U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/85022(DRS)

Docket No. 50-483 License No. NFP-25

Licensee: The Union Electric Company
Post Office Box 149
St. Louis, MO 63166

Facility Name: Callaway, Unit 1

Inspection At: Callaway Site, Callaway County, MO

Inspection Conducted: October 21 through November 8, 1985

Inspector: R. Hasse 11-27-85
Date

Approved By: F. Hawkins, Chief 11-27-85
Quality Assurance Programs Section Date

Inspection Summary

Inspection on October 21 through November 8, 1985 (Report No. 50-483/85022(DRS))
Areas Inspected: Special inspection by one regional inspector of licensee action on previous inspection findings and maintenance activities. The inspection involved 85 inspector-hours onsite.
Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

Union Electric Company

*S. Miltenberger, Manager, Callaway Plant
*D. Poole, Assistant Manager, Operations and Maintenance (Acting)
J. Blosser, Superintendent, Maintenance
*G. Belchik, Assistant Superintendent, Maintenance
*D. Brock, Superintendent, Planning and Scheduling (Acting)
*C. Naslund, Superintendent, Instrumentation and Controls
*W. Robinson, Supervisor, Compliance
*D. Heinlein, Assistant Superintendent, Operations
*J. Gearhart, Supervising Engineer, QA - Operations
*J. Veatch, Supervising Engineer, QA
*O. DuBois, Assistant Manager, Site QA
*W. Stahl, Supervising Engineer
*M. Reidmeyer, QA Engineer
*W. Norton, QA Engineer

USNRC

*B. Little, Senior Resident Inspector
*C. Brown, Resident Inspector
*F. Hawkins, Chief, Quality Assurance Programs Section

Other personnel were contacted as a matter of routine during the inspection.

*Denotes those attending the exit interview on November 8, 1985.

2. Licensee Action on Previous Inspection Findings

(Open) Open Item (483/84011-08): Lack of independent verification of Instruments and Control (I & C) valve position. The requirement for independent verification of I & C valve position has been incorporated into the procedures for all technical specification required surveillances. The requirement for independent verification must still be incorporated into approximately 200 other safety-related surveillance procedures. In the interim, a temporary department level procedure is being used to ensure independent verification of I & C valve position when it is not required by the specific surveillance procedure. This item will remain open pending the licensee's completion of this effort.

3. Maintenance Assessment

The purpose of this inspection was to provide an in-depth assessment of the licensee's maintenance program and its implementation. The inspection was prompted by the importance of maintenance activities in maintaining plant integrity and the resultant importance of detecting and correcting

maintenance problems early in a plant's operating phase. An indication of a potential maintenance problem was evidenced by the number of LERs issued by the licensee which involved maintenance activities.

a. Inspection Methodology

This inspection was conducted primarily through the evaluation of maintenance related LERs and licensee incident reports (IRs) issued during 1985. The inspector also conducted a program overview to determine if potential problems existed that had not yet resulted in IRs or LERs. This overview was conducted through a review of policy documents and procedures, control documents, and personnel interviews.

b. Organization, Program and Controls

The inspector reviewed policy documents, administrative procedures, control documents, and interviewed supervisory and management personnel to determine if the maintenance program was structurally sound. Specific observations are as follows:

(1) The maintenance organization is divided into three departments, maintenance (electrical and mechanical), instruments and controls (I&C), and planning and scheduling. These organizations report to the Assistant Plant Manager for Operations and Maintenance.

The Planning and Scheduling Department plays a key role in the maintenance organization, as well as providing considerable assistance to the Operations Department. The work release (WR) packages issued by this department include the tagging and valving orders, LCO considerations, and post- maintenance testing requirements, all typically determined by the Operations Department. This was considered a strong point by the inspector although some implementation problems have been experienced (see Paragraph 3.c.(2).

The inspector also identified one weakness in the organizational structure: There was no one individual responsible for the PM Program. This led to independent efforts by several organizations to make improvements in the program. In recognition of this fact, the licensee had recently consolidated some of these efforts into a joint effort between engineering and maintenance.

(2) A review of the administrative procedures and corporate level policy statements disclosed two concerns:

(a) There was no documented corporate level policy regarding the relative emphasis to be placed on preventive versus corrective maintenance within the structure of the maintenance program. While the establishment of policy in this area might be appropriately delegated to the plant level, the only statement currently regarding such policy at the plant level was in a memorandum type document; however, it was restricted to the preventive maintenance (PM) program structure.

