PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, New Jersey 08038-0236

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PSEG
Nuclear LLC

LR-N04-0310
LCR H02-002

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

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS TO SUPPORT REMOVAL OF THE REACTOR VESSEL HEAD SPRAY PIPING
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354

Reference: Letter LRN-03-0410, Request for Change to Technical Specifications to Deactivate the Reactor Vessel Head Spray Portion of the Residual Heat Removal (RHR) System, dated November 17, 2003.

On November 17, 2003, PSEG Nuclear LLC (PSEG) submitted the referenced request for a revision to the Technical Specifications (TS) to the Reactor Head Spray System.

In a letter dated June 14, 2004, PSEG received a request from the NRC staff for additional information regarding the subject request. This request for additional information was discussed with Mr. Ed Miller of the NRC staff on June 7, 2004. Attachment 1 contains PSEG Nuclear's response.

If you have any questions or require additional information, please contact Mr. Michael Mosier at (856) 339-5434.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 7/15/2004

M. Brothers
Vice President – Site Operations

Attachment

A001

C: Regional Administrator – NRC Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. D. Collins, Project Manager – Hope Creek
U.S. Nuclear Regulatory Commission
Mail Stop 08C2
Washington, DC 20555-0001

USNRC Senior Resident Inspector – Hope Creek (X24)

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
PO Box 415
Trenton, New Jersey 08625

Attachment 1

Response to NRC Request For Additional Information

HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NO. NFP-57
DOCKET NO. 50-354
REQUEST FOR ADDITIONAL INFORMATION

NRC Question 1:

Section 5.2 of the application identifies General Design Criteria (GDC) 14 and 55 of Title 10 of the *Code of Federal Regulation* (10 CFR), Appendix A as being applicable to the Reactor Head Spray System. However, other than a general statement that a flange and pipe cap will be installed, the application does not provide an explanation of how these requirements will continue to be met. Additionally, the NRC staff's review identified GDCs 50, 52, and 53, 10CFR 50.55a (c), and 10 CFR 50 Appendix J as containing applicable regulatory requirements. Provide a detailed explanation of how all of the applicable regulatory requirements of the GDC, 10 CFR 50.55a (c), and 10 CFR 50 Appendix J will be met by the proposed change.

PSEG Response to Question 1:

The following is a detailed explanation of how all of the applicable regulatory requirements of the GDCs, 10 CFR 50.55a (c), and 10 CFR 50 Appendix J are met under for the current design and how they will be met by the proposed change.

Criterion 14--Reactor coolant pressure boundary. **The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.**

GDC 14 is applicable to the Reactor Head Spray system since it is part of the reactor coolant pressure boundary (RCPB). The reactor pressure vessel (RPV) head was manufactured with three flanged nozzle connections. One is used for the Head Vent and one is a blind-flanged spare. The third is used for the head spray connection. The proposed modification removes the reactor head spray piping and installs a blind flange, bolting and gasket of identical design as that used on the spare nozzle. Testing of this blind flange connection will be accomplished during the RPV hydrostatic testing performed following the refueling outage and during all future RPV hydrostatic tests.

Criterion 50--Containment design basis. **The reactor containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions**

resulting from any loss-of-coolant accident. This margin shall reflect consideration of (1) the effects of potential energy sources which have not been included in the determination of the peak conditions, such as energy in steam generators and as required by § 50.44 energy from metal-water and other chemical reactions that may result from degradation but not total failure of emergency core cooling functioning, (2) the limited experience and experimental data available for defining accident phenomena and containment responses, and (3) the conservatism of the calculational model and input parameters.

Currently, Drywell Penetration P10 has a six-inch reactor head spray line passing through that is part of the RCPB, therefore, GDC 50 applies to Drywell Penetration, P10. The six-inch reactor head spray line will remain in the penetration with short stubs on the inboard and outboard sides of the penetration. A six-inch welded pipe cap will be attached to the inboard and outboard ends of the abandoned reactor head spray line. Drywell Penetration P10 will become a spare penetration. Relief valve H1BC-1BCPSV-11698 will be removed leaving a ¾" line connected to the abandoned reactor head spray line in the penetration. A flange will be installed at the remaining ¾ " pipe stub. The installation of the flange will provide a means to test the pipe cap welds. The outboard pipe cap will serve as the containment closure for the process pipe; the inboard pipe cap provides closure of the process pipe for cleanliness [Foreign Material Exclusion (FME)] purposes. The welding for both the inboard and outboard pipe cap welds will be per ASME Section III, Class MC.

