U. S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT No. 50-322/92-04

LICENSE No. NPF-82 (POL)

LICENSEE: Long Island Power Authority
P.O. Box 628, North Country Road
Wading River, New York 11792

FACILITY NAME: Shoreham Nuclear Power Station

DATES: June 27, 1992 - October 12, 1992

INSPECTORS: B. S. Norris, Project Inspector (Shoreham)
F. L. Bower, Reactor Engineer
J. T. Furia, Senior Radiation Specialist
R. L. Nimitz, Senior Radiation Specialist

SUBMITTED: B. S. Norris — 11-4-92 Date
Project Inspector (Shoreham)

APPROVED BY: C. J. Anderson, Chief — 11/5/92 Date
Reactor Projects Section 2B

AREAS INSPECTED:

On-site and in-office inspection by Region I staff, consisting of facility tours, observation of work-in-progress, and review of various licensee procedures and reports. Particular attention was given to procedural adherence, radiological controls, surveillance and maintenance, physical plant security, decommissioning activities, housekeeping, and industrial safety.

EXECUTIVE SUMMARY

DECOMMISSIONING PLAN

Inconsistencies were identified between the Decommissioning Plan, the physical plant condition, and some equipment configurations. LIPA had failed to keep the Commission apprised, in writing, of changes that they had made to the proposed Decommissioning Plan that was under review by the NRC. This is an apparent violation of 10 CFR 50.9(a). (Reference Section 2.0)

RADIOLOGICAL CONTROLS

Radiation controls personnel and general radiation workers were receiving the appropriate training and pre-job briefings prior to commencement of radiological work activities. The implementation and adequacy of radiological controls practices was sufficient to ensure that occupational radiation exposure was kept as low as reasonably achievable. The licensee frequently used mock-ups to test work techniques prior to actual performance of the activity. (Reference Sections 3.1 and 3.2)

The engineering work associated with the construction and operation of the dry cutting station was good. High efficiency ventilation systems were installed to control potential airborne radioactivity. The licensee plans to use a large diameter milling machine for cutting of the reactor vessel. (Reference Section 3.3))

SOLID RADWASTE AND TRANSPORTATION

The small volume of spent resin generated was placed in polyethylene liners, dewatered, and shipped to a low-level waste disposal site. The bulk of the radwaste shipments consisted of segmented plant piping and components. Reactor vessel internals were sectioned and placed in liners under water, the liners were then transferred into shipping casks. Bulk piping and valves were shipped in SeaVans. The licensee's radwaste shipping program and implementation of the program appeared to be generally good. However, an unresolved item was identified regarding the sign-off of activities associated with a shipment of irradiated control rod blades in advance of performing the required activities. The licensee's program for assurance of quality in the radwaste area included vendor audits, supplier surveillances, in-plant audits and surveillances. (Reference Section 4.0)

FIRE PROTECTION/PREVENTION PROGRAM

When the fire protection requirements were moved from the Technical Specifications to the Fire Hazards Analysis Report, the limiting conditions and surveillance requirements related the diesel generators, the emergency switchgear, and the batteries were not incorporated. However, this equipment is required to be operable to support fuel handling. This is an unresolved item. (Reference Section 5.1)

The combustible materials control program was clearly defined and well implemented. The fire protection equipment was adequately maintained to support the safe storage of the fuel and in accordance with the licensee's fire protection program. Housekeeping conditions were generally good. The licensee had developed a program for training related to discovering and reporting fires. (Reference Sections 5.2 through 5.5)

SURVEILLANCE AND MAINTENANCE

The inspectors monitored work-in-progress, reviewed procedures and work packages. Particular attention was given to procedural adherence, radiological controls practices, and housekeeping. All work observed was in conformance with applicable procedures and met the requirements of the Technical Specifications. Several weaknesses were noted in the area of industrial safety. (Reference Section 6.0)

NRC LICENSED OPERATORS

A recent amendment to the Technical Specifications eliminated the requirement for NRC licensed operators in the control room. The applicable program was reviewed by the inspector and found to be acceptable. (Reference Section 7.0)

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DETAILS

1.0 FACILITY STATUS

The Shoreham Nuclear Power Station was shut down in 1989, due to an agreement between the State of New York and the Long Island Lighting Company (LILCo), the original owner and operator of Shoreham. The maximum power attained prior to the agreement was 5% reactor power, with a total core history of 2 megawatt (MW) days. The reactor is defueled and drained, with the fuel in the spent fuel pool. The reactor vessel and contaminated systems are in the process of being removed and segmented in preparation for shipment for offsite burial. In June 1991, a Possession Only License (POL) was issued to LILCo; the POL became effective on July 19, 1991. On February 29, 1992, the NRC approved the transfer of the license to the Long Island Power Authority (LIPA). On June 11, 199.., the NRC issued an Order authorizing the decommissioning of Shoreham.

2.0 DECOMMISSIONING PLAN (71707)[1]

In an earlier report for Shoreham, an inspector identified inconsistencies between the Decommissioning Plan (D-Plan), as approved by the Decommissioning Order (dated June 11, 1992) and the physical plant condition and some equipment configurations. At that time, it was classified as an Unresolved Item (50-322/92-03-01). Examples of the changes are:

- Cutting techniques for some small bore piping were modified to include hydraulic shears in addition to the original band saw cutting;
- The design of the wet cutting station (WCS) was changed;
- The installation of the dry cutting station (DCS) was deferred until later in the project, and the location was moved to the steam dryer/moisture separator pit;
- The steam dryer and the moisture separator were originally scheduled to be moved directly from the reactor vessel to the DCS for segmentation, instead they were placed in a temporary storage location on the refuel floor;
- Various temporary cranes were redesigned and installed in locations other than originally stated; and
- Health physics controls with respect to ventilation systems, job debriefing sessions, and identification of removed components were not always in accordance with the D-Plan.

The above examples were later described in a letter from LIPA to the NRC, dated July 1, 1992, explaining the justification for the changes. It was the determination of the licensee that (1) all of the changes involved no unreviewed safety questions, (2) the environmental impact was not changed, and (3) each change was for ALARA and/or safety benefit. In addition, LIPA stated that safety, environmental, and ALARA principles were not adversely affected as a result of any cost or schedule benefits.

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[1] The inspection procedures from NRC Manual Chapters 2515 and 2560 that the inspectors used as guidance are parenthetically listed for each report section, as applicable.

The inspectors concluded that LIPA had failed to keep the Commission apprised, in writing, of changes that they had made to the proposed D-Plan that was under review by the NRC's office of Nuclear Material Safety and Safeguards (NMSS) since early 1991. This is a violation of 10 CFR 50.9(a), Severity Level IV. (NV4 50-322/92-04-01) Unresolved item 50-322/92-03-01 is administratively closed.