The current PM program, exclusive of calibrations, tests, and adjustments, consisted of roughly 36% predictive efforts (inspect, vibration analysis, etc.) and 64% preventive effort (lubrication, clean, overhaul, or replace). The policy being formulated was shifting emphasis toward predictive efforts.

(b) The program provided no system for periodic update of the PM program.

(3) The inspector reviewed the plant performance summary submitted to top level management (Performance Monitoring - Management Information). This summary included appropriate performance indicators such as WR backlog, personnel errors, equipment failures, and control room instrument operability. Management response to adverse trends was typified by the incident reduction program currently being conducted (see Paragraph 3.c.(1)).

The inspector also interviewed a department superintendent to determine if the correction of identified problems in his department was a formal part of his performance evaluation. A review of his performance objectives indicated that the correction of these problems was properly addressed.

c. Program Implementation

A review of Incident Reports (IR) related to maintenance, interviews with licensee personnel and a review of implementation procedures resulted in the following observations:

(1) The inspector found a total of 50 IRs indicating maintenance problems of some significance. Of these, eight resulted in LERs. Another 18 IRs were judged by the inspector to have been violations of NRC requirements if they had not been found by the licensee and corrective action initiated. While none of these had more than minor safety significance, the total number, combined with the number resulting in LERs, is indicative

of a problem with either the maintenance program or its implementation or both. The inspector trended the frequency of IR and LER generation for 1985 to determine if corrective actions taken to date had been effective. Eleven IRs and two LERs were issued during the first quarter of 1985. During the second quarter, 14 IRs and three LERs were issued. For the balance of the year (up to approximately mid-October), 14 IRs and three LERs were issued. Thus, there was no indication of an improving trend. The licensee was aware of this problem and was in the process of evaluating all IRs (not restricted to the maintenance area) issued to date as the first phase of an incident reduction program. The effectiveness of the licensee's corrective action to reduce the frequency of maintenance related incidents is considered an unresolved item pending further NRC review (483/85022-01).

(2) The inspector evaluated the IRs to determine if there was a dominant cause for the incidents. There was no immediately apparent programmatic problem. All of the IRs reviewed involved some form of personnel error; however, a more in-depth evaluation might surface some programmatic weaknesses which predispose to personnel error. The inspector was confident that the evaluation being performed by the licensee had a high probability of detecting such weaknesses. The inspector categorized the personnel errors as follows:

(a) Unwitting error (indicative of either inadequate training or lack of supervision).

(b) Knowing violation of procedures or controls (indicative of a discipline problem).

(c) Inadequate or erroneous technical procedures (indicative of lack of technical knowledge of the author, inadequate procedure review and validation).

It should be noted that the assignments in the second category assumed that all personnel working in the field were knowledgeable of work control procedures. Approximately 60% of the cases were unwitting errors. Approximately 27% appeared to involve knowing violations of controls or procedures, and the remaining 13% involved procedure deficiencies. An evaluation of the unwitting errors showed that approximately one-half were committed by the Maintenance and I & C Departments and one-half by the Planning and Scheduling Department.

The inspector assessed the amount of supervision performed by the first line supervisors. The Maintenance Department foremen spent less than 50% of their time in field supervision. The I & C Department foremen did little field supervision, but relied on field surveillance to determine if activities were being properly performed.

A review of the qualifications and training of the craftsmen indicated that technical qualifications were adequate and appropriate training in work control had been provided. The Planning and Scheduling Department was staffed by licensed personnel, qualified craftsmen, and trained QC personnel; however, the level of experience in the planning function was somewhat low due to recent staff additions.

(3) The inspector noted that completed corrective maintenance WRs frequently lacked a statement of root cause. This had also been identified during an internal audit conductd by the licensee. Training sessions were being held for the craftsmen to stress the importance of root cause determination. The inspector attended one of the sessions and found it to be adequate. The effectiveness of this corrective action is considered an unresolved item pending further NRC review (483/850Z2-02).

A discussion with the Maintenance Department superintendent indicated that the craftsmen were expected to document failures at the component level. Determining the reason for the component failure was considered to be an engineering function. While these responsibilities are generally consistent with standard practice, the craftsmen should document the apparent cause of component failure, if possible, based on their observations. Failure to do so may result in lost information or the true root cause not being determined until a series of similar component failures occurs and an engineering review is triggered by the trending program.

