

APPENDIX A

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-482/84-57

Construction Permit: CPPR-147

Docket: 50-482

Licensee: Kansas Gas and Electric Company
P.O. Box 208
Wichita, Kansas 67201

Facility Name: Wolf Creek Generating Station

Inspection At: Wolf Creek Site, Coffey County, Burlington, Kansas

Inspection Conducted: December 4-20, 1984

Inspectors:

S.E. Martin
for H. Bundy, Resident Reactor Inspector
Wolf Creek Task Force

2/19/85
Date

R. Smith
R. Smith, Reactor Inspector

2-19-85
Date

R. Smith
for R. Breslau, Reactor Inspector

2-19-85
Date

S.E. Martin
for W. Guldemon, Chief, Resident Inspection Program
Wolf Creek Task Force

2/19/85
Date

Approved:

S.E. Martin
L. Martin, Chief, Wolf Creek Task Force

2/19/85
Date

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Inspection Summary

Enforcement Conference and Inspection Conducted December 4-20, 1984
(Report 50-482/84-57)

Areas Inspected: Special announced inspection of preoperational testing activities including in an enforcement conference. The inspection and enforcement conference involved 48 inspector-hours onsite by eight NRC inspectors including 24 inspector-hours at the enforcement conference.

Results: In the area inspected, one violation with multiple examples was identified (preoperational test program breakdown - paragraph 2).

DETAILS

1. Persons Contacted

KG&E

G. L. Koester, Vice President, Nuclear
C. C. Mason, Site Director
R. M. Grant, Director of Quality
F. T. Rhodes, Plant Manager
G. Rathbun, Manager of Licensing and Radiological Services
V. Palermo, Assistant Director - Nuclear
D. L. Maynard, Manager of Licensing
W. J. Rudolph II, Manager, Quality Assurance
D. Rick, Superintendent of Maintenance
G. D. Boyer, Superintendent of Technical Support
D. Smith, Superintendent of Plant Support
M. G. Williams, Superintendent of Regulatory, Quality,
and Administrative Services
J. Zell, Superintendent of Operations
F. D. McLaurin, Assistant Startup Manager
C. G. Patrick, Superintendent of Quality Evaluations
C. E. Parry, Superintendent of Quality Systems Engineering
K. R. Ellison, Startup Technical Support Supervisor
W. M. Lindsay, Supervisor of Quality Systems
T. M. Gardner, Lead Systems Test Supervisor
B. McKinney, Instrument and Control Supervisor
R. D. Chappell, Lead QA/QC Interface
K. Peterson, Lead Engineer, Licensing
R. L. Hoyt, Site Emergency Plan Administrator
N. Little, Results Engineering
F. G. Gannon, Quality Assurance
T. Hough, QA Evaluations
R. Flannigan, Kansas City Power and Light Site Representative
A. Mee, Kansas Electric Power Company Project Coordinator

NRC

R. P. Denise, Director, Wolf Creek Task Force
L. E. Martin, Chief, Wolf Creek Task Force
W. G. Guldemon, Chief, Wolf Creek Resident Inspector Program
M. A. Ring, Acting Chief, Test Programs Section, Region III
M. J. Farber, Reactor Inspector, Region III
D. L. Williams, Reactor Inspector, Region III
R. Smith, Reactor Inspector, Region IV
H. F. Bundy, Resident Inspector

All of the above personnel were in attendance at the enforcement conference conducted on December 4, 1984.

In addition to the personnel listed above, other members of the licensee's technical and administrative staffs were contacted during this inspection.

2. Preoperational Test Program Implementation

10 CFR 50, Appendix B, Criterion XI, "Test Control" states, "A test program shall be established to assure that all testing required to demonstrate that structures, systems and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant or fuel processing plant operation, of structures, systems, and components. Test procedures shall include provisions for assuring that all prerequisites for a given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions. Test results shall be documented and evaluated to assure that test requirements have been satisfied."

During the period October 1 - November 30, 1984, a routine inspection of preoperational testing activities at Wolf Creek identified nine examples of violations in four categories, three concerns, and two open items for which more information is required to determine if enforcement action is appropriate. This inspection effort is documented in NRC Inspection Report 50-482/84-43. The results are summarized below:

- Violation (482/8443-09): Failure to provide verification of design safety features (3 examples):
 - (1) The ability of an SIS or Feedwater Isolation Signal to override the exercise mode of the Main Feedwater Isolation Valves was not verified in SU3-AE01, "Main Feedwater System," as committed to in FSAR Section 14.2.12.1.5.
 - (2) The ability of an SIS to override the slow closure mode of the MSIVs was not verified in SU3-AB04, "Main Steam System," as committed to in FSAR Section 14.2.12.1.3.
 - (3) The ability of an SIS to override the Automatic Test Insertion sequence in the Load Shed/Emergency Load Sequencer system was not verified in SU3-NF01, "Load Shedding and Load Sequencer," as committed to in FSAR Section 14.2.12.1.6.3.
- Violation (482/8443-10): Failure to verify a design document commitment (1 example):
 - (1) Preoperational Test SU3-NK01, "125 VDC Class 1E Electrical System," did not monitor and record hydrogen concentration

during battery operations for retention as a plant permanent record, as committed to in FSAR Section 8.3.2.2.1.