3.0 RADIOLOGICAL CONTROLS (83723, 83750)

3.1 Training and Qualifications

3.1.1 Radiation Workers

The inspector reviewed the training and qualification of radiation workers. The review was with respect to criteria contained in 10 CFR 19.12, "Instructions to Workers," and applicable procedures.

The inspector selected workers for review who were observed to be performing on-going radiological work activities. The inspector independently verified, through review of records and discussions with cognizant personnel, that the selected workers were qualified in accordance with applicable requirements. The inspector also verified that selected applicable workers had received respirator training, respirator fit testing, and medical examinations to facilitate the use of respiratory protective equipment. In addition, the inspector noted, based on direct observation, that workers were receiving appropriate pre-job briefings prior to commencement of radiological work activities.

The inspector noted, through discussions with personnel and review of training records, that specific training on hot particles was not included in radiation worker training. Although no hot particles have been encountered during routine work activities, personnel may encounter such particles during drain-down and clean-up of the wet cutting station. Operations associated with plasma-arc cutting could also create these particles. The inspector discussed this concern with the licensee, they indicated that training on the radiological hazards associated with hot particles would be considered.

3.1.2 Radiological Controls Personnel

The inspector reviewed the training and qualification records of radiological controls personnel. The review was against the criteria contained in Technical Specification 6.3, "Unit Staff Qualifications," and Technical Specification 6.4, "Training." The inspector reviewed the records of those individuals who were observed to be providing direct oversight of workers involved in radiological or significant work activities. The inspector also independently verified the performance of these selected individuals during observations of on-going work activities.

The inspector review indicated that the selected radiological controls personnel had received applicable training and met qualification requirements.

3.2 Radiological Controls Practices

The inspector reviewed the implementation and adequacy of radiological controls. The evaluation of the licensee's performance was based on discussions with cognizant personnel and independent inspector observations during tours. The following elements of the program were reviewed:

- posting, barricading and access to radiation, high radiation, and airborne radioactivity areas;
- key control to high radiation areas;
- personnel adherence to radiation protection procedures, radiation work permits, and good radiological control practices;
- maintaining occupational radiation exposure as low as reasonably achievable (ALARA);
- use of dosimetry devices;
- airborne radioactivity sampling and controls;
- installation and use of engineering controls to minimize airborne radioactivity;
- adequacy of radiological surveys to support pre-planning of work and on-going work;
- calibration and checking of radiological survey instrumentation; and
- contamination controls, including hot particle controls.

The inspector observed and reviewed the following activities:

- cutting of irradiated components in the wet cutting station;
- transfer of irradiated components from the reactor vessel to the wet cutting station; and
- transfer (in air) of irradiated components from wet storage to shielded shipping casks.

The inspector entered the partially drained reactor vessel to observe work conditions therein. In addition, the inspector discussed licensee plans regarding draining of the reactor vessel to access additional components for cutting and removal.

The inspector's review indicated that generally good radiological controls were implemented for the work activities reviewed. ALARA controls were considered to be very good. The inspector noted that the licensee frequently used extensive mock-ups to test work techniques prior to actual performance of the work activities.

3.3 Installation of the Dry Cutting Station

The inspector reviewed the licensee's preparations for the construction and operation of the dry cutting station (DCS) during the period of June 27 to October 12, 1992. The inspector found the licensee's engineering actions associated with the technical aspects of the DCS to be of good quality. The inspector also reviewed the initial cutting operations. The DCS is an enclosed facility located in the reactor cavity equipment storage pit, situated to control potential contamination and airborne radioactivity associated with cutting of the steam dryer, moisture separator and reactor vessel. High efficiency ventilation systems were installed to control potential airborne radioactivity. The inspector also met with licensee personnel to discuss the

cutting of the reactor vessel. The licensee plans to use a large diameter milling machine, with provisions to control the milling debris. The technique is not prone to generation of significant airborne radioactivity.

3.4 Termination Survey Planning and Decommissioning Status

The inspector met with cognizant licensee personnel on July 30, 1992, to discuss the development and evaluation of the termination survey plan. The inspector also attended a presentation by personnel who would be performing an assessment of the licensee's termination survey program. The inspector also meet with cognizant licensee personnel on July 30, 1992, to discuss the current status of decommissioning efforts and plans. Attachment 2 to this inspection report are the handouts provided at the meetings.

The inspector concluded, based on observations during station tours and attendance at the above meetings, that the licensee was taking care to ensure decommissioning activities were properly performed with appropriate management reviews.

4.0 SOLID RADWASTE AND TRANSPORTATION (83722, 86721)

4.1 Organization

Within the LIPA organization, the responsibility for the processing, packaging, and shipping of low-level radioactive waste rests with the Radwaste Section, under the supervision of the Radwaste Engineer. The Radwaste Engineer reports through the Radiological Controls Division Manager, to the Operations and Maintenance Department Manager, to the Resident Manager. Staffing levels appeared to be sufficient to meet the demands of the decommissioning project. Operation of the liquid radwaste systems remained the responsibility of the Operations Department personnel.

4.2 On-Going Activities

The licensee continued to operate, on a very limited basis, the floor drain and liquid radwaste systems for ongoing plant decontamination efforts. In addition, the spent fuel pool clean-up system remained in operation. The small volume of spent resins generated by decommissioning activities were placed in polyethylene liners, dewatered, and shipped to a low-level waste disposal site. The bulk of the radwaste shipments consisted of segmented plant piping and components to support the decommissioning effort. Reactor vessel internals were typically sectioned and placed in liners under water; the liner was then air transferred into Chem-Nuclear Systems, Inc. 8-120A shipping casks. Since early August, using a specially constructed container, frequent shipments of irradiated control rod blades have left the site for disposal. Bulk piping and valves were typically placed in SeaVans, which were shipped to either SEG (a Westinghouse Company) or the Quadrex Corporation for volume reduction and disposal.

4.3 Radwaste Shipping Activities

The inspector reviewed the licensee's radwaste shipping program. The review was with respect to the criteria contained in 10 CFR 71, "Packaging and Transportation of Radioactive Material," and applicable licensee procedures. The inspector reviewed applicable documents and discussed the shipping program with cognizant personnel. The inspector directly observed radwaste shipping container (cask) loading activities. The inspector also reviewed reports associated with the quality assurance review of the contractor providing waste analysis services, including the computer codes used by the contractor to calculate the total amount of radioactive material present in shipments.

The licensee shipping activities appeared to be generally good. However, the inspector observed the loading of a liner, containing irradiated reactor vessel internals, into a ChemNuclear cask on July 30, 1992. The inspector noted that the liner was misaligned during loading, resulting in the liner impacting the top of the cask. The lid was subsequently placed on the cask. The inspector questioned the inspection of the cask O-rings for potential damage and was informed that the O-rings had been inspected prior to loading. The timing of the inspection was principally due to ALARA concerns. A review of the applicable procedure appeared to indicate that inspection of the O-rings should occur after loading. Also the checklist for the loading procedure was incorrect in that it referenced an incorrect procedure step.

