ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-298/96-06

License: DPR-46

Licensee: Nebraska Public Power District
1414 15th Street
Columbus, Nebraska

Facility Name: Cooper Nuclear Station

Inspection At: Brownville, Nebraska

Inspection Conducted: February 13-15, 1996 and April 23 through May 17, 1996

Inspectors: William P. Ang, Senior Reactor Inspector, Engineering Branch
Division of Reactor Safety

William J. Wagner, Reactor Inspector, Engineering Branch
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Approved: Chris A. VanDenburgh, Chief, Engineering Branch, Division of Reactor Safety — 6-17-96 Date

Inspection Summary

Areas Inspected: Routine, announced inspection of the licensee's engineering self-assessment activities.

Results:

Engineering

- The inspectors determined that the licensee's engineering self-assessment team was well qualified (Section 2.1.2).
- The inspectors concluded that the scope and depth of the self-assessment plan was sufficient to satisfy the inspection requirements of NRC Inspection Procedure 37550, "Engineering" (Section 2.2.2).
- The inspectors found that the licensee's engineering self-assessment team had performed a good, independent, and sufficiently objective self assessment of engineering activities (Section 3.1.2).

- The inspectors determined that the licensee appropriately addressed operability concerns that arose during the engineering self assessment (Section 3.1.2).

- The inspectors determined that the licensee needed to better assure that all engineering self-assessment observations and questions had been appropriately evaluated and corrective actions completed. The licensee agreed to control the team's observations and questions by means of the nuclear engineering division action item tracking database (Section 3.1.2).

- The self-assessment team identified good, self-critical findings that were well supported. However, the inspectors noted that the majority of the self-assessment team's findings were previously identified programmatic issues that resulted in the licensee's engineering transition plan and performance improvement plan. Significant actions of those plans had been initiated (Section 3.2.2).

- The inspectors determined that engineering promptly initiated additional corrective actions for the team findings and was tracking corrective actions for those findings (Section 3.2.2).

- The self-assessment team found improvements in engineering performance after the consolidation of the onsite engineering division that resulted in more effective interaction and integration of the engineering organization with the plant (Section 3.2.2).

- The self-assessment team found program and process improvements in selected areas, such as the motor-operated valves, inservice tests, and inservice inspection programs (Section 3.2.2).

- The self-assessment team identified five causal factors that were major contributors to less than desired engineering performance that required immediate significant improvement. These causal factors involved the failure of engineering management to provide:

    - Clearly defined, communicated, and reinforced roles, responsibilities, and interfaces for engineers, supervisors, and managers;

    - Clear expectations and accountability for performance;

    - Effective lines of communication within engineering and with external customers and support organizations;

    - Effective prioritization of engineering work leading to ineffective use of resources and important tasks not being performed; and,

    - Effective, integrated planning and scheduling of engineering work (Section 3.2.2).

- The self-assessment team identified eight engineering performance weaknesses that needed significant improvement. These weaknesses involved:

  - System engineers not performing important functions of their job responsibilities, including system problem identification and resolution, performance monitoring and trending, becoming the primary source of system knowledge, and providing oversight of system maintenance and surveillance testing;

  - Inconsistent engineering performance on operability assessments and safety evaluations;

  - Engineering performance in plant design and configuration control;

  - Inaccessible plant design basis information, and limited design and licensing basis knowledge, that was not integrated well into plant processes;

  - Expenditure of significant time and resources by engineers and supervisors (particularly in plant engineering) on low-value work activities;

  - Many engineering programs needed significant attention to establish clear ownership, expectations, plans, and performance monitoring;

  - Management and supervision had not reinforced the need for attention to detail and greater consistency in the area of procedural compliance; and,

  - Incomplete transition of the findings and observations from the Diagnostic Self-Assessment Team and NRC Special Evaluation Team reports to long-term performance improvement plans (Section 3.2.2).

- The inspectors identified a new vulnerability for the automatic starting of the emergency diesel generators that was introduced by a recently implemented design change. The licensee agreed to further evaluate the need for additional periodic testing and/or preventive maintenance to address the identified condition (Section 4.1.2.1).

