vessel attachments and appurtenances such as jet pump instrumentation penetration assemblies and head spray and vent components."

Were any welds that fall within this defined scope excluded from the licensee submittal (for example, welds in the RWCU outboard of the isolation valves)? If previously excluded, please list identity of such welds and plans for mitigation and inspections in Tables 2 and 3 or provide alternative proposal. If IGSOC susceptible welds were excluded from the licensee submittal based on temperature considerations please identify the welds and describe in detail the method of temperature measurements.

Item 4. Welds that Are Not UT Inspectable

Generic Letter 88-01 (in Table 1) states: "Welds that are not UT inspectable should be replaced, "sleeved", or local leak detection spplied. RT examination or visual inspection for leakage may also be considered."

Does the licensee submittal include discussions and plans for:

- (a) All welds that are inaccessible for UT inspections?
- (b) All welds that are only partially accessible for UT inspections?
- (c) Welds that cannot be UT inspected because of geometrical constraints or other reasons.

If not, please list these welds and plans for mitigation/inspection.

Item 5. Leakage Detection

Generic Letter 88-01 states on page 3:

"Confirmation of you plans to ensure that the Technical

ATTACHMENT A (continued)

Specification related to leakage detection will be in conformance with the staff position on leak detection included in this letter."

The staff position is outlined on pages 5 and 6 of Generic Letter 88-01 and include the following items:

- Leakage detection should be is conformance with Position C of Regulatory Guide 1.45 "Reactor Coolant Pressure Boundary Leakage Detection Systems," or as otherwise approved by the NRC.
- 2. Plant shutdown should be initiated for corrective action when:
 - (a) within any 24 hour period any leakage detection system indicates an increase of unidentified leakage in excess of 2 gpm or its equivalent, or
 - (b) the total unidentified leakage attains a rate of 5 gpm or equivalent.
- Leakage should be monitored (or determined from flow measurements if flow is continuously monitored) at approximately four hour intervals or less.
- 4. Unidentified leakage should include all leakage other than
 - (a) leakage into closed systems, or
 - (b) leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with operations of monitoring systems or not to be from a throughwall crack.
- 5. For plants operating with any IGSCC Category D, E, F, or G welds, at least one of the leakage measurement instruments associated with each sump shall be operable, and the outage time for inoperable instruments shall be limited to 24 hours or immediately initiate an orderly shutdown.

Although most licensee submittals describe the intention of meeting some or all of these requirements or offer alternative measures, it is not always clear whether these requirements are contained in the Technical Specifications. Thus it is requested that this information should be provided by each licensee. For clarity and completeness, please use a checklist such as that illustrated in Table 4.

Licensee Positions on Leakage Detection

_	Position	Already Contained in TS	TS will be Changed to Include	Alternate Position Proposed
1.	Conforms with Position C of Regulatory Guide 1.45			
2.	Plant shutdown should be initiated when:			
	 (a) within any period of 24 hours or less, an increase is indicated in the rate of unidentified leakage in excess of 2 gpm, or 			
	(b) the total unidentified leakage attains a rate of 5 gpm.			
3.	Leakage monitored at four hour intervals or less.			
4.	Unidentified leakage includes all except:			
	(a) leakage into closed systems, or			
	(b) leakage into the containment atmosphere from sources that are located, do not interfere with monitoring systems, or not from throughwall crack.			
5.	Provisions for shutdown within 24 hours due to inoperable measurement instruments in plants with Category D. E. F. or G welds.			

Instructions:

Place "X" or "yes" under appropriate column for each item. Provide description and justification for alternative positions if not already provided.

ATTACHMENT B

REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO PILGRIM NUCLEAR POWER STATION

Item 1 Inservice Inspection Program

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Please note the following in prepration of the response to Attachment A: The licensee submittal states that seven (20%) of the IGSCC Category A welds will be inspected. In the attachment, however, 148 IGSCC Category welds are listed (excluding longitudinal seam welds which are outside of the scope of Generic Letter 88-01). Seven is 5% (not 20%) of 148. Please supply an explanation of this discrepancy.