Long
Island
Power
Authority

Shoreham Nuclear Power Station
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JUN 21994

LSNRC-2171

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Resolution of NRC Inspection Items
Associated with the Planned Final Draindown of
the Shoreham Spent Fuel Storage Pool
Shoreham Nuclear Power Station - Unit No. 1
Docket No. 50-322

Refs.

1) LIPA letter LSNRC-2004 to U.S. Nuclear Regulatory Commission, dated January 5, 1993; subject: Request for Approval of Temporary Liquid Radwaste Processing System Design

2) LIPA letter LSNRC-2053 to U.S. Nuclear Regulatory Commission, dated April 6, 1993; subject: Clarification of Request for Approval of Temporary Liquid Radwaste Processing System Design

3) NRC letter to LIPA (L.M. Hill) from C.L. Pittiglio, dated May 26, 1993; subject: Approval of Decommissioning Plan Change

Ladies and Gentlemen:

This letter documents LIPA's resolution of two items identified by NRC Region I Project Inspector, Mr. Ron Nimitz, pertaining to the planned final draindown and discharge of the Shoreham Spent Fuel Storage Pool (SFSP) following the complete removal of all irradiated fuel. These items involve: 1) the reconciliation of previously documented SFSP draindown flowpath information against current plans, and 2) the handling of draindown flow which is passed through the Reactor Building Salt Water Drain Tank (SWDT).

The first item pertains to the fact that a minor flowpath configuration detail will be different from the description that was provided in earlier submittals to the NRC. References 1) and 2) identified LIPA's original intent to direct all final SFSP draindown flow through the SWDT prior to ultimate discharge via the plant circulating water tunnel. This SFSP draindown approach was

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approved by the NRC in Reference 3) on the basis of certain committed limitations on the use of this release pathway, and on specific operational controls to be applied during the SFSP draindown. Subsequent to receipt of the NRC's approval, however, LIPA identified a desired improvement to the draindown approach which would direct the bulk of the SFSP water through the discharge piping of the SWDT, but would bypass the SWDT itself except for limited quantities as identified below.

The improvement provides a more efficient and reliable draindown process, yet retains the balance of the original flowpath and all of the other salient features of the original approach, including the previously agreed upon limitations and operational controls for the SFSP draindown. This improvement was extensively discussed with Mr. Nimitz and with the NRC/NMSS Shoreham Project Manager, Mr. C. L. Pittiglio. It was determined to be a minor operational detail having no safety, radiological, or regulatory significance, and which does not alter the basis for the NRC's approval of the SFSP draindown approach as provided in Reference 3). On this basis, it was agreed that the improvement should be reconciled with the previously docketed information, but that no formal change to the Shoreham Decommissioning Plan is required.

The second item pertains to the handling of that limited amount of SFSP water which will still be routed through the SWDT, relative to the controls provided in the Shoreham Offsite Dose Calculation Manual (ODCM). This water will consist of two types of influents from the SFSP, which will be handled in two different ways as described below.

Diverted Bulk Flow Through Radiation Monitoring Panel

A small stream of water from the bulk SFSP draindown flow will be diverted to a radiation monitor panel in accordance with original commitments to the NRC and the requirements of the ODCM. The flow to the radiation monitor panel is then routed to the SWDT by design. This diverted flow will fill the SWDT multiple times during the bulk SFSP draindown, with discharge to the circulating water tunnel following each fill. LIPA plans to handle each such discharge as a part of the total batch discharge from the SFSP, i.e., they will not be treated as individual batches separate from the bulk SFSP draindown batch. This approach was initially questioned by the NRC Region I Project Inspector on the basis of the definition of a batch release as contained in the ODCM (see Footnote "b" of attached ODCM Table 4.11.1.1.1-1). The recent ODCM change which was developed to address the SFSP draindown (see Footnote "g" and associated Document Change Notice of attached ODCM Table 4.11.1.1.1-1), however, provides specific instructions regarding the handling of the SFSP draindown on a batch basis,

including allowance for inclusion of the associated SWDT discharges with the bulk SFSP discharge batch. LIPA believes that the specific instructions for the SFSP draindown are the governing provisions.

This position is further supported by the fact that all non-SFSP inputs to the SWDT have been mechanically isolated, and the SWDT was radiologically surveyed and found to be free of radioactive contamination after the isolations were made. Thus, there is no potential for introduction of non-SFSP influents to the SWDT, thereby ensuring that the SFSP water in the SWDT will have the same characteristics as the SFSP water which bypasses the SWDT.

The above notwithstanding, LIPA intends to sample the contents of each such SWDT discharge for comparison to the bulk sample that will be taken directly from the SFSP. In addition, after the first time that the SWDT is filled by diverted bulk SFSP flow, the bulk discharge flow will be halted until the comparative sample from the SWDT is verified by gamma isotopic analysis to be below the applicable ODCM limits.

