U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No.: 50-483/92014(DRS)

Docket No.: 50-483 License No.: NPF-30

Licensee: Union Electric Company
Post Office Box 149 - Mail Code 400
St. Louis, MO 63166

Facility Name: Callaway Nuclear Plant

Inspection At: Steedman, MO 65077

Inspection Conducted: November 2 through 20, 1992

Inspectors: _____ 12-8-92
M. P. Huber Date

_____ 12-8-92
J. F. Smith Date

Approved By: _____ 12-8-92
J. M. Jacobson, Chief Date
Materials & Processes Section

Inspection Summary

Inspection conducted November 2 through 20, 1992 (Report No. 50-483/92014(DRS))
Areas Inspected: Announced safety issues inspection of the licensee's inservice testing (IST) program (TI 2515/110), the licensee's program on check valves (TI 2515/114), and licensee self assessment in these areas.
Results: The inspection disclosed no open items, violations or deviations.

The following strengths were identified during the inspection:

- The training of personnel in the maintenance of pumps and valves was enhanced by an operating closed loop hydraulic system provided exclusively for training.

- Management and engineering attention was directed to the implementation of the IST and check valve programs.

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DETAILS

1. Persons Contacted

Union Electric Company (UE)

*W. R. Campbell, Manager, Callaway Plant
*J. A. McGraw, Superintendent, System Engineering
*G. A. Hughes, Supervising Engineer, Nuclear Safety
*J. L. Cunningham, Shift Supervisor, Nuclear Operations
*G. N. Belchik, Senior Planning Supervisor, Nuclear Operations
*R. C. Wink, Systems Engineer, Nuclear Engineering
*C. J. Derner, Systems Engineer, Nuclear Engineering
*G. J. Roesner, Systems Engineer, Nuclear Engineering
*J. D. Schnack, Quality Assurance Engineer, Quality Assurance

U. S. Nuclear Regulatory Commission (NRC)

*B. L. Bartlett, Senior Resident Inspector, Callaway Plant

*Denotes those personnel attending the exit meeting on November 20, 1992.

2. Inservice Testing (IST) of Pumps and Valves

The inspectors reviewed IST procedures and completed IST surveillances. Generally, the methods used for the testing of pumps and valves were adequate. The test frequencies and acceptance criteria were specified and provisions were made for prompt operability determinations.

a. Scope

The scope of the licensee's IST Program appeared adequate. Selected plant systems were reviewed to ensure that the program scope was adequate. Technical Specifications (TS) and Emergency Operating Procedures (EOPs) were also reviewed to evaluate the program scope.

b. Pump Testing

The testing of pumps in the IST program was generally considered to be adequate. However, a problem was noted with the test procedure for the Essential Service Water (ESW) pumps. The test procedure did not establish a five minute run time after the required flow rate was achieved. IWP-3500, "Duration of Tests," requires that each pump shall be run at least 5 minutes

under conditions as stable as the system permits. The measurements or observations of each of the quantities specified by the Code shall be measured at the end of that 5 minute period.

The inspectors noted the error while observing surveillance testing of the train B ESW pump. Although the procedure did not establish the run time controls, the equipment operator performing the surveillance did not begin measuring the Code specified quantities until five minutes had elapsed.

The licensee implemented changes to the ESW pump testing procedures to correct the error. No further problems were noted.

c. Valve Testing

Some concerns were noted and are discussed below. In each case the inspectors reviewed the licensee's response and concurred in the resolution.

(1) Check Valve Testing

Check valves on the instrument air supply line to turbine-driven auxiliary feedwater pump discharge valves AL-HV-6, 8, 10, and 12, were tested without using quantitative leak rate acceptance criteria. The acceptance criteria used was qualitative and relied on the judgement of the person performing the test. The check valves on the air supply line must close and maintain a certain amount of leak-tightness so the nitrogen gas supply does not leak back through the air system, which would render the discharge valves inoperable. The licensee agreed that a leak rate should be specified and used as the acceptance criteria when performing the leak test. During the inspection, the licensee initiated actions to revise the procedure.

(2) Position Indicator Verification Testing

Remote position indicators were observed by the licensee at least once every two years to verify that valve operation was accurately indicated. However, certain position indicators on motor control centers were not among those observed. Section XI of the ASME Code requires that valves with remote position indicators be observed at least once every two years to verify that valve operation is accurately indicated. The

interpretation of the requirement by ASME was that only the indications that were used for stroke timing needed to be verified. This was the position that had been taken at Callaway. However, the position of the NRC is that remote position indicators should be observed to verify that valve operation is accurately indicated wherever a valve could be operated during an accident. The licensee stated that the valves with position indicating lights that were required to be operated from the motor control centers would be incorporated into their surveillance program for position indicator verification testing.