The observations were brought to the attention of a QA representative. He indicated that, in light of potential damage to the O-rings, the lid would be removed and the O-rings re-inspected. The subsequent re-inspection of the O-rings indicated that no damage had occurred during the loading of the cask. The QA inspector also noted that the procedure issues raised by the NRC inspector (i.e., performance of inspection prior to cask closure and incorrect procedure check-off) would be reviewed. The ambiguities in the procedure were reviewed and clarified. The licensee's personnel indicated that this was the first time that a liner had impacted the top of the cask.

The inspector also reviewed the documentation that was being prepared to support a shipment, for disposal, of irradiated control rod blades (Shipment No. RWS-92-31). This shipment was being prepared in the Turbine Building truck bay. The inspector's independent review of the shipping package and associated shipping paper documentation indicated that portions of the checklist, used for documenting completion of items had been signed-off even though certain activities had not been performed; specifically, the sealing of the package with a non-removable (tamper proof) seal. The inspector discussed this matter with the individual completing the paper work. This individual indicated that he had unconsciously/erroneously signed off the tamper seal procedure step when signing off the procedure steps that he had completed. Other portions of the shipping package prepartion check list that had not been completed were not signed off. The sealing of the package was a routine matter that he often performed, but when he arrived at the shipping package to install the seal, a rope barrier had been erected around the trailer on which the shipping package was secured. The barrier was posted with signs requiring the use of a radiation work permit to enter the rope barrier.

This matter was discussed with licensee representatives, who indicated that the applicable paper work would be re-done and that this concern would be reviewed. The inspector's discussions with the individual indicated that he normally performs a final check of completion of checklist requirements. Also, the individual indicated the licensee's QA group routinely reviews shipping activities, including completion of applicable checklist requirements. The QA personnel inspect the shipping package.

The inspector indicated that the completion of sign-offs of shipping papers checklist steps in advance of completing the actual activity was an unresolved item (50-322/92-04-03) pending determination of the reasons for and extent of this practice and the adequacy of resulting shipments.

As part of this inspection, the following radwaste shipment records were reviewed:

Shipment #	Activity (Ci)	Volume (cu ft)	Type
RWS 92-12	3.44 E-05	2560.0	DAW
RWS 92-16	5.15 E-05	2560.0	DAW
RWS 92-18	9.50 E-05	2560.0	DAW
RWS 92-21	1.86 E+00	1280.0	DAW
RWS 92-22	8.14 E-05	2560.0	DAW
RWS 92-23	1.86 E+00	1280.0	DAW
RWS 92-25	2.17 E+01	125.2	Core Hardware
RWS 92-26	3.59 E-03	2560.0	DAW
RWS 92-28	2.59 E+01	125.2	Core Hardware
RWS 92-29	1.87 E-01	2560.0	DAW
RWS 92-33	6.36 E-04	2560.0	DAW
RWS 92-34	1.00 E+02	125.2	Core Hardware
RWS 92-35	6.61 E-04	2560.0	DAW
RWS 92-39	2.98 E+01	125.2	Core Hardware
RWS 92-42	4.28 E-04	2560.0	DAW

All shipments appeared to be made in accordance with the applicable provisions of 49 CFR Parts 100-177 and 10 CFR Parts 20, 61 and 71.

The licensee utilized the RADMAN computer code, supplied by WMG, Inc., for shipment calculations, waste classification, and preparation of the waste disposal manifests. WMG, Inc. also conducted an analysis of the irradiated hardware being removed from the reactor core, using the ORIGEN computer code, for the determination of isotopes and activities in these shipments. Plant specific scaling factors have been developed for the spent resin waste streams, while generic scaling factors for low level contaminated piping and valves were used for these shipments.

4.4 Assurance of Quality

The licensee's program for assurance of quality in the radwaste area included vendor audits, supplier surveillances, in-plant audits and surveillances, and quality control check-off sheets contained within the radwaste and transportation procedures. As part of this inspection, a review of these documents was conducted.

Vendor audits and surveillances were conducted at: (1) ChemNuclear, audited via the Nuclear Utilities Procurement Issues Council and surveillances performed by the licensee; (2) Container Products Corporation, surveillances performed by the licensee, especially during the fabrication and testing of the control rod blade shipping boxes; and (3) WMG, audited by the licensee.

In-plant audits and surveillances were conducted by the Nuclear Quality Assurance (NQA) Department. The most recent audit of the radwaste and transportation program (audit NM-92-02, dated April 15, 1992) included the Process Control Program. The finding and observations identified as a result of this audit were addressed and corrected by the plant staff in a timely manner. Numerous NQA surveillances were conducted of radwaste and radioactive material shipments, utilizing task specific check lists. The licensee's program of in-plant audit and surveillance activities in this area was considered acceptable.

5.0 FIRE PROTECTION/PREVENTION PROGRAM (64704)

This inspection was performed to verify that the licensee was implementing an adequate fire protection and prevention program consistent with their license, Fire Hazard Analysis Report (FHAR), Defueled Safety Analysis Report (DSAR), and other licensing documents during the decommissioning phase. The inspection included the verification of administrative requirements and procedures, procedure implementation, technical adequacy of programs, inspection of plant facilities, fire brigade qualification and training, and review of previous licensee audit findings. In particular, these reviews were conducted to verify that adequate fire protection measures were being taken to maintain the safe condition of the fuel during the construction like activities which are occurring. Attachment 1 contains a list of the documents reviewed during this inspection.

5.1 Changes to the Approved Fire Protection Program

License condition 2.D requires the licensee to maintain in effect all provisions of the approved fire protection program as described in the FHAR and DSAR, and as approved in the Safety Evaluation Report, as amplified in Supplements 2 and 9 subject to the following provision:

> "The licensee may make changes to the approved fire protection program without prior approval of the Commission only if these changes would not adversely affect the ability to maintain the fuel in the Spent Fuel Pool in a safe condition in the event of a fire."

The inspector reviewed procedure LRCDX6.1, Control of DSAR Changes, to verify that adequate processes and procedures were in place for the evaluation, review and approval of changes to the FHAR. The inspector also reviewed recent revisions to the FHAR to ascertain whether these changes had been accomplished in accordance with the procedure.

The revisions moved the fire protection requirements previously located in the Technical Specifications (TS) to the FHAR. Based on the provision of the above license condition, the former TS limiting conditions and surveillance requirements were modified to include only that fire protection equipment used to protect the Reactor Building. The fire protection requirements previously in the TS, but not incorporated into the FHAR, were relocated to the preventive maintenance program. The revisions also reduced the frequency of compensatory fire watch inspections from once per hour, to once per 8 hours, to once per 8 hour shift; and compensatory fire watches were eliminated for those areas which are continuously occupied. The licensee downgraded the rating of some of the 3-hour fire barriers in the Reactor Building which had originally been provided for redundant safe shutdown train separation. The latest revision added an introductory section, which defines the applicability of the FHAR as it pertains to Shoreham.

