



## LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

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JOHN D. LEONARD, JR.  
VICE PRESIDENT - NUCLEAR OPERATIONS

NOV 12 1985

SNRC-1215

Dr. Thomas E. Murley  
Regional Administrator  
Office of Inspection and Enforcement  
Region I  
U.S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

Startup Testing Program Activities  
Executive Summary  
Shoreham Nuclear Power Station  
Docket No. 50-322

Dear Dr. Murley:

The Shoreham Nuclear Power Station has recently completed the low power test program granted under our 5% license. In general, the test program produced satisfactory results. Four systems on which corrective modifications or repairs are being made during the present outage will require some retesting.

Presently Shoreham is in an outage mode to perform regulatory required electrical equipment environmental qualification modifications and other plant enhancements as described in the summary report. Upon completion of the outage, Shoreham will again proceed to 5% power to perform minor HPCI and RCIC testing for the purpose of controls tuning, supplementary testing on the reactor vessel water level instrumentation corrective modification, and to synchronize the main generator to check its proper electrical performance.

The 5% testing program has confirmed what the ASLB has previously ruled, Shoreham is a well designed and constructed plant. Our operating staff and support organization have demonstrated their ability to operate the plant safely. We eagerly look forward to resolution of the emergency planning controversy so that Shoreham can complete its power ascension testing and make a vital contribution to the energy picture on Long Island.

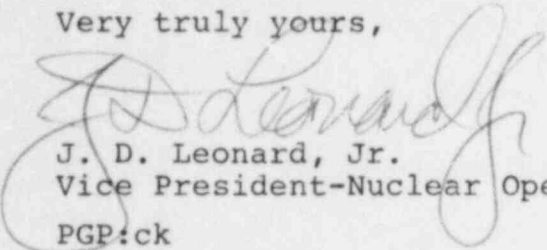
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Attached is a summary report of the program.

If there are any questions, please contact this office.

Very truly yours,



J. D. Leonard, Jr.  
Vice President-Nuclear Operations

PGP:ck

Attachment

cc: J. A. Berry

## Executive Summary Report Low Power Testing

### I. History

Operating License NPF-19 was issued to the Shoreham Nuclear Power Station by the U.S. Nuclear Regulatory Commission on December 7, 1984. This license granted permission for fuel loading and the performance of initial criticality testing. The decision, by an Atomic Safety and Licensing Board of the Nuclear Regulatory Commission, that the Trans America DeLaval Inc. diesel generators are qualified to provide emergency electrical power was issued on June 17, 1985. Operating License NPF-36 was issued on July 3, 1985. This license authorized low power testing at the Shoreham Nuclear Power Station at power levels not to exceed 5% of rated power.

Fuel loading commenced on December 21, 1984 and was completed on February 8, 1985. Initial criticality occurred on February 15, 1985. The procedures for low power testing commenced on July 7, 1985 and rated temperature and pressure were first achieved on August 19, 1985. Low power testing under the 5% power license has been completed and the plant was shut down on October 8, 1985.

### II. Testing Program

In conjunction with fuel loading several startup tests described in the FSAR were performed. Initial testing included the control rod drive mechanisms, main steam isolation valves and nuclear instrumentation. Collection of base line data for several nuclear processes was also included in this testing. A reactor shutdown margin demonstration and a reactivity anomalies test were performed in conjunction with the initial criticality. Various other nuclear instrumentation tests were successfully performed together with plant critical operation. Subsequent to the initial criticality numerous reactor plant criticals were performed for operator training and equipment checkout.