- Violation (482/8443-11): Improper Test Methods (3 examples):
 - (1) Failure mode testing of air operated valves (AOV) did not verify correct fail position on loss of air and loss of electrical power to the solenoid air valve.
 - (2) A pressure gauge of improper range was used to record pump performance data for acceptance criteria in SU3-EJ01, "Residual Heat Removal System."
 - (3) The method used for conducting the 35 start diesel generator reliability tests did not provide correct test conditions in accordance with FSAR Section 8.1.4.3.
- Violation (482/8443-12): Failure to test equipment in the conditions under which it is expected to operate (2 examples):
 - (1) SU3-NF01, "LOCA Sequencer," did not provide proper environmental conditions for the diesel generator during its 24-hour load test.
 - (2) SU3-NF03, "Shutdown Sequencer," did not test the emergency pumps' ability to start and accelerate to full load under degraded voltage conditions.
- Open Item: Inadequate acceptance criteria (1 example):
 - (1) The acceptance criteria for the diesel generator electrical Preoperational Test SU3-NE01, were less restrictive than the operability requirements contained in the draft Technical Specifications, thereby creating the potential for an acceptable test on technically inoperable equipment.
- Open Item: Test procedure not reflective of as-built conditions (1 example):
 - (1) Five examples of technical inadequacies in the Reactor Protection System preoperational test procedure were identified which would have prevented successful completion of the tests. These examples, relating primarily to switch positions and test equipment status, would have been self-disclosing during test performance.
- Open Item: Number of completed preoperational test packages voided during the final review stages:

- (1) Seven completed preoperational tests were voided during final review prior to being sent to the Joint Test Group. The cited reason was numerous "administrative errors."
- Open Items: Failure to adequately evaluate anomalous test results (2 examples):
 - (1) No reason was established for excessive Main Steam Isolation Valve (MSIV) fast closure times prior to accepting a single satisfactory measurement.
 - (2) A step discontinuity in the head flow data of the Residual Heat Removal System (RHR) pumps during the performance of SU3-EJ01, RHR Cold Preoperational Test, was neither identified nor evaluated.

The four items of noncompliance and one concern clearly demonstrate a failure in the part of the licensee to satisfy the 10 CFR 50, Appendix B, Criterion XI requirement for technically adequate procedures. The fact that all of the procedures involved had been reviewed and approved by the licensee demonstrates a weakness in the licensee's evaluation/review process. This weakness is further demonstrated by the open items identified on reviewed and accepted test results and the remaining concern. The remaining concern also demonstrates a weakness in procedure execution.

These items, taken together, represent a significant breakdown in the licensee's preoperational test program; however, in order to provide additional perspective on the execution of preoperational testing, other recent NRC inspection findings were reviewed and are summarized below:

- Examples of additional technically inadequate procedures are identified in NRC Inspections Reports 50-482/84-15, 20, and 30. In NRC Inspection Report 50-482/84-15 it was identified that a flow instrument of marginal accuracy was used during the performance of the RHR Cold Preoperational Test SU3-EJ01. As noted above, a similar discrepancy was documented in NRC Inspection Report 50-482/84-43. In NRC Inspection Report 50-482/84-20 it was identified that several preoperational test procedures failed to adequately specify required plant conditions or the means to achieve those conditions. In NRC Inspection Report 50-482/84-30 two examples of procedural technical inadequacies were identified. The first example concerned a failure to ensure that emergency electrical loads would start and accelerate at 75 percent of rated voltage. The second example concerned a failure to test emergency pump acceleration under full vice recirculation flow conditions.
- Examples of failure to properly execute procedures are identified in NRC Inspection Reports 50-482/84-15, 84-20, 84-27, 84-38, and 84-46. Included in these reports were three examples of failure to properly process test procedure changes, four examples of failure to comply

with test procedures, two examples of failure to place interrupted tests in a suspended status as required, one example of a failure to obtain a required signature verification, and one example of a failure to conduct an adequate test briefing.

- Four examples of failure to properly document test discrepancies are documented in NRC Inspection Reports 50-482/84-15 and 84-38.
- Each of the items noted above was identified by the NRC inspection process. As such, they demonstrate a weakness in the licensee's review and evaluation process.

Given the number, nature, and chronology of the deficiencies identified in the licensee's preoperational test program, two conclusions are reached:

- (1) Significant weaknesses existed in all key elements of the licensee's preoperational test program. For the most part, these weaknesses were not identified or acted upon by the licensee.
- (2) Licensee actions taken to resolve NRC identified weaknesses were not sufficiently comprehensive to prevent recurrence. In all cases, the licensee was responsive to individual NRC concerns and took steps to resolve those concerns; however, insufficient management attention was devoted to identifying and correcting root causes.