The inspector noted that, for the earlier revisions, procedure LRCDX6.1 was not strictly followed when making all of the changes; however, the evaluations, reviews, and approvals performed did meet the intent of the procedure. Later revisions were accomplished in accordance the procedure. During the review, the inspector noted that the limiting conditions and surveillance requirements for fire protection equipment in the vicinity of the diesel generators, the emergency switchgear, and the batteries had been deleted from the FHAR. However, the TS require this equipment to be operable to support fuel handling. At the exit meeting, the inspector indicated that the level of fire protection provided for an area, including limiting conditions, compensatory actions, and surveillance requirements, should be commensurate with the equipment operability requirements. Licensee management noted and agreed to evaluate this concern and provide the results of this evaluation to the NRC. This item remains unresolved pending the completion of the licensee's evaluation. (URI 50-322/92-04-02)

5.2 Fire Protection Program Organization and Administration

A review of the Corporate Fire Protection Program and discussions with licensee personnel were used to ascertain whether the fire protection program and administration were commensurate with decommissioning activities. The following are the findings of that review:

- Personnel were designated for implementing the fire protection program;
- Qualifications were delineated for personnel designated to implement the program;
- Site personnel were designated to review all proposed maintenance, modifications, or decommissioning activities which could adversely affect fire protection and the safety of the facility;
- Personnel were designated to train site and contractor personnel in the procedures which implement the fire protection program;
- Fire reporting instructions for general plant personnel were delineated;

- Fire brigade organization and qualifications of brigade members were delineated; and
- Programs and procedures existed to implement periodic inspections of the program; and assure that prompt and effective corrective actions are taken to preclude the occurrence of conditions adverse to fire protection

No unacceptable conditions or concerns were identified. The organization of the fire protection program is well documented and the responsibilities of personnel are clearly defined. The administrative procedures reviewed included the necessary level of detail.

5.3 Combustible Materials and Ignition Sources

The inspector conducted a tour of the facility and reviewed the related procedures to determine whether adequate controls had been established and implemented to minimize the amount of combustibles to which safety-related and adjacent areas may be exposed during decommissioning activities. The review included an evaluation of the adequacy for:

- The handling of and limitation on the use of combustibles;
- The controls to reduce the hazards from ignition sources, such as grinding and cutting operations;
- The control of transient fire loads during decommissioning activities;
- Periodic inspections for accumulation of combustibles;
- All wood used in safety-related areas is treated with flame retardant;
- Permit and inspection requirements for activities involving ignition sources;
- Requirements that fire watches be present throughout hot work operations; and
- Requirements which ensure that designated fire watches are trained and equipped to identify and combat fires.

The inspector found that the combustible materials control program was clearly defined in their procedures, and was well implemented. The program provided for the applicable procedures and required the use of permits to control (1) the storage of combustible materials, (2) transient fire loads, and (3) hot work activities such as cutting, grinding, and welding. The inspector observed the proper permits were posted and that conditions were in accordance with the permits, with one exception. An oxygen-acetylene unit, in the reactor building, had its regulator valve open with the gas lines charged; although the unit was not in use nor was a permit found in the area. The proper permit was located, reviewed and found acceptable. However, further investigation identified that the unit had been idle for at least 48 hours. The inspector noted to licensee management that, as a good practice, the regulator valve should be closed and the gas lines should be depressurized whenever the unit is not being used.

5.4 Inspection of Fire Protection Equipment

The inspector toured accessible areas of the facility, including the reactor building, control structure, fire pump house, and outlying areas of the plant. These inspections verified that the

fire protection equipment was being adequately maintained to support the safe storage of the fuel and in accordance with the licensee's fire protection program. The inspection included

- water fire protection equipment (fire pumps, fire protection water systems, fire water piping and distribution systems, post indicator valves, hydrants, and contents of fire hose houses),
- automatic and manual fixed suppression systems, interior hose stations,
- area fire detection and alarm systems,
- fire brigade equipment lockers, and
- fire barriers, penetration seals, and fire doors.

Portable fire extinguishers were randomly checked to verify that the required monthly surveillance inspections were performed and the seals were intact. Fire extinguishers were also checked for type, location, accessibility, and conditions. Additionally, during the tour the inspector interviewed licensee personnel. The inspector noted no significant deterioration of fire fighting equipment, tank gauges registered full, hoses had recently tested date stamps, battery powered lights were working, and the fire fighting clothes were in an acceptable condition.

The inspector observed generally good housekeeping conditions. The housekeeping and the control of combustible material was excellent. No hot work activities were observed during the tours. Based on interviews with site personnel, the inspector concluded that licensee personnel were aware of the station policy and procedures for fire watches, and reporting and responding to fires.

Additionally, the inspector reviewed selected procedures to determine whether the licensee had developed adequate procedures for the maintenance, inspection, and testing of the fire protection equipment. The procedures reviewed were found to be technically adequate. In addition, a sample of completed test records were reviewed to verify compliance with the Fire Hazards Analysis Report and established procedures. A review of Maintenance Work Requests (MWRs) identified that there was a backlog of 74 MWRs, some dating back to 1986. The licensee noted that there was a recently initiated effort to reduce this backlog and that the fire protection system (M43) MWRs are being closely tracked during the regular planning meetings. No unacceptable conditions or significant safety concerns were identified.

5.5 Fire Brigade, Fire Watch and Site Wide Training

Through interviews and document reviews, the inspector verified that the licensee had developed a program for the training of (1) fire brigade personnel, (2) fire watch personnel, (3) discovering and reporting fires, and (4) fire alarm response. The program consisted of initial fire fighting skills, quarterly refresher training, annual practice sessions, and unannounced drills.

The administrative and training program procedures reviewed included the appropriate requirements. The fire watch lesson plans and general employee handouts contained an appropriate level of detail. Fire watch personnel receive hands-on training, including extinguishing live fires. From a review of the fire brigade lesson plans and training records,

the inspector concluded that the licensee had developed and implemented a suitable fire brigade training program. The inspector attended a quarterly fire brigade training meeting. The agenda included current topics, recent changes to the program and procedures, and an announced fire brigade drill. No significant weaknesses were noted, a critique was conducted and documented.

The tracking of fire brigade training for individuals was good; however, for one shift, the tracking was found to be less formally maintained. A recent QA audit identified that the "A" fire brigade shift had missed their first quarter fire brigade drill; the licensee initiated corrective actions. The inspector found the corrective actions to be adequate, and noted that the QA department will track them to closure.