Following receipt of the Low Power Testing License (NPF-36), plant startup for test condition "heat-up" commenced after ambient temperature data had been gathered. The plant was stabilized at the initial temperature/pressure plateau on July 11, 1985. This was followed by a series of tests, data collection and inspections at each of various operating plateaus of higher temperature/pressure as plant heat-up progressed. These "heat-up" tests included:

- o nuclear instrumentation response performance and calibration
- o piping and pressure systems thermal expansion and vibration

- o control rod drive mechanism testing
- o cooling systems performance
- o feedwater and reactor water level control system operation and tuning
- o safety relief valve operability
- o suppression pool cooling
- o high pressure coolant injection (HPCI) testing
- o reactor core isolation cooling (RCIC) testing
- o reactor recirculation system
- o residual heat removal
- o condenser offgas and gaseous radwaste
- o reactor building/control building chilled water/ventilation
- o main steam isolation valves
- o reactor water cleanup
- o reactor building/drywell cooling
- o loose parts monitoring
- o operability demonstration of the various balance of plant (BOP) support systems as an integrated plant

While at rated temperature and pressure numerous other tests described in the FSAR were conducted. These rated condition tests included:

- o operation, tuning and testing HPCI and RCIC including HPCI and RCIC endurance runs and a RCIC vessel injection;
- o nuclear steam supply system and BOP piping and pressure vessel inspection for thermal expansion and vibration;
- o control rod drive testing;
- o cooling water systems performance testing;
- o plant instrumentation and control systems operation and calibration;
- o radiation and radiochemistry baseline data collection;
- o main steam isolation valve testing;
- o safety relief valve testing;
- o operation and tune-up of the reactor water cleanup system;
- o baseline data collection for nuclear instrumentation;
- o operation and tuning of the recirculation flow control system;
- o check out of the BOP systems as an integrated system.

At the conclusion of the FSAR related test program, the main turbine generator was rolled to synchronous speed for an initial check of machine balance to evaluate and tune the turbine control system.

The 5% test program formally exercises about 29 of the 59 formal power ascension test procedures. In conducting those 29 procedures, approximately 95% of all plant components or systems were operated during the 5% testing program. Therefore, the 5% test program is capable of identifying significant problem areas.

Activities related to pipe expansion checks gives an indication of the effort expended on the test procedures. Pipe expansion checks are designed to confirm that pipes expand as designed and that there is no binding on supports or other pipes or structures. Approximately 29,000 manhours have been required to set up the program, to conduct training and to perform the in-plant inspections. Many of the tests required entrance to the primary containment while at power. There have been a minimum of problems identified. Resolution of the problems generally involved trimming of insulation or adjustments to hangers and rupture restraints.

During plant "heat-up" testing an operational problem was discovered with the reactor water level indicating system. This problem first became apparent on instruments associated with the "A" reference leg when the instruments demonstrated an offset when compared to the "B" leg instruments. The problem was traced to a water seal which had developed in the line which communicates steam from the reactor pressure vessel to the reference leg condensing pot. The problem was corrected by installation of a hanger on the line. The same problem was subsequently observed on level instruments associated with the "B" reference leg. The cause of the problem was also traced to a water seal which had developed between the reactor pressure vessel and the condensing pot. This problem was also corrected with the addition of a hanger and with improved insulation on the instrument line.

### III. Overview of the Outage

As was previously stated, the plant was shut down on October 8, 1985. This shutdown is required to make several important plant modifications. They are: replace the expired neutron sources; install various pieces of equipment necessary to satisfy the Commission regulation concerning environmental qualification of electrical equipment; increase the number of fire detectors and relocate others to provide better plant protection; make necessary changes to the post-accident sampling facility; and other modifications.

In addition to the above modifications, LILCO is currently considering further modifications to the "A" and "B" water level instrumentation reference legs and other plant enhancements. If we decide to make these additional changes, the outage will extend into the first quarter of 1986.



Upon plant restart, we will perform some testing of the HPCI and the RCIC systems, test the modification of the water level indication system and the electrical performance of the main generator.

#### IV: Plant Readiness

At the completion of this shutdown and retest, the Shoreham Nuclear Power Station will be capable and ready for full power testing and operation.

The plant has been proven safe and its operational staff have proven to be capable at this level of operation. The testing confirms a well designed and constructed plant. The problems with the RPV level system have been identified and are being corrected. Licensee Event Reports were not excessive from our review of plants in a similar stage in the power ascension test program.

The single remaining requirement for full power operation is to obtain government approval of the emergency plan together with a successful graded drill. FEMA has recently sent a letter to the NRC concerning its plans to conduct such a drill.