(4) A review of work status indicated a backlog or approximately 3600 WRs. There was no backlog of emergency or priority 1 work. The backlog consisted of approximately 1800 WRs relating to plant equipment that could be performed with the plant on-line, 600 WRs which required an outage to be worked, and approximately 1200 WRs involving non-plant equipment. Of the total backlog, approximately 500 were WRs written prior to the operating phase.

There had been a steady reduction in the backlog for plant equipment since plant startup until May 1985, at which time the backlog became fairly steady at the current level of approximately 2400 WRs (outage plus non-outage). A combined goal of 2500 outstanding WRs had been established for outage and non-outage work. No individual goal for non-outage plant equipment had been established. The Planning and Scheduling Department felt that approximately 1500 WRs was a comfortable level for non-outage WRs as compared to the current level of approximately 1800. This level was established based on a 13-week scheduling cycle (one of 13 systems worked each week) and a WR generation rate of approximately 120 plant equipment WRs per week.

All outstanding WRs were reviewed at least once each 13 weeks as a result of this scheduling system. The PM program was being conducted within schedule with the level of past due tasks fairly constant at ten. All past due tasks received an engineering evaluation.

Overtime usage for the Maintenance Department was approximately 20% and the I & C Department less than 10%. While the Maintenance Department overtime may be slightly high, there was no indication of major understaffing. The apparent leveling of WR backlog for plant equipment slightly above 1500 WRs, and the somewhat high overtime level in the Maintenance Department may indicate a minor problem in this area. The inspector did note that an increase in efficiency was one of the formal goals for this Department which could resolve the problem.

(5) The inspector reviewed the implementation of the plant and equipment trending program to determine if it was adequate to detect problems in a timely manner. The program being conducted was extensive and included a maintenance history review, trending of many plant parameters, the predictive maintenance program, and instrument drift history. The system engineer was generally the focal point for evaluating and processing this information. The maintenance history data to be evaluated by engineering was currently being selected on the basis of the total number of maintenance activities in the history file. The data was sorted at both the component number and system levels. The current trigger level for evaluation was the 5 systems and the 20 components having the highest number of maintenance activities. The data was sorted and provided to engineering every six months. A revision was being made to the program to also sort by purchase specification number to accommodate components common in several systems. The inspector was concerned that using the total number of maintenance activities in the history file as the only selection criteria for evaluation could miss more currently developing trends (e.g., an aging problem). The licensee shared this concern and indicated the selection process was being refined.

(6) During personnel interviews, the inspector asked for a general assessment of work package quality. The general consensus was that the quality was adequate, but all persons interviewed felt that some improvements would be helpful. Specifically, the technical quality could be improved by more consultation with the crafts and technicians prior to issuing a package.

d. Conclusions and Recommendations

The basic conclusion drawn by the inspector was that the licensee had a generally well-designed maintenance program. Implementation problems resulted in two items of regulatory concern (Paragraphs 3.c.(1) and 3.c.(3)). Aggressive corrective action was being taken in those two areas. Based on the overall assessment, the following recommendations are offered for the licensee's consideration:

(1) Appoint a single individual responsible for the PM program (Paragraph 3.b.(1)).

(2) Establish a formal policy (plant or corporate level) for the overall maintenance program (Paragraph 3.b.(2)(a)).

(3) Provide a program for a periodic and systematic update of the PM program (Paragraph 3.b.(2)(b)).

(4) Perform an evaluation to determine the adequacy of field supervision and training effectiveness (Paragraph 3.c.(2)).

(5) Instruct craftsmen to determine the cause of failure to the lowest level practicable (Paragraph 3.c.(3)).

(6 Continue to closely monitor the WR backlog to determine staffing adequacy (Paragraph 3.c.(4)).

(7) Continue to refine the selection criteria for maintenance history evaluations to permit detection of recent trends (Paragraph 3.c.(5)).

(8) Based on its key role, closely monitor the accuracy and technical quality of work packages produced by the Planning and Scheduling Department (Paragraphs 3.c.(2) and 3.c.(5)).

4. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. Unresolved items disclosed during this inspection are presented in Paragraphs 3.c.(1) and 3.c.(3).

5. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on November 8, 1985, and summarized the purpose, scope, and findings of the inspection. During a telephone conference on Nobember 26, 1985 the licensee indicated the inspector had no access to proprietary information during the inspection.