5.6 Quality Assurance Audits and Corrective Actions

The licensee is required by the POL Technical Specifications to perform an audit of the fire protection program at least once every 24 months, utilizing either a qualified offsite licensee fire protection engineer(s) or an outside independent fire protection consultant.

The inspector reviewed quality assurance audits for the past two years and ascertained that an effective audit program had been implemented. The audits covered the fire protection organization; program, procedures and implementation; qualification and training; system and equipment alterations; tests, surveillances, and maintenance; and records. Discrepancies were identified to the responsible organizations, and responses were received within the required time limits. The corrective actions were reviewed and found to be adequate. The licensee's policy is to conduct audits annually, and was considered a good initiative.

Fire/Safety Field Incident Report, No. 92-015, was reviewed to assess the licensee's program for self-assessment and corrective actions associated with fire protection related events. The licensee stated that this was the only actual fire to occur at the site during 1992. An electrical fire occurred in the main warehouse on April 3, 1992, due to a faulty breaker. The fire spread to an adjacent wall and nearby cardboard boxes before it was extinguished by personnel in the warehouse. Upon arrival, the fire brigade checked for fire extension and posted an overnight reflash watch. Associated corrective actions included electrical safety inspections of all "non-permanent" plant structures, procedure revisions to improve fire reporting and brigade response, and electrical and fire safety lessons learned to site personnel.

6.0 SURVEILLANCE AND MAINTENANCE (42700, 54834, 61700, 62702, 71707)

The inspectors monitored work-in-progress, reviewed procedures, and examined completed safety evaluations and work packages associated with the removal of interferences, systems, and components. The inspectors paid particular attention to the adherence to procedures, radiological controls practices, and housekeeping.

The inspectors also monitored periodic surveillances required by the Technical Specifications. All work observed was in conformance with applicable procedures and met the requirements of the Technical Specifications.

Se[illegible] weaknesses were noted in the area of industrial safety and were reported to licensee s[illegible]. Examples include:

- Hand tools that were being used over the WCS and the reactor vessel were not always anchored with a lanyard;
- Personnel did not always use a safety harness when working around open areas;
- The ladder providing access to the reactor vessel was long and had no safety attachments or cage.

7.0 NRC LICENSED OPERATORS (40500)

A recent amendment to the Technical Specifications regarding shift manning changed the requirement from NRC licensed operators to licensee certified fuel handlers. The inspector reviewed procedure SP 12X014.07, "Certified Operator Requalification Program." The program was consistent with the requirements previously contained in the NRC approved program for requalification of the Shoreham licensed operators, with the exception that an NRC administered requalification examination was no longer required every six years.

8.0 OPEN ITEMS

Closed (Unresolved Item 50-322/92-03-01)

Reference Section 2.0.

Closed (Unresolved Item 50-322/92-03-02)

The NRC identified that a quality control inspector failed to verify completion of the prerequisites for segmentation of the bio-shield blocks prior to allowing the activity to start; two similar instances were later identified by the licensee. Subsequently, the LIPA Nuclear Quality Assurance (QA) Department Manager initiated Corrective Action Request (CAR) 92X01. The ensuing investigation identified two primary and four secondary causal factors:

Primary causal factors
- inadequate work planning, and
- ineffective supervision

Secondary causal factors
- ineffective management projection of priorities,
- incomplete/inadequate work instructions,
- inadequate training, and
- failure to understand the work environment

Immediate corrective actions included (1) a Resident Manager Directive discussing the CAR, (2) work fundamentals training emphasizing procedural adherence, (3) departmental focus meetings

to stress the message of compliance to work control instructions, (4) review of the work control instructions for adequacy and clarity, and (5) more frequent pre-job briefings. Long term corrective actions included increased management oversight of the work activities and the associated work packages, and appropriate disciplinary action on a case-by-case basis. The inspector reviewed the Resident Manager's Directive, attended some of the training sessions, and observed management in the plant on a more frequent basis.

Based on the inspector's review, the Quality Assurance department's continued attention, and the apparent commitment on the part of the LIPA management, this unresolved item is closed.

9.0 REVIEW OF PERIODIC AND SPECIAL REPORTS (90713)

The documents listed below, in addition to Attachment 1, were reviewed by the inspectors to verify that the information was technically adequate, submitted in a timely manner, and satisfied the appropriate reporting requirements, as required. No problems were observed in this area.

- Semi-Annual Radioactive Effluent Release Report for the 1st & 2nd Quarters of 1992, dated August 27, 1992
- 1992 Emergency Exercise Scenario Objectives, dated September 4, 1992
- Shoreham Fitness for Duty Program Performance for January through June 1992, dated August 24, 1992
- Safeguards Event Log for April 1 through June 30, 1992, dated July 29, 1992
- LIPA Deficiency Reports
- Safety Evaluations

10.0 MANAGEMENT MEETINGS (30702, 94702)

10.1 Management Meetings

- On July 16, 1992, the Director of the Office of Nuclear Material Safety and Safeguards, met with the Resident Manager and members of his staff. The purpose of the meeting was to receive an overview of the decommissioning program and to tour the facility.

- On July 28, 1992, inspectors from the NRC Region I staff attended the LIPA Board of Trustees meeting, held at the Shoreham site. A general summary of the status of Shoreham was presented by the LIPA management to the Board. The information presented was consistent with information already known by the Project Inspector.

- On October 6, 1992, Leonard Calone, LILCo Manager, Shoreham Site Support, informed the inspector that he was to be reassigned to a position unrelated to Shoreham. The License Transfer order requires that certain LILCo management maintain their qualifications, such that they could resume control of Shoreham in the event that LIPA becomes unable to complete the decommissioning project. Mr. Calone ensured the inspector that he would

maintain his qualifications as (1) the LILCo Plant Manager, and (2) the LIPA Operations and Maintenance Department Manager.

10.2 Exit Meeting

The issues within this report were discussed with licensee management throughout the inspection period. A verbal summary was provided by Mr. B. Norris to the Resident Manager, and members of his staff, at a meeting on October 9, 1992 at the Shoreham site. At that meeting, the inspector also ensured that he understood the ramifications associated with two recent issues; specifically, (1) denial of access to NRC inspectors (as discussed in NRC Information Notice 92-66), and (2) discriminatory dose limits for NRC women inspectors (as discussed in an internal memorandum, dated July 28, 1992). A copy of each of these documents was provided to him. Region I review of this report and discussions with licensee representatives, determined that this report does not contain any proprietary information or safeguards information subject to 10 CFR 2.790 restrictions.

