September 1, 2004

MEMORANDUM TO: Daniel S. Collins, Acting Chief, Section 2
Project Directorate I
Division of Licensing Project Management

FROM: G. Edward Miller, Project Engineer, Section 2 ***/RA/***
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF JULY 14, 2004, TELECONFERENCE WITH PSEG NUCLEAR, LLC REGARDING HOPE CREEK GENERATING STATION PROPOSED IMPLEMENTATION OF A RISK-INFORMED INSERVICE INSPECTION PLAN (TAC NO. MC2221)

By letter dated March 1, 2004 PSEG Nuclear, LLC (PSEG) submitted a proposed alternative to the requirements of "Rules for Inservice Inspection of Nuclear Power Plant Components," Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code for the Hope Creek Generating Station. During its review, the Nuclear Regulatory Commission staff (NRC or staff) identified that additional information was required, and draft questions were communicated to PSEG. The draft questions are available online at the Public Document Room under ADAMS accession number ML041950101. On July 14, 2004 the staff had a teleconference with PSEG to ensure that there were no aspects of the question that require clarification. During the discussions PSEG provided preliminary information regarding their intended responses to the staff's questions. The NRC staff determined that additional internal NRC discussions were needed to finalize the NRC staff's 5th question regarding the manner in which the licensee defines the population of welds subject to augmented inspections. The licensee transmitted its proposed response to the question by e-mail t assist the NRC in those discussions. That e-mail, which does not constitute a formal response, is included in attachment 1 to this memorandum.

Docket No. 50-354

Attachment: As stated

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As explained in paragraph 4 of Section 3.5, and reiterated in the notes to Table 3.5 of the March 1, 2004 submittal, you have included 6 non-Category A Intergranular Stress Corrosion Cracking (IGSCC)-susceptible welds in the scope of the RI-ISI program. This was done even though you indicated that the IGSCC inspection program was to be unaffected by the RI-ISI program and welds only susceptible to IGSCC are excluded from the RI-ISI program scope such that IGSCC susceptibility was no longer considered in the risk-ranking of a piping segment. Therefore, the scope of piping segments left for consideration under the RI-ISI program include only IGSCC welds susceptible to multiple degradation mechanisms.

Section 3.6.4 of EPRI TR-112657 provides two alternatives for selecting weld locations. The alternatives are also discussed in ASME Code Cases N-560 and N-578, but the staff has only endorsed the alternatives as described in the EPRI Topical Report and has not endorsed the Code Cases. The selection alternatives discussed in Section 3.6.4.1 and 3.6.4.2 correspond to discussions in ASME Code Case N-560 and N578 respectively. In Section 3.6.4.1 of the TR, there are explicit provisions for crediting an augmented inspection program examination as an RI-ISI examination, provided that the location is a high risk location (Risk Categories 1, 2, or 3), and that no more than half of the total RI-ISI examinations may be “borrowed” from these programs. Section 3.6.5.1 expands on this discussion by noting that the locations of these “borrowed” examinations must be identical to those called out in the augmented inspection program, and not one that is within the scope of the program, but not identified for inspection.

Section 3.6.4.2 of the TR requires that the augmented inspection program remain completely as is. All elements in high and medium risk segments that are part of these programs must continue to be examined. The “number, location, and frequency” would remain the same. These programs are not subsumed into the EPRI RI-ISI program (with the exception of Category A IGSCC welds). The section further states that elements determined to have degradation mechanisms, other than those in the Flow Accelerated Corrosion (FAC) and IGSCC inspection programs are to be included in the RI-ISI program. The number and locations are to be selected according to the RI-ISI program. There is no provision in this section which allows augmented inspections to be credited toward the total number of RI-ISI examinations.

Section 3.6.5.2 of the TR, which discusses the attributes of a Code Case N-578 examination, only reiterates the provisions for welds that are under the jurisdiction of an augmented inspection program. No additional information is given. For welds not under one of these programs, this section provides additional guidance for selection of locations. Again, there is no provision given for crediting these augmented inspection program examinations toward the RI-ISI examination count.