Criterion 52--Capability for containment leakage rate testing. **The reactor containment and other equipment which may be subjected to containment test conditions shall be designed so that periodic integrated leakage rate testing can be conducted at containment design pressure.**

Criterion 53--Provisions for containment testing and inspection. **The reactor containment shall be designed to permit (1) appropriate periodic inspection of all-important areas, such as penetrations, (2) an appropriate surveillance program, and (3) periodic testing at containment design pressure of the leaktightness of penetrations, which have resilient seals and expansion bellows.**

GDC 52 and 53 apply to the capability for testing the current configuration of Drywell Penetration, P10, to periodic Integrated Leakage Rate Testing. The six-inch reactor head spray line will remain in the penetration as described in response to GDC 50. The outboard pipe cap will serve as the containment closure for the process pipe. The pipe cap to pipe weld will require a one time test (air) to 48.1 psig following installation. Following this initial test, the penetration will be tested as part of the primary containment ILRT. The ILRT will be conducted with the blind flange installed on the ¾ inch test connection removed to ensure proper testing of the outboard pipe cap weld. The remaining portions of the penetration, such as the expansion bellows, will be unaffected by this proposed modification. The expansion bellows will be tested as part of the ILRT, which is the current method of testing.

Criterion 55--Reactor coolant pressure boundary penetrating containment. **Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:**

(1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or

(2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

(3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

(4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety. Other appropriate requirements to minimize the probability or consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements, such as higher quality in design, fabrication, and testing, additional provisions for inservice inspection, protection against more severe natural phenomena, and additional isolation valves and containment, shall include consideration of the population density, use characteristics, and physical characteristics of the site environs.

GDC 55 currently applies the reactor head spray line, which is a RCPB penetrating the Drywell. The proposed modification cuts and caps the Head Spray Line that passes through Drywell Penetration, P10. The associated containment isolation valves will also be removed. GDC 55 will then no longer be applicable.

§ 50.55a Codes and standards.

(c) ***Reactor coolant pressure boundary.***

(1) Components which are part of the reactor coolant pressure boundary must meet the requirements for Class 1 components in Section III of the ASME Boiler

and Pressure Vessel Code, except as provided in paragraphs (c)(2), (c)(3), and (c)(4) of this section.

(2) Components which are connected to the reactor coolant system and are part of the reactor coolant pressure boundary as defined in § 50.2 need not meet the requirements of paragraph (c)(1) of this section, *Provided*:
(i) In the event of postulated failure of the component during normal reactor operation, the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system; or
(ii) The component is or can be isolated from the reactor coolant system by two valves in series (both closed, both open, or one closed and the other open). Each open valve must be capable of automatic actuation and, assuming the other valve is open, its closure time must be such that, in the event of postulated failure of the component during normal reactor operation, each valve remains operable and the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system only.

(3) The Code edition, addenda, and optional ASME Code cases to be applied to components of the reactor coolant pressure boundary must be determined by the provisions of paragraph NCA-1140, Subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, but (i) the edition and addenda applied to a component must be those which are incorporated by reference in paragraph (b)(1) of this section, (ii) the ASME Code provisions applied to the pressure vessel may be dated no earlier than the Summer 1972 Addenda of the 1971 edition, (iii) the ASME Code provisions applied to piping, pumps, and valves may be dated no earlier than the Winter 1972 Addenda of the 1971 edition, and (iv) The optional Code cases applied to a component must be those listed in NRC Regulatory Guide 1.84 that is incorporated by reference in paragraph (b) of this section.

(4) For a nuclear power plant whose construction permit was issued prior to May 14, 1984 the applicable Code Edition and Addenda for a component of the reactor coolant pressure boundary continue to be that Code Edition and Addenda that were required by Commission regulations for such component at the time of issuance of the construction permit.

10 CFR 50.55a(c)(4) applies to the Reactor Pressure Vessel (RPV) Nozzle, N6A (reactor head spray). The construction permit for Hope Creek was issued prior to May 14, 1984. Therefore, the blind flange to be installed on nozzle N6A is designed to ASME Section III, Class 1, 1968 Edition, Winter 69 Addenda, which is the original construction Code. Testing of this blind flange connection will be accomplished during the RPV hydrostatic testing performed following refueling outages.

10 CFR 50 Appendix J, Containment Leakage Testing

Prior to removal LLRTs will be performed on the two reactor head spray containment isolation valves during 1R16. The penetration will be tested as part of the ILRT. Since both isolation valves are being removed and the portion of the reactor head spray line passing through the drywell penetration is being cut and capped, the new configuration will no longer undergo an LLRT, but will be tested as part of the ILRT in accordance with 10CFR50 Appendix J.