LIST OF ATTACHMENTS

Attachment 1	Documents Reviewed
Attachment 2	Handouts from Termination Survey & Decommissioning Status Meetings

ATTACHMENT 1

DOCUMENTS REVIEWED

Procedures

PDXNE-11	Shoreham Corporate Fire Protection Program (Nuclear), Rev. 0
F1X500.01	Organization and Administration of Fire Protection Program, Rev. 2
F1X500.02	Fire Brigade Organization, Response, Practice and Drills, Rev. 0
F1X500.03	Fire Protection Program Training, Rev. 0
F1X500.04	Wading River Fire Department Interface, Rev. 1
F1X501.01	Fire Protection Permits, Rev. 1
F1X501.02	Fire Protection Watches and Patrols, Rev. 1
F2X500.01	Handling and Storage of Combustible Materials and Solvents, Rev. 1
F3X501.01	Fire Protection Inspections, Rev. dated March 30, 1992
F3X501.02	Fire Protection Equipment Inspection and Maintenances, Rev. 2
F3X502.01	Fire Suppression System Inspections, Rev. 0
F4X503.02	Fire Hose Station Inspection, Care and Maintenance, Rev. 1
F4X503.03	Fire Hydrant and Standpipe Operability Test, Rev. 1
F4X505.03	Fire Doors and Associated Hardware Inspection and Testing, Rev. 1
F9X007.25	Generator Hydrogen Seal Oil Unit Pre-Fire Plan, Rev. 0
LRCDX6.1	Control of DSAR Changes, Rev. 0
SP 12X014.07	Certified Operator Requalification Program, Rev. 1

Fire Protection Related Documents

NOC Policy 27	LIPA/LILCO Shoreham Corporate Fire Protection Program (Nuclear), Rev. 0
Lesson Plan	Fire Watch Training - Lesson Plan #1, Rev. 0
LNQA-92X03	Audit of the Fire Protection Program from June 9 - 19, 1992
NH-91-05	Audit of the Fire Protection Program from June 10 - 14, 1992

Memo from Carney/Quinan to Calone/Montgomery (dated February 19, 1992) concerning Shoreham Nuclear Power Station Fire Protection Program Philosophy and Approach POL to Decommissioning

Surveillance Tests

SP 24X503.01	Fire Pump Operability Test, Rev. 1
SP 24.503.02	Fire Pump Functional Test and Flow Rate Verification, Rev. 10
SP 24.503.04	Fire Main System Valve Cycling Test, Rev. 7
SP 44X504.11	Fire Detection Detector Channel Functional Test (Sec. Cont. El.-175'), Rev. 1
SP 44[illegible]3.14	Fire Detection Detector Channel Functional Test (Sec. Cont.) Rev. 4
SP F4.503.04	Fire Protection Underground Piping Flow Test, Rev. 2

ATTACHMENT 2

HANDOUTS FROM

TERMINATION SURVEY &

DECOMMISSIONING STATUS

MEETINGS ON

JULY 30, 1992

ATTACHMENT 2

HANDOUTS FROM

TERMINATION SURVEY &

DECOMMISSIONING STATUS

MEETINGS ON

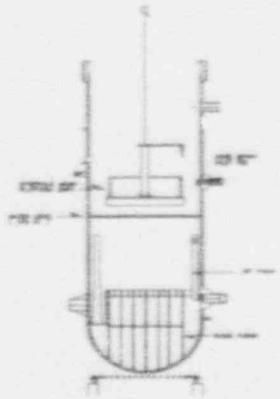
JULY 30, 1992

SHOREHAM DECOMMISSIONING STATUS

WEEK OF: JULY 27TH, 1992

LEGEND

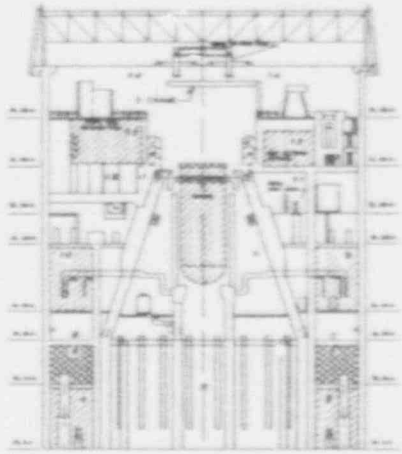
ELEVATION 175' STATUS



REACTOR PRESSURE VESSEL STATUS

DECOMMISSIONING WORK ZONES

1. DRYWELL
2. SUPPRESSION POOL
3. ELEVATION 91' - EAST
4. ELEVATION 91' - WEST
5. ELEVATION 40' - EAST
6. ELEVATION 40' - WEST
7. ELEVATION 93' - EAST
8. ELEVATION 93' - WEST
9. ELEVATION 78' - EAST
10. ELEVATION 78' - WEST
11. ELEVATION 113' - EAST
12. ELEVATION 113' - WEST
13. ELEVATION 135'
14. ELEVATION 175'

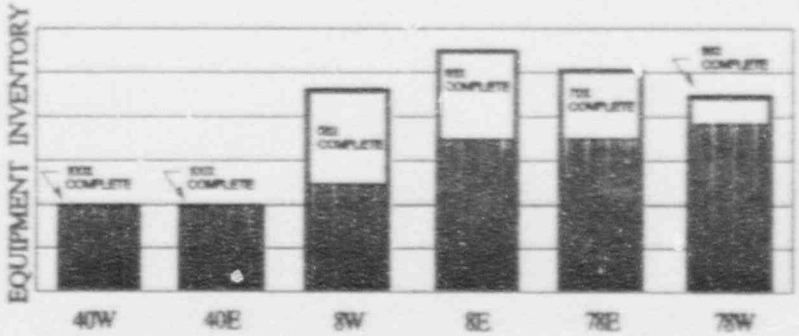


REACTOR BUILDING STATUS

ELEVATION 175' WORK

ACTIVITY	JULY M 27	JULY T 28	JULY W 29	JULY Th 30	JULY F 31	AUGUST S 1	AUGUST S 2	AUGUST M 3
INTERNALS WORK PLATFORM (IWP)	REVER JET PUMP RISERS AND BRACKETS						NO WORK	REVER JET PUMP RISERS AND BRACKETS
WET CUTTING STATION (WCS)	SEGMENT TOP SHROUD			SEGMENT JET PUMP INLET MIXERS AND RISERS			NO WORK	SEGMENT JET PUMP INLET MIXERS AND RISERS
CONTROL ROD BLADE DISPOSAL	PREP FOR LOADING LINER NO. 3 INTO SHIELDED BOX				LOAD LINER NO. 3 INTO SHIELDED BOX			

SYSTEM REMOVAL WORK



(SYSTEMS INCLUDED: CRD, R.R., CORE SPRAY, PROCESS SAMPLING)

