

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

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 4 TO FACILITY OPERATING LICENSE NO. NPF-38

#### LOUISIANA POWER AND LIGHT COMPANY

#### WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

#### 1.0 INTRODUCTION

By letter dated February 19, 1986, as supplemented by letters dated February 27, 1986, March 4, 1986 and March 17, 1986, Louisiana Power and Light Company (licensee), requested thanges to the Technical Specifications (Appendix A to Facility Operating License NPF-38) for the Waterford Steam Electric Station, Unit 3. The proposed changes would revise (1) Technical Specification 4.6.1.2 by delaying the performance of Type B and Type C local leak rate testing (LLRT) required by Appendix J to 10 CFR Part 50 until the first refueling outage and (2) Technical Specification 4.8.1.1.2 by extending the first Emergency Diesel Generator (EDG) inspection interval until the first refueling outage and conducting subsequent inspection at intervals not to exceed 24 months.

### 2.0 DISCUSSION

Technical Specifications 4.6.1.2.d and f require that LLRT be conducted at intervals of no greater than 24 months. Because the LLRT (Type B and C) was completed on April 22, 1984, the above technical specification would require an extended mid-cycle plant shutdown to complete this surveillance in April 1986. The licensee has requested that the technical specifications be revised to permit a delay of this testing to the first refueling outage currently scheduled to start between December 15, 1986 and March 1, 1987. This delay will also put future testing on a schedule coincident with future refueling outages.

Technical Specification 4.8.1.1.2.d.1 requires that an inspection of the EDGs be conducted every 18 months during shutdown in accordance with procedures prepared in conjunction with the manufacturer's recommendations. Inspection of the EDGs would be required in June 1986. This date is based on issuance of the facility operating license in December 1984 and would have reasonably coincided with a refueling outage if the original schedule for commercial operation had been maintained. Commercial operation, however, was delayed. Consequently, the June 1986 date now coincides with an anticipated period of

8604230296 860414 PDR ADOCK 05000382 PDR full power operation. To conduct the EDG inspection as scheduled will require a lengthy, unscheduled outage. Moreover, subsequent EDG inspections would also be out of synch with refueling outages if Waterford 3 adopts a 24-month fuel cycle, as currently planned. The licensee has requested that the initial inspection interval be increased by approximately seven to ten months to coincide with the first Waterford refueling outage and that the inspection interval for subsequent inspections be increased to 24 months.

#### 3.0 EVALUATION

### Type B and Type C Containment Leakage Rate Testing

The licensee indicated that the containment is very leak tight. The initial LLRT for the plant demonstrated an actual leak rate of less than 3% of the technical specification allowable limit. Current leakage is only slightly above this value (less than 4% of allowable). Similarly, initial and current bypass leakage is well within (less than 10% of) the allowable limit. Further, the licensee indicates that only limited maintenance has been performed on components which maintain containment integrity, and satisfactory Type B postmaintenance and testing was performed in each case. The containment leak tightness has also been borne out by the periodic (every one to two days) need to relieve containment pressure in order to stay within technical specification containment pressure limits. The licensee has also indicated that the containment air lock and containment purge system (supply and exhaust) which are potentially significant leak paths and receive periodic exercising will continue to be leak tested in accordance with separate Technical Specifications, 3.6.1.3 and 3.6.1.7, respectively.

The licensee points out that the delay in receipt of the operating license (a period of approximately eight months) is the major reason why the Appendix J LLRT schedule does not coincide more closely with the first refueling outage. During this delay, the containment was not under stress as the plant was not operating, thus containment isolation valves were not exercised and received very limited wear. Because of this initial low usage factor, no appreciable additional leakage is expected from Type B and C equipment during the requested extension period over that which might occur during a normal Appendix J schedule period from refueling to refueling, as the greatest wear occurs during power operation when the systems are in use.

In addition to the above, by letter dated February 27, 1986, in response to a staff request, the licensee provided supplemental information in support of the schedular exemption request in order to gain added assurance of current containment integrity. Specifically, the licensee was requested to determine those Type B and C components that could be tested in accordance with the existing requirements of Technical Specifications 4.6.1.2.d and f prior to exceeding the April 22, 1986 LLRT completion schedule requirement.

In their response, the licensee identified those Type B and C components which are testable while the plant is at power and those which if not testable at power should be tested during a currently planned two week outage scheduled for March 1986. The licensee indicated that all electrical penetrations may be tested during power operation since the test can be accomplished from outside containment. However, the remaining components identified in Technical Specification Table 3.6-1 (73 valves) require containment entry for leak rate testing and thus present a concern for radiological exposure to the test personnel. Of these 73 valves, approximately 47 are in systems which can be isolated for testing at power and do not have other technical specification restrictions on them.

In order to assess the exposure to workers for testing these 47 valves, the licensee performed an evaluation of the dose consequences to personnel based on available information regarding the containment conditions, radiation surveys, number of workers, and time required to perform a test of each penetration. The results indicate a total minimum dose of 14.3 man-rem which the licensee views as unacceptably high and unwarranted given the current leak tightness of the containment. Thus, containment isolation valve testing at power was not considered feasible.

The licensee also examined the listing of valves in Technical Specification Table 3.6-1 to determine those which should be tested during the two week outage. Four penetrations (eight valves of the total of 73 listed) were identified for leak testing during the March 1986 outage on the basis of relative frequency of cycling, a history of leakage, leakage potential based on Nuclear Plant Reliability Data System generic data, or the need for rework and retesting from the previous LLRT. The remaining 65 valves are to be tested at the first refueling outage. Valves which show adverse leakage prior to the first refueling outage will be reworked and restested as necessary.