In the first alternative, augmented program elements are fully included in the RI-ISI program but augmented inspections may be credited to satisfy the required number of inspection locations. In the second alternative, augmented program elements (and degradation mechanism) are excluded from the RI-ISI program although discontinued Section XI inspections must still be reflected in the change in risk estimates. There are no provisions in EPRI TR-112657 for mixing the alternatives by excluding the augmented inspection program elements and degradation mechanism but crediting the inspections.

Section 3.5 of your submittal, and the notes to Table 3.5, appear to indicate that you have excluded all augmented program elements from the RI-ISI program but have credited some of the inspections in the RI-ISI program, in essence, mixing the alternatives. Explain this apparent discrepancy.

Response
Based upon lessons learned from the first few follow-on plant applications, the guidance in EPRI TR-112657 could be clearer. One point to keep in mind is that regardless of the IGSCC category assignment, all welds remain within the RI-ISI Program scope. It is only their treatment (i.e., inspection) that may be impacted. In accordance with EPRI TR-112657, piping welds identified as Category A are considered resistant to IGSCC and are assigned a low failure potential provided no other damage mechanisms are present. In these cases, IGSCC is not assigned as a damage mechanism for RI-ISI purposes nor for Generic Letter 88-01 purposes. As such, the examination of welds identified as Category A inspection locations is subsumed by the RI-ISI Program. For non Category A locations, the plant augmented inspection program is not affected by the RI-ISI Program application and inspections mandated by Generic Letter 88-01 (or BWRVIP-075) will continue.

There are twenty non Category A locations in the HCGS augmented inspection program for IGSCC. Six of these locations have been selected for RI-ISI examination as indicated in the table below. For the Risk Category 2 (2) cases, these locations will be subjected to examination techniques and volumes appropriate to detect the other damage mechanisms identified, in addition to the IGSCC examinations to be performed per the plant's augmented inspection program. For the Risk Category 4 (2) cases, the IGSCC examinations performed per the plant's augmented inspection program will be credited towards satisfying the RI-ISI Program requirements. That is, double credit will be taken for one exam (i.e., IGSCC credit and RI-ISI credit). This is consistent with the Fitzpatrick RI-ISI Program submittal (9-1`2-2000 ADAMS ML0037410481) which was the first BWR application approved using the EPRI RI-ISI methodology that had a substantial number of non Category A IGSCC welds. This is also consistent with how these augmented IGSCC exams have historically been credited by traditional Section XI ISI Programs.

System	Risk Category	DMs	Weld Count	RI-ISI Selections	Comments
RPV	2 (2)	TT, (IGSCC)	1	1	This piping weld has been selected for examination per the plant's augmented inspection program for IGSCC (Category C) and for RI-ISI purposes due to the presence of TT.
	2 (2)	CC, (IGSCC)	12	3	These three piping welds have been selected for examination per the plant's augmented inspection program for IGSCC (two Category C and one Category E) and for RI-ISI purposes due to the presence of CC.
	4 (2)	None (IGSCC)	6	1	This piping weld has been selected for examination per the plant's augmented inspection program for IGSCC (Category C) and is being credited for RI-ISI purposes.
BC	4 (2)	None (IGSCC)	1	1	This piping weld has been selected for examination per the plant's augmented inspection program for IGSCC (Category C) and is being credited for RI-ISI purposes.

All required IGSCC examinations (i.e., non Category A welds) will still be performed under the auspices of the plant's augmented inspection program. Additional examinations will be performed to meet the RI-ISI Program requirements if other damage mechanisms are present. If no other damage mechanisms are present, the augmented inspection program examination performed for IGSCC may be credited per EPRI TR-112657 to satisfy the Risk Category 4 selection requirements.