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (1) Drywell

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Other Misc Components	17	0	17
Pipe	4,038	0	4,038
Valve	64	0	64
B31 Reactor Water Recirculation			
Other Misc Components	2	0	2
Pipe	2,156	0	2,156
Pump	2	0	2
Valve	43	0	43
C11 Control Rod Drive			
Pipe	750	0	750
C51 TIP System			
Other Misc Components	1	0	1
Pipe	6	0	6
E11 Residual Heat Removal			
Pipe	688	0	688
Valve	24	0	24
E21 Core Spray			
Pipe	407	0	407
Valve	10	0	10
E41 High-Pressure Coolant Injection			
Pipe	400	0	400
Valve	8	0	8
G33 Reactor Water Cleanup			
Pipe	264	0	264
Valve	15	0	15
G41 Fuel Pool Cleanup			
Pipe	131	0	131
Valve	3	0	3
P33 Process Sampling			
Pipe	143	0	143

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (1) Drywell

	Quantity To Remove	Quantity Removed	Quantity Remaining
Valve	5	0	5

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (2) Suppression Pool

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Pipe	332	0	332
E11 Residual Heat Removal			
Filter	3	0	3
Pipe	227	0	227
Valve	4	0	4
E21 Core Spray			
Filter	2	0	2
Pipe	10	0	10
G41 Fuel Pool Cleanup			
Other Misc Components	1	0	1
Pipe	144	0	144
Pump	1	0	1
Valve	3	0	3

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (3) Elev 8 East

	Quantity To Remove	Quantity Removed	Quantity Remaining
C11 Control Rod Drive			
Pipe	155	155	0
Valve	4	4	0
E11 Residual Heat Removal			
Heat Exchanger	3	0	3
Other Misc Components	4	2	2
Pipe	1,188	859	329
Pump	2	0	2
Valve	95	86	9
E21 Core Spray			
Pipe	441	406	35
Pump	2	0	2
Valve	42	39	3
E41 High-Pressure Coolant Injection			
Other Misc Components	2	0	2
Pipe	292	0	292
Switch	1	0	1
Valve	33	0	33
G41 Fuel Pool Cleanup			
Other Misc Components	3	0	3
Pipe	114	0	114
Valve	13	0	13
P33 Process Sampling			
Pipe	35	0	35

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (4) Elev 8 West

	Quantity To Remove	Quantity Removed	Quantity Remaining
C11 Control Rod Drive			
Pipe	53	53	0
E11 Residual Heat Removal			
Heat Exchanger	3	0	3
Other Misc Components	3	1	2
Pipe	1,290	845	445
Pump	2	0	2
Valve	103	86	17
E21 Core Spray			
Pipe	418	410	8
Pump	2	0	2
Valve	37	35	2
E41 High-Pressure Coolant Injection			
Other Misc Components	1	0	1
Pipe	80	0	80
Valve	3	0	3
G41 Fuel Pool Cleanup			
Pipe	87	0	87
Valve	1	0	1
P33 Process Sampling			
Pipe	55	0	55

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (5) Elev 40 East

	Quantity To Remove	Quantity Removed	Quantity Remaining
C11 Control Rod Drive			
Filter	1	1	0
Other Misc Components	10	10	0
Pipe	358	358	0
Valve	45	45	0
E11 Residual Heat Removal			
Pipe	518	518	0
Valve	22	22	0
E21 Core Spray			
Pipe	83	83	0
Valve	9	9	0
E41 High-Pressure Coolant Injection			
Pipe	23	0	23
G41 Fuel Pool Cleanup			
Pipe	23	0	23
P33 Process Sampling			
Pipe	111	111	0

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (6) Elev 40 West

	Quantity To Remove	Quantity Removed	Quantity Remaining
C11 Control Rod Drive			
Filter	1	1	0
Other Misc Components	3	3	0
Pipe	147	147	0
Valve	15	15	0
E11 Residual Heat Removal			
Other Misc Components	1	1	0
Pipe	523	523	0
Valve	30	30	0
E21 Core Spray			
Pipe	99	99	0
Valve	7	7	0
E41 High-Pressure Coolant Injection			
Pipe	23	0	23
G41 Fuel Pool Cleanup			
Pipe	32	0	32
Valve	4	0	4
P33 Process Sampling			
Pipe	101	101	0

ZONE: (7) Elev 63 East

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Pipe	73	0	73
Valve	16	0	16
B31 Reactor Water Recirculation			
Pipe	159	0	159
Valve	22	0	22
C11 Control Rod Drive			
Other Misc Components	4	0	4
Pipe	462	0	462
Valve	31	0	31
C51 TIP System			
Other Misc Components	5	0	5
Pipe	46	0	46
Valve	3	0	3
E11 Residual Heat Removal			
Pipe	753	0	753
Valve	55	0	55
E21 Core Spray			
Pipe	97	0	97
Valve	8	0	8
E41 High-Pressure Coolant Injection			
Pipe	113	0	113
Valve	6	0	6
G33 Reactor Water Cleanup			
Pipe	27	0	27
G41 Fuel Pool Cleanup			
Pipe	111	0	111
P33 Process Sampling			
Pipe	119	0	119

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (8) Elev 63 West

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Other Misc Components	2	0	2
Pipe	86	0	86
Valve	20	0	20
C11 Control Rod Drive			
Filter	2	0	2
Other Misc Components	8	0	8
Pipe	194	0	194
Valve	49	0	49
E11 Residual Heat Removal			
Pipe	693	0	693
Valve	56	0	56
E21 Core Spray			
Pipe	174	0	174
Valve	6	0	6
E41 High-Pressure Coolant Injection			
Pipe	77	0	77
Valve	18	0	18
G41 Fuel Pool Cleanup			
Pipe	106	0	106
P33 Process Sampling			
Other Misc Components	1	0	1
Pipe	22	0	22
Valve	5	0	5

ZONE: (9) Elev 78 East

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Other Misc Components	4	0	4
Pipe	273	0	273
Valve	59	0	59
C11 Control Rod Drive			
Other Misc Components	1	1	0
Pipe	5,286	5,264	22
Switch	7	7	0
Valve	50	50	0
C51 TIP System			
Other Misc Components	1	0	1
Pipe	79	0	79
Valve	3	0	3
E11 Residual Heat Removal			
Pipe	143	10	133
Valve	22	0	22
E21 Core Spray			
Pipe	85	0	85
Valve	12	0	12
G11 Liquid Radwaste			
Pipe	91	0	91
G33 Reactor Water Cleanup			
Pipe	366	0	366
Valve	17	0	17
G41 Fuel Pool Cleanup			
Pipe	93	0	93
Valve	4	0	4
P33 Process Sampling			
Pipe	139	0	139

ZONE: (10) Elev 78 West

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Other Misc Components	3	0	3
Pipe	439	0	439
Valve	67	0	67
C11 Control Rod Drive			
Pipe	4,557	4,557	0
Switch	8	8	0
Valve	26	26	0
E11 Residual Heat Removal			
Pipe	176	31	145
Valve	15	5	10
E21 Core Spray			
Pipe	87	54	33
Valve	13	12	1
E41 High-Pressure Coolant Injection			
Other Misc Components	1	0	1
Pipe	11	0	11
G11 Liquid Radwaste			
Pipe	79	0	79
G41 Fuel Pool Cleanup			
Pipe	257	0	257