3. Check Valve Program

a. Scope

The check valve program was generally considered to be good. It consisted of two parts: (1) the IST Program, and (2) the Check Valve Predictive Performance Manual. The Check Valve Predictive Performance Manual was developed in response to Institute of Nuclear Power Operations (INPO) Significant Operating Experience Report (SOER) 86-03, "Check Valve Failures or Degradation."

The IST program included 155 check valves and the Predictive Performance Manual included 120 check valves. Approximately 84 check valves were in both programs. This was considered to be a good overlap between the programs.

b. Design Application Review

The licensee adopted a conservative approach to determining which valves should be in the check valve reliability program. The licensee performed an application design review for check valves in systems addressed by SOER 86-03 to determine the scope of the program. The design equations specified in EPRI NP-5479, "Application Guidelines for Check Valves," were applied in the design review.

As a result of the review, the licensee deleted certain valves from the check valve program on the basis of function (valves used for operating convenience or maintenance), but not for size or design. Also as a result of the review, the licensee found seven valves in the auxiliary feedwater system, which were already in the IST program for testing in the open position;

however, had active safety functions in the closed position. The valves involved were AL-V-0001, 2, and 3, and EG-V-0003, 7, 12, and 16. The licensee was incorporating the testing of these valves in the closed position into the IST program.

c. Non-Intrusive Testing Methods

Acoustic monitoring equipment was used during check valve stroke testing to provide indication that a valve would go to its full open position. The licensee had the equipment and training necessary to confirm acoustic indications by magnetic means, but did not pursue this option because it would require welding a magnet to the valve disk (use of an independent, confirming system is desirable for NIT). The licensee planned to procure other magnetic testing equipment as indicated in their Check Valve Program Action Plan. If field testing confirms other methods to be effective, the equipment could update existing magnetic equipment to give position indication without modifying valves.

4. Training

Training for personnel performing work on pumps and valves appeared to be adequate in course content and duration. Training records were readily retrievable and appeared adequate. Additionally, the licensee constructed an operating test facility to train personnel in the operation and maintenance of the different components and systems. The test facility allowed the trainee to work on the equipment and then to operate the components and the system to demonstrate that the work was done properly. The use of the test facility in the licensee's training program was considered a strength.

5. Trending

Trending of maintenance performed, failure data, and test results for pumps and valves was acceptable. Recorded information was available in computer and hard copy form. Trends of test results were maintained and evaluated by the IST, Check Valve, and LLRT Coordinators. Records for all items reviewed were available and all postings were current.

6. Post-Maintenance Testing

Post-maintenance testing (PMT) at Callaway was controlled by a procedure entitled "Retest Development." The program outlined in the procedure appeared acceptable, but was not comprehensive in prescribing a specific retest for a given component. The procedure covered PMT of essentially all

equipment at Callaway, but only offered options of which tests should be considered. It did not prescribe minimum mandatory testing. Coverage of valves was reasonably detailed, but coverage of pumps was marginal. For example, the only entry describing PMT for pumps was "Repair or Replacement of Safety or Non-Safety-Related Pumps." Although several test options were offered, there was no guidance concerning what constituted routine maintenance or repair. The decision of whether an operation such as a packing adjustment should be considered a repair or if such adjustment would warrant a subsequent leak test, retest for new baseline, or operability check, was left to the discretion of the person preparing the work order. The inspectors presented the issue for the licensee to consider. No further action was deemed necessary.

7. Licensee Self-Assessment

The licensee's self-assessment plan was administered by Quality Assurance and was generally acceptable. The planning guide for licensee self-assessment activities identified a number of critical attributes to be evaluated in each area and appeared to cover the areas adequately.

Not every attribute was inspected on every assessment. A review of inservice testing and check valve testing documents showed that only the area of test performance had been selected for assessment. However, sections were provided in the planning guide to address the areas of test frequencies, trending, PMT, test plans, evaluations and other Code requirements. Inasmuch as these are identified as critical attributes, they will, presumably, be the subject of future evaluations.

8. Exit Meeting

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 20, 1992. The inspectors summarized the purpose, scope and the findings of the inspection and discussed the likely informational content of the inspection report. The licensee did not identify any of the documents or processes reviewed by the inspectors during the inspection as proprietary.