- The self-assessment team observed poor material condition and housekeeping in the diesel generator and high pressure coolant injection pump rooms (Section 4.2.2).

Summary of Inspection Findings:

- Inspection Followup Item 50-298/9606-01 (Sections 3.1.2 and 3.2.2).

- Inspection Followup Item 50-298/9606-02 (Section 4.1.2.1).

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DETAILS

1 INTRODUCTION

In a letter dated November 3, 1995, the licensee requested the NRC consider a reduced-scope engineering team inspection at the Cooper Nuclear Station based on the licensee's plans to perform an engineering self-assessment. Alternatively, the licensee proposed to combine the NRC inspection with the licensee's self-assessment in accordance with NRC Inspection Procedure 40501. The licensee included its engineering self-assessment plan as an attachment to the letter. The plan provided the details regarding the objectives, team members, schedule, approach, and scope of the self assessment.

In a letter dated December 1, 1995, NRC strongly encouraged the licensee to perform the self assessment and recognized that the self assessment provided an opportunity for the licensee's staff to take ownership for any existing weaknesses within the engineering program. However, NRC informed the licensee that the normal NRC practice was to increase inspection effort by performing both the core inspection program and focused regional initiative inspection at facilities with SALP Category 3 ratings. NRC informed the licensee of an alternative approach to their proposal because of their recent SALP Category 3 rating in the engineering functional area.

NRC informed the licensee that it would delay the planned core engineering inspection at the Cooper Nuclear Station in order to allow time for the performance of the licensee planned engineering self assessment. NRC informed the licensee that it would monitor the performance of the self assessment in accordance with NRC Inspection Procedure 40501. The NRC would determine what additional engineering inspection would be appropriate for the Cooper Nuclear Station based on the quality and results of the licensee self assessment and may eliminate planned NRC initiative inspection.

The proposed licensee engineering self assessment was a part of an ongoing Cooper Nuclear Station initiative for performance improvement. The licensee initiated a long-term performance improvement plan that included an engineering transition plan in November 1994. The engineering transition plan included the following actions that had been performed.

- Restructuring of the engineering organization;
- Development of position profiles for all engineering positions;
- Selection of managers, supervisors, and staff;
- Relocation of corporate engineering to the site; and,
- Recruiting new engineers and supervisors.

The final activity of the initial phase of the engineering transition plan required an engineering self assessment to accomplish the following:

- Assess the post-reorganization effectiveness of the engineering division to perform routine and emergent site activities, including the identification and resolution of technical issues and problems;
- Identify areas needing further improvement; and,
- Further develop engineering self-assessment capabilities.

The licensee performed an engineering self assessment at Cooper Nuclear Station on February 1-23, 1996. The results of the self-assessment were contained in a self-assessment report that was available for onsite review. The NRC inspectors monitored the performance of the engineering self-assessment on February 12-15, 1996, reviewed the self-assessment results, and independently inspected the areas assessed by the licensee, on April 23-26, 1996. The NRC inspectors continued the review of documents in office, and discussed by telephone the self-assessment results with the licensee, on April 29 through May 17, 1996. The purpose of the NRC reviews and inspections was to determine the quality and results of the licensee self assessment.

2 LICENSEE ENGINEERING SELF-ASSESSMENT PLAN (40501)

2.1 Self-Assessment Team Qualifications, Objectivity, and Independence

2.1.1 Inspection Scope

The purpose of this inspection was to determine the qualifications, objectivity, and independence of the licensee's self-assessment team in accordance with NRC Inspection Procedure 40501, "Licensee Self-Assessments Related to Team Inspections." The inspectors determined the qualifications, objectivity, and independence of the licensee's engineering self-assessment team and individual team members by performing the following:

- The inspectors reviewed the licensee's engineering self-assessment plan prior to and during the onsite inspection. The inspectors were informed by the licensee of changes to the team composition due to availability of personnel during the onsite inspection.
- The inspectors interviewed selected team members.
- The inspector accompanied and observed selected team members during their assessment activities. At the time of the onsite inspection, the ongoing team assessment activities were predominantly interviews of licensee personnel and reviews of engineering work products.
- The inspector observed two of the daily team meetings, a mid-assessment team refocusing discussion/team meeting, and a mid-assessment management briefing conducted by the team.