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (11) Elev 112 East

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Pipe	24	0	24
Valve	9	0	9
C11 Control Rod Drive			
Pipe	28	0	28
Valve	7	0	7
G11 Liquid Radwaste			
Other Misc Components	7	0	7
Pipe	1,417	0	1,417
Switch	1	0	1
Tank	2	0	2
Pump	2	0	2
Valve	61	0	61
G33 Reactor Water Cleanup			
Heat Exchanger	5	0	5
Other Misc Components	2	0	2
Pipe	1,141	0	1,141
Valve	129	0	129
G41 Fuel Pool Cleanup			
Pipe	422	0	422
Valve	4	0	4
P33 Process Sampling			
Pipe	398	0	398

ZONE: (12) Elev 112 West

	Quantity To Remove	Quantity Removed	Quantity Remaining
B21 Nuclear Boiler			
Pipe	19	0	19
Valve	9	0	9
E11 Residual Heat Removal			
Pipe	14	0	14
Valve	4	0	4
G11 Liquid Radwaste			
Pipe	118	0	118
G33 Reactor Water Cleanup			
Pipe	6	0	6
G41 Fuel Pool Cleanup			
Other Misc Components	5	0	5
Pipe	1,250	0	1,250
Pump	2	0	2
Valve	30	0	30

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (13) Elev 150

	Quantity To Remove	Quantity Removed	Quantity Remaining
E11 Residual Heat Removal			
Pipe	2	0	2
Valve	2	0	2
G33 Reactor Water Cleanup			
Filter	3	0	3
Other Misc Components	5	0	5
Pipe	1,084	0	1,084
Tank	1	0	1
Pump	3	0	3
Valve	108	0	108
G41 Fuel Pool Cleanup			
Heat Exchanger	2	0	2
Other Misc Components	36	0	36
Pipe	1,514	0	1,514
Pump	2	0	2
Valve	54	0	54
P33 Process Sampling			
Heat Exchanger	1	0	1
Other Misc Components	2	0	2
Pipe	448	0	448
Switch	1	0	1
Valve	15	0	15

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (20) Turbine Bldg

	Quantity To Remove	Quantity Removed	Quantity Remaining
G33 Reactor Water Cleanup			
Pipe	469	0	469
G41 Fuel Pool Cleanup			
Pipe	1,013	0	1,013
Valve	2	0	2

SORTED BY ZONE, SYSTEM, MATERIAL TYPE
PROGRESS THROUGH 07/29/92

ZONE: (30) Radwaste Bldg

	Quantity To Remove	Quantity Removed	Quantity Remaining
G11 Liquid Radwaste			
Pipe	50	0	50
Valve	7	0	7
G33 Reactor Water Cleanup			
Pipe	40	0	40
G41 Fuel Pool Cleanup			
Other Misc Components	2	0	2
Pipe	603	0	603
Tank	1	0	1
Valve	23	0	23
K52 Condensate Demineralizer			
Other Misc Components	4	0	4
Pipe	560	0	560
Tank	1	0	1
Pump	6	0	6
Valve	32	0	32

STATUS OF RPV INTERNALS SEGMENTATION

AFTER RECEIPT OF THE DECOMMISSIONING ORDER, THE FOLLOWING RPV INTERNALS WERE REMOVED AND SEGMENTED:

1. TEN IRM/SRM DRY TUBES WERE CUT/REMOVED AND TEMPORARILY STORED IN THE SPENT FUEL STORAGE POOL. TWO OF THE TWELVE DRY TUBES STILL REMAIN IN THE RPV. THEY WILL BE REMOVED AT A LATER DATE.

2. THE TOP GUIDE WAS REMOVED, PLACED IN THE WCS, SEGMENTED, PLACED IN LINERS, AND SHIPPED OFF-SITE.

3. THE INTERNAL FEEDWATER AND CORE SPRAY SPARGER PIPING HAS BEEN REMOVED, PLACED IN C-VANS AND SHIPPED OFF-SITE.

4. THE MS/SD GUIDE RODS HAVE BEEN CUT, REMOVED AND AWAIT FURTHER SEGMENTATION IN THE WCS.

5. THE SHROUD ABOVE THE CORE PLATE WAS CUT INTO THREE RING SECTIONS AND REMOVED FROM THE VESSEL:
   -THE TOP SHROUD RING IS CURRENTLY BEING SEGMENTED IN THE WCS.
   -THE OTHER TWO SHROUD RINGS HAVE BEEN SEGMENTED IN THE WCS, PLACED IN LINERS, AND SHIPPED OFF-SITE.

6. THE JET PUMP HOLDOWN BEAMS WERE SEVERED TO RELEASE THE RAMS HEAD FROM THE DIFFUSER AND RISER SECTION.

7. TEN RAMS HEAD WERE REMOVED AND PLACED IN THE WCS AND AWAIT FURTHER SEGMENTATION.

8. TEN JET PUMP RISES ADAPTERS WERE CUT, REMOVED, AND PLACED IN THE WCS. THEY WILL BE PLACED IN LINERS FOR SHIPMENT OFF-SITE.

9. TEN JET PUMP RISERS WERE FURTHER CUT, REMOVED, AND PLACED IN THE WCS AND AWAIT FURTHER SEGMENTATION.

COMPONENT DOSE RATES

COMPONENT	DOSE RATE
RPV INTERNALS:	
Top Guide	94 R/hr @ 6" water
Dry Tubes	49 R/hr - contact
Core Shroud	9 R/hr @ 6" water
Jet Pumps	2 R/hr - contact
Core Plate	1 R/hr - contact
Guide Tubes	120 mR/hr - contact
Steam Separator	2 mR/hr - contact
Steam Dryer	< 1 mR/hr - contact
NUCLEAR FUEL	94 R/hr - contact
CONTROL ROD BLADES	100 R/hr - contact
RPV EXTERIOR (DRY)	<5 mR/hr - contact
RECIRCULATION PIPING	0.3 mR/hr - contact

GENERAL AREA DOSE RATES

AREA	DOSE RATE
Refuel Floor - 175' el	< 0.5 mR/hr
Rx Cavity	0.5 mR/hr
Wet Cutting Station	0.5 mR/hr
Drywell	< 0.5 mR/hr
Rx Building	< 0.5 mR/hr
Radwaste Building	< 0.5 mR/hr
Turbine Building	< 0.5 mR/hr

CURIE INVENTORY

COMPONENT	CURIES
Nuclear Fuel	176,000
Control Rod Blades	960
Reactor Vessel (including internals)	600
Systems	0.003