



Long
Island
Power
Authority

Shoreham Nuclear Power Station
P.O. Box 628
North Country Road
Wading River, N.Y. 11792

LSNRC-2099

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

OCT 08 1993

ATTN: Director, Office of Nuclear
Material Safety and Safeguards

Decommissioning Plan Change Notification:
Removal of Reactor Pressure Vessel Bioshield Wall
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

- Ref: (1) Order Approving the Decommissioning Plan and
Authorizing Decommissioning of Shoreham Nuclear Power
Station, Unit 1, dated June 11, 1992
- (2) Long Island Power Authority Shoreham Nuclear Power
Station Decommissioning Plan, submitted December 29,
1990
- (3) LIPA (L.M. Hill) letter LSNRC-1832 to NRC (Document
Control Desk) dated August 26, 1991
- (4) LIPA letter dated January 5, 1993, LSNRC-2004, to
Robert Bernero from L.M. Hill; subject: Request for
Approval of Temporary Liquid Radwaste Processing System
Design
- (5) LIPA letter dated December 4, 1992, LSNRC-2016, to
Robert Bernero from L.M. Hill; subject: Request for
Approval of Decommissioning Plan Change/Clarification
Liquid Radwaste Processing System
- (6) LIPA letter dated December 11, 1992, LSNRC-2017, to
Robert Bernero from L.M. Hill; subject: Request for
Approval of Decommissioning Plan Change/Clarification
Liquid Radwaste Processing System
- (7) LIPA letter dated December 30, 1992, LSNRC-2019, to
Robert Bernero from L.M. Hill; subject: Request for
Approval of Decommissioning Plan Change/Clarification
of Fuel Pool Cooling and Cleanup System (G41)
- (8) LIPA letter dated April 6, 1993, LSNRC-2053, to Robert
Bernero from L.M. Hill; subject: Clarification of
Request for Approval of Temporary Liquid Radwaste
Processing System Design
- (9) Long Island Power Authority Supplement to Environmental
Report (Decommissioning), December 1990

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Gentlemen:

In accordance with Condition 4(a), 4(b) and 4(c) of Reference 1, LIPA hereby submits notification of a pending change to the Shoreham Decommissioning Plan (Ref. 2) as amended. It is LIPA's understanding that, unless directed otherwise, LIPA is authorized to implement the change described herein after 30 days of the date of this notification.

In LIPA's response to NRC Question II.(16) (see Ref. 3), LIPA had indicated that the steel-lined concrete bioshield wall which surrounded the Reactor Pressure Vessel (RPV) was activated to some extent. Analysis of radiological survey data at that time had indicated that the extent of activation above the 5 μ R/hr at one meter gamma dose rate criterion was confined to portions of the wall's inner steel liner. Concrete and interior support steel was believed to be below this limit. It was also noted in the LIPA response to the NRC, however, that background contributions of the immediately adjacent RPV and limited accessibility during the surveys caused the data and associated analysis to be somewhat complex. Consequently, it was noted that more accurate determination of the radiological conditions of the bioshield wall would be necessary.

With the removal of the bulk of the RPV, its background radiation contribution has been eliminated. LIPA has now obtained more accurate radiological data to characterize the condition of the bioshield wall. This data shows that a band of approximately 19 feet of the bioshield wall extending from approximately elevation 108' to elevation 126' is activated above the gamma dose rate criterion, and that some interior concrete and support steel within this band is also activated above the limit. Consequently, it has been determined that this activated material must be removed from the Shoreham site, to satisfy the Decommissioning Plan site release criteria.

The bioshield wall removal technique will involve the use of remotely operated diamond wire saw cutting equipment to cut the bioshield wall into removable blocks. The blocks will be lifted from their locations and lowered to elevation 78 ft. using a new crane to be mounted on top of the lower head of the RPV (which is all that currently remains of the RPV). The blocks will then be moved through the Drywell equipment hatch using a specially designed rolling hand cart. The diamond wire saw operation will use plant demineralized water for both cooling and control of airborne contamination. This cooling water will be collected in containers for re-use by decanting the liquid off the concrete/water slurry, with make-up from the demineralized water system as needed. The slurry remaining in the containers will be disposed of in accordance with an approved Process

Control Program (either LIPA's or a vendor's) and approved Station Procedures. Upon completion of the cutting process, the decanted liquid (estimated at 300 gallons) will be sampled, processed, and discharged utilizing the remaining portions of the permanent Liquid Radwaste System until the Radwaste System is no longer available due to the phased decommissioning of the Liquid Radwaste System (Reference 4, 5 and 6).

