

UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 79 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By application for license amendment dated March 5, 1993, Union Electric Company (the licensee) requested changes to the Technical Specification (TS) Surveillance Requirement 4.7.8.d. The amendment would allow a one-time schedule extension of the snubber surveillance requirement for a transient event inspection, for the Callaway Plant, Unit 1. The change was requested in response to an event that occurred at Callaway involving a water hammer in the Chemical and Volume Control System (CVCS) alternate charging line.

The CVCS charging system performs several non-accident functions. These include: maintaining the water inventory in the Reactor Coolant System (RCS), providing Reactor Coolant Pump (RCP) seal injection, controlling RCS chemistry conditions, activity levels and boric acid concentration, and providing a means of filling and pressure testing the RCS. The charging line system is divided into two subsystems, seal injection and charging line. The seal injection subsystem diverts a portion of the CVCS charging flow to the RCP seals. The charging line subsystem is divided into the normal charging line and the alternate charging line. The normal charging line discharges into the RCS loop one cold leg and is the normal, at power flow path of charging flow into the RCS. The alternate charging line discharges into the RCS loop four cold leg and is used when there is a malfunction of the normal charging line isolation valve.

During a routine monthly containment entry, the alternate charging line isolation valve BGHV8147 was found to have a packing leak. A work authorization to tighten the packing gland was generated and completed. On October 30, 1992, a water hammer occurred in the line when the valve was stroked open for post-maintenance testing. Subsequent root cause evaluation determined that steam void formation in the alternate charging line was due to depressurization caused by the leakage from the isolation valve. When the valve was stroked, the void collapsed and caused the water hammer.

As a result of the water hammer, a transient event was declared and TS 4.7.8.d Transient Event Inspection was entered. TS 4.7.8.d requires a physical inspection to be performed within six months of the transient. Since TS 4.7.8.d was entered on October 30, 1992, the inspection of all snubbers installed on the alternate charging line would have to be performed by April 30, 1993. A large portion of this line is within the biological shield in containment, and is inaccessible while the plant is at power. Therefore, the licensee has requested to extend the surveillance time requirement for these snubbers until November 1, 1993 (during the next refueling outage) or the next entry into Mode 3, whichever occurs first.

2.0 EVALUATION

As a basis for this request, the licensee provided an evaluation of a previous water hammer event which occurred during the fourth refueling outage at Callaway. The event occurred in the alternate charging line during refilling of the RCS. During the subsequent inspection, the pair of snubbers which make up hanger BG21-R005 was found to be damaged. No other damage to the piping components was observed. The piping system was re-analyzed with the failed snubber and shown to be within ASME code allowable limits. The licensee concluded that if snubber failure were to occur, it would occur to these same snubbers. As additional justification for the request, the licensee noted that Wolf Creek Generating Station experienced a water hammer event estimated to be of similar magnitude in their alternate charging line. The same snubbers were found to be damaged. No other piping components were damaged and the system was able to perform its intended function. Wolf Creek is a Standard Nuclear Unit Power Plant System and is nearly identical in design to Callaway.

Hanger BG21-R005 is mounted as an axial restraint to the alternate charging line. Since transient forces act predominantly in the axial direction, BG21-R005 will be the first restraint to experience the impact loading. Were BG21-R005 to fail, subsequent movement will allow forces to be transmitted to rigid supports BG21-C006 and BG21-C007. These supports exhibited no damage during the previous water hammer events at Callaway and Wolf Creek.

During an Engineered Safety Features actuation, the alternate charging line is isolated by two motor operated containment isolation valves. Consequently, the use of the alternate charging line is not required in any Final Safety Analysis Report Chapter 15 analyses. Therefore, the alternate charging line is not required for the safe shutdown of the plant nor to mitigate the consequences of postulated accidents.

Based on the staff evaluation above, the staff concludes that the proposed Technical Specification modification concerning the one-time schedule extension for the snubber transient event inspection for snubbers on the alternate charging line is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Missouri State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (58 FR 16247). Accordingly, this 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.

5.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: April 27, 1993