The staff has reviewed the information presented by the licensee and compared the current status of the Waterford containment and the additional licensee commitments against the intent of the criteria of Type B and C leak testing as contained in Appendix J to 10 CFR 50. Appendix J states that this testing "shall be performed during reactor shutdown for refueling, or other convenient intervals but in no case at intervals greater than two years." The intent of Appendix J for LLRT therefore is to permit a full cycle of operation prior to performing the test. Because of the time and containment access requirements for the testing, a refueling outage becomes the only practical or convenient normal interval for which to plan and perform the LLRT. This interval is appropriate since the greatest usage, wear, and potential degradation of containment integrity occurs with the plant at power. On this basis, the staff concludes that the licensee's justification which includes the current leak tightness of the containment, and less than a full operating cycle on Type B and C components because of the initial licensing delay is valid. The staff further concludes that the licensee's evaluation of the practicality and consequences of testing without an extended shutdown, performance of the above identified additional leak rate testing prior to the April 22, 1986 Appendix J

schedule requirement and continued perodic surveillance of the airlock and containment purge valves provides satisfactory additional assurance of containment integrity. The staff therefore, concludes that the licensee's requested one-time change to Technical Specifications 4.6.1.2.d and f to extend the schedule for performance of the Type B and C containment LLRT to the first refueling outage is acceptable. The staff also concludes that an exemption to the schedular requirements of Appendix J to 10 CFR Part 50 for Type B and C testing should be granted.

### Emergency Diesel Generator Surveillance

The staff's concern is for any potential impact on EDG reliability as a consequence of extending the first EDG inspection interval by as much as 10 months. To evaluate any impact, the staff has reviewed the licensee's submittal, EDG surveillance requirements, Waterford EDG operating history. industry experience with this type of EDG, and the licensee's program for monitoring EDG performance/condition. To date, the EDGs at Waterford, combined, have operated in excess of 1000 hours, have experienced a total of 100 starts (both planned and unplanned), but have had only one failure. This single failure was due to erratic governor operation during a routine surveillance test, which was manually terminated prior to completing the minimum one-hour run. The erratic governor operation was remedied by adjustments to the electronic governor module sensitivity and gain. Such adjustments are not uncommon during early operation of electronic governors and are not indicative of chronic problems. To date, there have been no additional governor problems. Based on the above operating history, the EDGs at Waterford have a demonstrated reliability which is better than the industry average. Between now and the first refueling outage, the EDGs will be tested at least once in every 31 days to demonstrate ongoing operability. Successful testing during this period will enhance reliability figures. In addition to surveillance testing, the licensee has committed to periodic analysis of critical diesel engine pressure and vibration parameters using an engine analyzer manufactured by the engine vendor (Cooper-Bessemer). The vendor has provided a base line plot of these critical engine parameters for the EDGs at Waterford which show the diesel engines to be in good condition. These data will provide the basis against which the periodic analysis results will be compared to determine any significant changes or trends. Engine analysis will provide valuable information regarding continued EDG operability or, if applicable, degradation of operability. Analysis results showing engine degradation would provide advance warning of EDG failure (excepting catastrophic) in sufficient time to allow for safe plant shutdown.

At the present time, there are no known generic problems with EDGs produced by Cooper-Bessemer for nuclear service which would challenge the demonstrated reliability of the Waterford EDGs.

Based on the above evaluation, the staff concurs with the licensee's safety analysis, and concludes that extending the first interval for EDG inspection by approximately 10 months is acceptable.

Inspection of EDGs is conducted periodically for the purpose of evaluating continued operability through physical inspection of various EDG components/ systems. The actual condition of the inspected components/systems is evaluated with respect to the condition which could be expected for components/ systems having that length and type of service, or against new conditions, as applicable. The periodic inspections are a means of confirming reliability data established through surveillance testing. Inspection results, in combination with EDG operating history, form the bases for developing confidence levels regarding continued EDG operability reliability.

At present, EDG inspections are required every 18 months. This interval is convenient as it corresponds to the normal refueling cycle for nuclear plants. Since these inspections require rendering the EDG inoperable, they are scheduled to coincide with refueling outages so as to eliminate any unnecessary plant shutdown. Extension of the inspection interval by six months to coincide with an anticipated 24-month refueling cycle would have little or no effect on EDG reliability. During this six-month period, EDG operability would still be demonstrated at least once per 31 days, and diesel engine performance parameters would still be monitored. In normal service, the EDGs at Waterford could be expected to see 10 to 50 hours of operation during this six-month period. This is insignificant when considered in light of the usable life at these EDGs which is measured in tens of thousands of hours. Therefore, delaying inspection by six months or 50 operating hours would not have a measurable effect on EDG reliability.

Based on the above, the staff concludes that extending the EDG inspection interval to a maximum of 24 months as proposed by the licensee does not constitute a risk to public health and safety. The proposed Technical Specification change is, therefore, acceptable.

## 4.0 CONTACT WITH STATE OFFICIAL

The NRC staff has advised the Administrator, Nuclear Energy Division, Department of Environmental Quality, State of Louisiana of the proposed determination of no significant hazards consideration. No comments were received.

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#### 5.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes in the installation or use of facility components located within the restricted area. The staff has determined that the amendment involves no significant increase in the amounts of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupation radiation exposure. The Commission has previously issued proposed findings that the amendment involves no significant hazards consideration, and there has been no public comment on such findings. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

## 6.0 CONCLUSION

Based upon our evaluation of the proposed changes to the Waterford 3 Technical Specifications, we have concluded that: there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public. We, therefore, conclude that the proposed changes are acceptable, and are hereby incorporated into the Waterford 3 Technical Specification.

Dated: April 14, 1986