Small Batches From the SFSP Following Bulk SFSP Draindown

Following the bulk SFSP draindown, relatively small amounts of water may still need to be discharged from the SFSP as a result of washdown, filter dewatering, and other tasks. Water from these sources will be drained directly into the SWDT from the SFSP. Prior to discharge, each fill of the SWDT will be treated in accordance with the normal provisions of the ODCM for batch releases from the SWDT, i.e., they will be individually recirculated, sampled and verified to be acceptable for discharge.

Sincerely,

A.J. Bortz
Resident Manager

Attachment

cc: L. Bell
C. L. Pittiglio
T. T. Martin
R. L. Nimitz

TABLE 4.11.1.1.1-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/mL)[a]
A. Batch Release[b]	P Each Batch	P Each Batch	Principal Gamma Emitters[c]	5×10^{-7}
1. No Longer In Use	P* One Batch/M	M*	Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
2. No Longer In Use	P* Each Batch	M* Composite[d]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
3. No Longer In Use	P* Each Batch	Q** Composite[d]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
4. Reactor Bldg Salt Water Drain Tank[g,h]				
B. Continuous Releases[e]	M# Grab Sample[f]	M# Grab Sample[f]	Principal Gamma Emitters[c]	5×10^{-7}
1. No Longer in Use			Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
2. Reactor Building Salt Water Drain Tank			H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	Q## Grab Sample[f]	Q## Grab Sample[f]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}

* If batch is released during the month.
** If batch is released during the quarter.
# If flow is released during the month.
If flow is released during the quarter.

TABLE 4.11.1.1.1-1 (Continued)

TABLE NOTATION

[a]The LLD is defined, for purposes of the Controls, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume,

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22×10^6 is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide, and

Δt for plant effluents is the elapsed time between the midpoint of sample collection and the time of counting.

Typical values of E, V, Y and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of the measurement system and not as a posteriori (after the fact) limit for a particular measurement.

[b]A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by a method described in the ODCM to assure representative sampling.

TABLE 4.11.1.1-1 (Continued)

TABLE NOTATIONS (Continued)

[c]The principal gamma emitters for which the LLD specification applies include the following radionuclides: Mn-54, Co-60, Zn-65, Cs-134 and Cs-137. Ce-144 shall also be measured, but with an LLD of $5 \times 10^{-6} \mu Ci/mL$. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report pursuant to Control 6.8.1.4.

[d]A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen that is representative of the liquids released.

[e]A continuous release is the discharge of liquid wastes of a nondiscrete volume, e.g., from a volume of a system that has an input flow during the continuous release.

[f]If the alarm setpoint of the effluent monitor, as determined by the method presented in the ODCM, is exceeded, the frequency of sampling shall be increased to daily until the alarm condition no longer exists. Frequency of analysis shall be increased to daily for principal gamma emitters and on incident composite for H-3, gross alpha, Sr-89, Sr-90 and Fe-55 prepared and analyzed.

[g]When the final draining of the Spent Fuel Storage Pool is performed (after removal of all spent fuel from Pool), it shall be considered a batch release of the contents of the SFSP with mixing and sampling requirements as defined in the ODCM for batch releases. This is despite its transit through the limited volume of the Reactor Building Salt Water Drain Tank to the Long Island Sound through the continuous release path via 1D11-PNL-079. The actual details of the release times, flowrates, and duration will be determined when the release is to take place, in accordance with the applicable requirements of the ODCM. Final draining of the SFSP shall be the only occasion for use of the Salt Water Drain Tank in a batch release mode.

[h]Only applicable to final draining of the Spent Fuel Storage Pool. (Also see Note 'g' above).

Long Island Power Authority

DOCUMENT CHANGE NOTICE

DCN No. 94X005

Sheet 1 of 1

(1) AFFECTED DOCUMENT(s): Document X4170002 ODCM LIPA Rev. 2

(2) DCR No. 94X007

(3) DESCRIPTION OF CHANGE:

(4) EFFECTIVE DATE: 5-26-94

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1. Pg I.3-18, Add to Note "g",

   "Alternatively, the Spent Fuel Storage Pool (SFSP) may be drained bypassing the RB-SWDT but still flowing through 1D11-PNL-079 for monitoring as a batch release."

2. Pgs. II.2.1-6 and II.2.1-7, Add to footnote,

   "If the Spent Fuel Storage Pool (SFSP) is being drained through 1D11-PNL-079 while bypassing RB-SWDT, then the SFSP concentration and flow rate will be used instead of the RB-SWDT concentration and flow to determine the appropriate RE-79 setpoint."

(7) APPROVAL(s)

(5) ORIGINATOR B A Mon DATE: 5/18/94	SECTION HEAD Charles W Addy DATE: 5/18/94
(6) REVIEWER DATE: 5/18/94	NED MANAGER DATE: 5/19/94
	OMD MANAGER N/A DATE:
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Approved by SRC 5/25/94	O.E./V.P. N/A DATE:

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