2.1.2 Observations and Findings

The inspectors found that the team consisted of eight engineering division personnel, one utility assistant manager from Washington Nuclear Project-2, three consultants, and an Institute of Nuclear Power Operations manager. A team facilitator and liaison personnel from operations, maintenance, quality assurance, and licensing were also assigned to assist the team. The inspectors determined that the team was composed of diverse and well-qualified members who were sufficiently objective and independent to allow meaningful assessments. Specifically, the inspectors noted the following:

- All team members were degreed engineers. The major engineering disciplines of mechanical, electrical, civil, and nuclear engineering were represented on the team.

- All team members had 10 or more years of industry experience in design, systems, or plant support engineering functions.

- Three licensee staff team members and three consultants or other utility team members had been previously licensed as senior reactor operators. Three additional team members had been previously certified as shift technical advisors.

- Licensee staff team members had Cooper Nuclear Station experience that ranged from less than 1 to 25 years. Licensee staff team members were senior engineers, supervisors, and a manager of the engineering division.

- The team included an engineering management consultant and an Institute of Nuclear Power Operations manager. Team synergism developed during team meetings. This was further enhanced by the previously mentioned team management experts, who assisted the team leader and the team during team meetings, in consolidating the individual observations and focusing those observations toward team findings.

- Licensee management, including specifically engineering division management, expressed, and demonstrated a sincere desire to identify engineering strengths and weaknesses. This was evident during the observed interactions with the team during interviews and during the team's mid-assessment management briefing. Similarly, team members that were interviewed by the inspectors expressed a sincere desire to identify engineering strengths and weaknesses. This ownership of engineering problems was demonstrated by team members in the observations, condition reports, and findings that they identified.

The inspectors concluded that the team was composed of well-qualified individuals, who were sufficiently independent and objective. The team was capable of performing good assessments.

2.2 Scope and Depth of Self-Assessment Plan

2.2.1 Inspection Scope

The inspectors reviewed the scope and depth of the licensee's engineering self-assessment plan to determine if it was equivalent to those requirements specified in NRC Inspection Procedure 37550, "Engineering." The inspectors performed the following:

- The inspectors reviewed the plan submitted by the licensee and compared it with the plan being utilized by the team during the assessment.
- The inspector interviewed the team leader and selected team members, and discussed the plan and the plan implementation with them.
- The inspector interviewed licensee managers from the engineering, operations and quality assurance divisions, and discussed various aspects of the plan.
- The inspectors compared the plan that was being utilized by the team with the requirements of NRC inspection Procedure 37550, "Engineering."

2.2.2 Observations and Findings

The inspectors determined that the licensee's engineering self assessment consisted of both a horizontal and a vertical review. The horizontal review assessed five major areas of engineering performance. The five areas were: (1) Ability to resolve operational issues, (2) Maintenance support, (3) System engineering effectiveness, (4) Plant modification, and (5) Engineering programs. The five areas selected for the horizontal review were engineering areas that had been identified during past major evaluations as areas that needed improvement. An assessment plan was developed by the team for each of the five areas. Within each of the five areas, the team reviewed engineering work products, conducted interviews with engineers and operations and maintenance personnel, and followed in-progress activities. Examples of recent events were selected to review important functions within the areas being evaluated.

The inspector noted that the engineering self-assessment plan submitted by the licensee with its November 3, 1995, letter included engineering document control as a sixth horizontal assessment area. The inspectors were informed by the team leader that an assessment plan was developed by the team for this area. However, the team determined that this area overlapped significantly with the other five assessment areas and was incorporated into the other areas.

The inspectors determined that the licensee's engineering self-assessment team vertical review was a safety system functional assessment of two systems. The two systems selected were the high pressure coolant injection system and the diesel generator system. These two systems were selected for the following reasons:

- Both systems had major modifications during the 1995 outage,
- Both systems were important safety systems and both were risk significant,
- Both systems have had deficiencies identified in the past year, and
- A predominantly electrical and mechanical system were selected.