Based on these conclusions, it is the position of the NRC that a major breakdown occurred in the conduct of the Wolf Creek preoperational test program and that this breakdown represents a significant violation of NRC requirements. It should be noted that the NRC has not concluded that the breakdown which occurred has invalidated the Wolf Creek preoperational test program. Most of the technical concerns have been resolved on a case basis to the satisfaction of the NRC by the licensee. Nonetheless, it is the responsibility of the licensee to conclusively demonstrate the validity of the program to the NRC before a license can be issued. As discussed below, the licensee has taken and is continuing to take steps to resolve all outstanding issues and concerns to the satisfaction of the NRC. Completion of all corrective actions will be tracked as an open item. (482/8457-01)

3. Enforcement Conference

On December 4, 1984, an enforcement conference was convened by the NRC with senior licensee management to present NRC findings and conclusions. Personnel in attendance at the enforcement conference are identified in paragraph 1 of this report.

During the enforcement conference, the NRC presented the findings and conclusions documented in paragraph 2 to the licensee. The NRC also noted that the licensee was soon to embark on a power ascension testing program and routine operations but, before that could happen, adequate assurances would have to be provided that the weakness identified during

preoperational testing were resolved. The licensee was then given the opportunity to respond to the NRC positions.

The licensee acknowledged that deficiencies existed in the conduct of the preoperational test program. They attributed those deficiencies to two primary causes:

- Excessive schedular pressures
- Difficult to use administrative procedures

With respect to the continuing nature of the deficiencies the licensee stated that each had been treated as an isolated instance but that the recurrent nature had necessitated a reevaluation which had, in turn, resulted in three major corrective action programs to prevent recurrence. These actions were:

- (1) Corrective Action Request (CAR) #20 dated November 9, 1984.
- (2) Internal Operations Program Deficiency (IOPD) #84-08 dated November 9, 1984.
- (3) A re-review of FSAR commitments and comparison to existing preoperational test program procedures.

CAR #20 was issued by the licensee's Quality Assurance (QA) organization to the Operations and Startup Organizations in response to continued lack of procedural compliance as identified in audits and surveillances conducted between February and October, 1984. The objectives of the CAR were to determine the primary causes for procedural noncompliance, to obtain necessary management involvement to effect corrective action, to ensure that identified deficiencies were corrected, and to require objective evidence that measures taken were effective to prevent recurrence. Corrective actions recommended by the CAR included:

- Decrease schedular pressures
- Perform a review of all FSAR required and vaulted preoperational test packages to identify all instances of procedural noncompliance
- Develop and implement a Nuclear Department Policy describing the importance of procedural compliance and providing actions to be taken if noncompliance occurs
- Test and recertify all Startup/Operations personnel actively engaged in testing activities and retrain personnel as necessary
- Establish more strict control of the issuance of test procedure changes and the allowable number of test discrepancies due to procedural noncompliance

IOPD #84-08 was issued by the licensee's operations organization to address not only the findings resulting in CAR #20 but NRC findings. It specified a number of corrective actions including:

- Reexamination and retraining of test personnel.
- Additional pretest reviews and authorizations to ensure that the procedure is correct and current, the system is in the appropriate configuration for testing, coordination with all affected work groups has been established, and the Test Engineer is thoroughly familiar with the system, the test, and attendant administrative requirements.
- Daily coaching, direction, and monitoring of Test Engineers by supervision.
- Daily independent review of all active test procedures by Startup Technical Support to identify errors and deficiencies and provide a feedback mechanism for corrective actions.
- Stricter controls on the issuance of test procedure changes and the allowable number of test discrepancies due to procedural noncompliance.
- Increased involvement by Shift Advisors in ongoing activities including testing.
- Re-emphasis of the goal of zero errors by the Plant Manager and the Director of Nuclear Operations with all station personnel.

The re-review of FSAR commitments was undertaken in response to NRC concerns. As a result of the re-review, only seven of approximately 1250 commitments were identified as not having been incorporated into the preoperational test program in addition to those identified by the NRC and it was tentatively concluded by the licensee that failure to incorporate commitments was not a generic concern.

The status of each of the three corrective action programs was included in the licensee's presentation. The licensee committed to complete the FSAR review by December 31, 1984. CAR #20 and IOPD 84-08, actions which have a logical completion date have been completed. Those actions of a continuing nature are ongoing including increased supervisory involvement.

With respect to NRC concerns about recurrence of the types of problems identified during future operations the licensee committed to the following actions:

- (1) A re-review of FSAR commitments and their incorporation into the power ascension test program will be completed by December 31, 1984.

- (2) Necessary Startup Procedures are being converted over to permanent operating procedures. This effort is to be completed prior to fuel load.

Following the licensee's presentation the NRC reiterated that it was the licensee's responsibility to demonstrate the validity of the preoperational test program. The corrective actions outlined appeared to be responsive to NRC concerns; however, a final conclusion could not be made until those actions had been fully implemented. The licensee was cautioned to include such documents as Regulatory Guides in their commitment review as commitments to such documents were made by reference. The licensee acknowledged this admonition. Additionally, the licensee was requested to submit a summary description of their corrective actions in writing for NRC review. This was done by letter dated December 11, 1984, from Mr. G. L. Koester, Vice President - Nuclear to Mr. R. D. Martin, NRC Region IV, Regional Administrator.