The maximum expected concentration of radioactivity in the demineralized water is $5.6e-10$ $\mu\text{Ci/cc}$, a level of activity which is below the limit of detection for Shoreham laboratory analysis of environmental samples (REMP). As an alternative method of processing and disposal, this decanted water could be collected and stored in containers in the Reactor Building on the refuel floor, and transferred, after all fuel assemblies have been removed, to the Spent Fuel Storage Pool for processing (see Ref. 7) and final discharge through the Salt Water Drain Tank (see Ref. 8). This alternate method will be used for disposal when the permanent Liquid Radwaste System is no longer available. Neither the isotopes (Co-60, Mn-54, Eu-152) nor the low expected activity in the water will impact the decommissioning of the SFSP or Termination Survey activities. This method would allow the continued decommissioning and termination survey of the Radwaste System and Building. Other contamination control measures, such as use of Radiation Work Permits, portable airborne radiation monitors, Herculite or other materials to cover areas, contamination control tents with HEPA-filtered ventilation, and periodic air sampling will be employed as deemed necessary. Respirators will be used if air sample results indicate the need for personnel protection against airborne radionuclides.

Because the activated band of material is located approximately midway along the height of the bioshield wall, it will be necessary to first remove the non-activated upper section of the wall, as well as interfering piping and components which are mounted to or near the wall. Consistent with earlier discussions with the NRC staff, removal of the non-contaminated interferences as well as the potentially contaminated main steam line segment interferences of the Nuclear Boiler system are not subject to the 30-day notification schedule constraint.

The occupational radiation exposure estimated to be incurred during removal of the bioshield wall is negligible (less than 0.340 man-rem), which is an extremely small fraction of the original decommissioning project exposure estimate of 189 man-rem. The decommissioning radiation exposure incurred to date indicates that the additional exposure due to bioshield wall removal will not cause the initial estimate to be exceeded. In fact, the current project goal, including the bioshield wall removal is 3.5 man-rem.

Postulated accident doses during bioshield wall removal are within the bounding accident scenarios identified in Section 3.4 of the Decommissioning Plan. The two applicable accidents associated with this work are the postulated waste container drop and a rupture of a vacuum filter bag. The waste container drop accident had already considered that the worst case source term would be associated with the release of radioactive materials from activated concrete bioshield wall rubble. Since this source term was conservatively estimated relative to the actual bioshield wall activity levels, no additional analysis was required. The Decommissioning Plan estimate for the vacuum filter bag rupture was not based on an activated concrete source term. However, analysis indicates that the source term available for potential release from the activated bioshield wall material cannot exceed that associated with any of the existing Decommissioning Plan accidents, including the vacuum filter bag rupture. Offsite whole body and organ dose estimates for this event are higher in the Decommissioning Plan by more than an order of magnitude than any potential release associated with bioshield wall removal.

All radioactive waste associated with the bioshield wall removal will be Class A. A total volume of approximately 4260 cubic feet of concrete and steel will be disposed of as low level waste. This volume is estimated to contain up to 456.79 millicuries of radioactive material. This is a small volume and radioactivity content relative to the decommissioning project estimate of 80,000 cubic feet and 602 curies of radioactive material. Volume reduction efforts to date on other material removed from Shoreham, however, are such that the waste material added by removal of the bioshield wall will not cause the estimated burial volume to exceed the original project estimate.

The additional cost of performing this work is estimated to be approximately 1.7 million dollars. Because of projected underruns in the balance of the decommissioning project, this additional cost is not expected to result in exceeding the original decommissioning cost estimate of 186 million dollars.

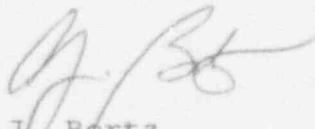
LIPA has performed a safety evaluation of the proposed bioshield wall removal pursuant to 10 CFR 50.59. This safety evaluation has been reviewed and approved by LIPA's Site Review Committee (SRC), and is included as Attachment 1 to this letter. Attachment 2 is the minutes of the SRC meeting at which this safety evaluation was reviewed and approved. Based on the safety evaluation and on the information provided above, LIPA concludes that the bioshield wall removal will not involve any unreviewed safety questions, and that it will not result in environmental impacts different from and exceeding those set forth in LIPA's

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Supplement to the Environmental Report (Decommissioning)
(Ref. 9).

Should you have any questions or require additional information,
please do not hesitate to contact my office.

Very truly yours,



A. J. Bortz
Resident Manager
Shoreham Station

SS/kc

cc: L. Bell (NMSS)	E. Wenzinger (NRC-Region I)
J. Austin (NMSS)	R. Nimitz (NRC-Region I)
E. Brach (NMSS)	J. Joyner (NRC-Region I)
L. Pittiglio (NMSS)	
J. Greeves (NMSS)	

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