The inspectors found that the team leader had prepared and utilized a matrix of NRC Inspection Procedure 37550, "Engineering," attributes to compare and ascertain that engineering self-assessment team activities accomplished the inspection module requirements. The inspectors found that the matrix was accurate and that module inspection attributes were generally addressed by the team activities.

The inspectors noted that the engineering self-assessment plan assessed programs and processes more than systems and work performance. However, the inspectors concluded that the plan was appropriate because recent engineering performance weaknesses were being addressed. The inspectors concluded that the licensee's engineering self-assessment plan was appropriate and generally satisfied requirements of NRC Inspection Procedure 37550.

3 LICENSEE ENGINEERING SELF-ASSESSMENT PERFORMANCE (40501)

3.1 Implementation of Self-Assessment Plan

3.1.1 Inspection Scope

The inspectors evaluated the scope and depth of the team's performance of the engineering self assessment. The inspectors evaluated the objectivity and independence of the team during the performance of the self-assessment. The inspectors also reviewed the process utilized for addressing operability concerns and for developing corrective actions for identified concerns. The inspectors performed the following:

- The inspector interviewed the team leader and selected team members to discuss and determine their assessment activities and issues that were being developed.
- The inspector accompanied and observed selected team members during their assessment activities. At the time of the onsite inspection, the ongoing team assessment activities were predominantly interviews of licensee personnel and reviews of engineering work products.
- The inspector interviewed licensee managers from the engineering, operations and quality assurance divisions, and discussed the team assessment activities and issues being developed by the team with them.

- The inspector observed two of the daily team meetings, a mid-assessment team refocusing discussion/team meeting, and a mid-assessment management briefing conducted by the team.

- The inspectors reviewed onsite the completed engineering self-assessment team report and associated team documents.

3.1.2 Observations and Findings

The engineering self-assessment team devoted more than 1500 man-hours to this assessment, utilizing eight senior engineering personnel and five consultants and loaned employees. The team conducted approximately 100 interviews, reviewed numerous documents, and observed numerous in-process work activities. The effort resulted in over 150 documented questions and approximately 300 documented observations during the 3-week assessment. The inspectors determined that the team observations and questions resulted in 22 condition reports and 16 team findings.

The inspectors noted that the team had two 1/2-day sessions that assessed progress against the plan at the mid-point of the assessment. During those progress reviews, the team determined the potential significant team findings that needed validation, and focused the assessment efforts that would be accomplished during the remaining 1-1/2 weeks of the assessment.

The inspectors noted that the team used a series of systematic methods to synthesize the final findings of the assessment from the large amount of data gathered during the 3-week assessment. These included the Institute of Nuclear Power Operations yellow sticky method, stream analysis, and causal factor charting. Those focusing efforts resulted in the team's identification of five causal factors findings, eight performance issues findings, and three areas needing enhancement.

The inspectors determined that the licensee formed an engineering self-assessment response team, led by an engineering division manager and consisting of senior engineering division personnel. The licensee assigned the following responsibilities to the response team:

- Respond to engineering self-assessment team questions within 48 hours.

- Address observations that were conditions adverse to quality within 24 hours.

- Upon discovery of an adverse condition to quality that could not be addressed within 24 hours, initiate a condition report and follow procedures for operability and reportability assessments.

The inspectors determined that team members promptly identified, to the assessment team leader, observations that appeared to be an item of noncompliance, an operability issue, a safety concern, a procedural violation, or any other condition adverse to quality. The team leader promptly relayed those observations to the response team for appropriate action in accordance with the corrective action program. In cases where a clear condition adverse

to quality was identified, the engineering self-assessment team generated the condition report. The response team was responsible for followup to ensure that operability evaluations, reportability evaluations and immediate corrective actions were undertaken in accordance with the licensee's procedures.

