



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO GENERIC LETTER 83-28, ITEMS 3.1.1, 3.1.2, 3.2.1, 3.2.2 AND 4.5.1  
LONG ISLAND LIGHTING COMPANY  
SHOREHAM NUCLEAR POWER STATION  
DOCKET NO. 50-322

1.0 INTRODUCTION

On February 25, 1983, both of the scram circuit breakers at Unit 1 of the Salem Nuclear Power Plant failed to open upon an automatic reactor trip signal from the reactor protection system. This incident occurred during the plant startup, and the reactor was tripped manually by the operator about 30 seconds after the initiation of the automatic trip signal. The failure of the circuit breakers has been determined to be related to the sticking of the undervoltage trip attachment. Prior to this incident, on February 22, 1983, at Unit 1 of the Salem Nuclear Power Plant, an automatic trip signal was generated due to a steam generator low-low level during plant startup. In this case, the reactor was tripped manually by the operator almost coincidentally with the automatic trip.

Following these incidents, on February 28, 1983, the NRC Executive Director for Operations (EDO), directed the staff to investigate and report on the generic implications of these occurrences at Unit 1 of the Salem Nuclear Power Plant. The results of the staff's inquiry into the generic implications of the Salem incidents are reported in NUREG-1000, "Generic Implications of ATWS Events at the Salem Nuclear Power Plant." As a result of this investigation, the Director, Division of Licensing, Office of Nuclear Reactor Regulation requested (by Generic Letter 83-28 dated July 8, 1983) all licensees of operating reactors, applicants for an operating license, and holders of construction permits to respond to certain generic concerns. These concerns are categorized into four areas: (1) Post-Trip Review, (2) Equipment Classification and Vendor Interface, (3) Post-Maintenance Testing, and (4) Reactor Trip System (RTS) Reliability Improvements. With each of these areas, various specific actions were delineated.

This safety evaluation (SE) addresses the following actions of Generic Letter 83-28:

3.1.1 and 3.1.2, Post Maintenance Testing (Reactor Trip System Components)

3.1.2 and 3.2.2, Post Maintenance Testing (All Other Safety-Related Components)

4.5.1, Reactor Trip System Reliability (System Functional Testing)

By the letters dated March 9, 1984, June 21, 1985 and June 6, 1986, Long Island Lighting Company described their planned and completed action regarding the above items for the Shoreham Nuclear Power Station (SNPS).

## 2.0 EVALUATION AND DISCUSSION

### 2.1 General

Generic Letter 83-28 included various NRC staff positions regarding the specific actions to be taken by operating reactor licensees and operating license applicants. The Generic Letter 83-28 positions and discussions of licensee compliance regarding Actions 3.1.1, 3.1.2, 3.2.1, 3.2.2 and 4.5.1 for Shoreham Nuclear Power Station are presented in the section that follows.

### 2.2 Action 3.1.1, Post Maintenance Testing (Reactor Trip System Components)

#### Position

Licensee and applicants shall submit the results of their review of test and maintenance procedures and Technical Specifications to assure that post maintenance operability testing of safety-related components in the reactor trip system is required to be conducted and the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service.

#### Evaluation

In letters dated March 9, 1984 and June 6, 1986, the licensee stated that their Station procedures SP12.013.01, "Maintenance Work Request," (MWR) outlines the requirement for post maintenance operability test (Postwork Tests) following a component maintenance or repair. The required post maintenance operability test is determined by the Operations Section and documented on the MWR form. An Operations Section procedure SP21.001.02, "Return of Safety Related Components to an Operable Status," supplementing SP12.013.01, "Maintenance Work Request," was issued to improve the method by which MWRs are handled for retests. The procedure also provides guidelines for determining the extent of post-maintenance operability testing for the various plant components.

The staff's review of the station surveillance and maintenance work request procedures determined that the licensee documentation

reflected the requirements of their Technical Specifications in that post-maintenance operability testing of safety-related components in the reactor trip system is required. Based on the above and a review of Operating Station Procedures, the staff concluded that the licensee's actions are consistent with the staff's position for action 3.1.1 of Generic Letter 83-28 and, therefore, are acceptable.

2.3 Action 3.1.2, Post Maintenance Testing  
(Reactor Trip System Components)

Position

Licensees and applicants shall submit the results of their check of vendor and engineering recommendations to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications, where required.

Evaluation

In letters dated March 9, 1984 and June 6, 1986, the licensee stated that appropriate vendors and engineering recommendations have been or are being incorporated in the test and maintenance procedure and technical specification. The licensee stated that their Station Procedure SP12.007.01, "Technical Correspondence and Bulletins," assures that all incoming correspondence such as bulletin and vendor information is properly tracked and assigned for action within the Shoreham Plant Staff and the necessary updates to existing procedures and programs are made, as appropriate. The review of engineering and vendor data are being incorporated in the test and maintenance procedures and the Technical Specification through the direction of Department level procedures. Licensee procedure SP12.007.01 defines the method used by the various Departments to review their procedures to assure that engineering and vendor data are applicable to the procedure. During the staff review of the licensee's station procedures it was determined that the vendor and other source material were included in the "references" section of the procedures. Based on the licensee's responses and the review of the procedures, the staff concluded that the licensee's actions are consistent with the staff position for action 3.1.2 of Generic Letter 83-28 and, therefore, are acceptable.

2.4 Action 3.2.1 and 3.2.2, Post Maintenance Testing (All Other Safety-Related Components)

Position

Item 3.2.1, licensees and applicants shall submit a report documenting the extending of test and maintenance procedures and

Technical Specifications review to assure that post-maintenance operability testing of all safety-related equipment is required to be conducted and that the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service. Item 3.2.2, licensees and applicants shall submit the results of their check of vendor and engineering recommendations to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications were required.

#### Evaluation

In letters dated March 9, 1984 and June 6, 1986, the licensee states that their response to NRC's Generic Letter 83-28 item 3.1. was applicable to all other safety-related components.

The staff review determined that all safety-related components are required to be reviewed and that this review does verify that both engineering and vendor data are considered to assure that appropriate guidance is included. Based on the review of test procedures, test data results and maintenance instructions, the staff concludes that the licensee's actions are consistent with the staff's position for actions 3.2.1 and 3.2.2 of Generic Letter 83-28 and, therefore, are acceptable.

#### 2.5 Action 4.5.1, Reactor Trip System Reliability (System Functional Testing)

##### Position

On-line functional testing of the reactor trip system, including independent testing of the diverse trip features, shall be performed on all plants. The diverse trip features to be tested include the breaker undervoltage and shunt trip features on Westinghouse, B&W and CE plants; the circuitry used for power interruption with the silicon controlled rectifiers on B&W plants; and the scram pilot valve and backup scram valves (including all initiating circuitry) on GE plants.

##### Evaluation

In a letter dated June 21, 1985, the licensee indicated that they will recommend an appropriate change to the SNPS Technical Specifications which will incorporate the requirement for testing the backup scram valves during each refueling outage. Their present procedures require testing of the scram system including the scram pilot valves to comply with their Technical Specifications requirement. The licensee has explained and the staff agrees, that

the reactor trip system currently is not designed to permit periodic on-line functional testing of backup scram valves. Justification for not making modifications to permit on-line testing has been reviewed separately by the staff under Action Items 4.5.2 and 4.5.3 of Generic Letter 83-28, as stated in the staff's letter to the licensee dated April 11, 1985.

Pursuant to Generic Letter (GL) 83-28 and the staff's prior evaluation letter to the licensee dated April 11, 1985, the backup scram valves (including all initiating circuitry) shall be functionally tested on a refueling frequency. The staff concludes that the licensee shall complete the first such testing prior to initially exceeding 5% power. The staff further concludes that pursuant to GL 83-28, item 4.5, the licensee shall submit a technical specification change at least six months prior to the first refueling outage stipulating a surveillance requirement to functionally test the backup scram valves (including initiating circuitry) at a refueling outage frequency.

Based on the above, the staff concludes that the licensee has complied with the NRC staff position for Action 4.5.1 of Generic Letter 83-28.

### 3.0 CONCLUSION

Based upon the foregoing discussion, the staff concludes that the licensee has complied with Actions 3.1.1, 3.1.2, 3.2.1, 3.2.2 and 4.5.1 of Generic Letter 83-28.

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Dated: September 19, 1988