The inspectors were informed, by the response team leader, that the self assessment resulted in 22 condition reports, including several requiring operability assessments. The inspectors reviewed the condition reports. The inspectors also reviewed the team observations that resulted in the condition reports. The inspectors also reviewed four additional team observations and three team questions that did not result in the initiation of condition reports. The condition reports, team observations, and team questions reviewed by the inspectors are listed in Attachment 2 of this inspection report. The inspectors determined the following:

- The licensee performed appropriate operability assessments for conditions identified by the team. Seven of the 22 condition reports identified conditions that required operability assessments.

- The team findings, observations, and questions did not identify any inoperable structure, system, or component that was required by the Technical Specifications.

- The licensee performed prompt evaluations of the team findings, observations, and condition reports. Corrective actions had been initiated, but not completed for numerous team findings, observations, and condition reports due to the scope and number of the identified conditions.

- The team leader maintained the original completed team observation and question forms and the computer database of the items identified by the team. However, the NRC inspectors noted that no formal mechanism had been established to assure that all team observations and questions had been evaluated and necessary corrective actions completed. The team leader acknowledged the need for a formalized method of assuring that all team observations and questions had been evaluated and necessary corrective actions completed. The team leader stated that all team observations and questions would be entered and tracked in the nuclear engineering division action item tracking computer database.

The inspectors concluded that the engineering self-assessment team had performed a good self assessment, and determined that the team was sufficiently independent and objective during the performance of the self assessment. The inspectors concluded that the licensee appropriately addressed issues that had potential operability concerns. Operability assessments for team issues were appropriately performed. The inspectors

identified a need for the licensee to assure that all team observations and questions had been appropriately evaluated and necessary corrective actions completed. The licensee controls for assuring that all team observations and questions are evaluated and necessary corrective actions completed will be reviewed during a planned future NRC engineering inspection as an inspection followup item (298/9606-01).

3.2. Licensee Self-Assessment Results

3.2.1 Inspection Scope

The NRC inspectors reviewed onsite the engineering self-assessment team report and summarized the team's findings and conclusions.

3.2.2 Observations and Findings

The licensee's engineering self-assessment team determined that some substantial improvements in engineering performance had been recently accomplished. In particular, the team noted that responsiveness to operations and maintenance had shown significant improvement, as reflected in comments made in many of the interviews conducted by the team. The team also noted that program and process improvements were evident in selected areas, such as the motor-operated valve program and in-service inspection and testing programs. The self-assessment team noted that engineering was viewed by most organizations on site as substantially more successful at supporting plant needs during the recently completed Refueling Outage RE-16 than in any previous outage. The self-assessment team concluded that most of these improvements were due to the efforts to consolidate engineering on site, thereby, allowing more effective interaction and integration with the plant. However, the team also noted that the details of the engineering reorganization and the transition toward meeting the new engineering mission identified in the transition plan were incomplete and several areas needed further significant improvement.

The licensee's engineering self-assessment team identified eight areas in which significant improvement in engineering performance was needed. The team also identified five causal factors that were major contributors to less than desired performance. The team concluded that those five factors had to be given the highest priority and that addressing those causes would improve engineering performance substantially. The team also identified three areas where improvements would enhance engineering effectiveness and facilitate the other improvements.

The five causal factors identified by the licensee's engineering self-assessment team that required the highest priority were:

- The engineering division management team had not clearly defined; communicated; and reinforced roles, responsibilities, and interfaces for engineers, supervisors, and managers.

- The engineering division management team had not established clear expectations for supervisors and staff and was not holding them accountable for performance.

- The engineering division management team had not established effective lines of communication within engineering, external customers, and support organizations.

- The engineering division managers and supervisors were not effectively prioritizing work, leading to ineffective use of resources and a lack of important task performance.

- The engineering division management team had not established effective integrated planning and scheduling of engineering work.

The licensee's engineering self-assessment team determined that the five causal factors identified above led to the following eight areas where engineering performance was in need of significant improvement:

- System engineers were not performing the most important functions that must be the focus of their job responsibilities, including system problem identification and resolution, performance monitoring and trending, becoming the primary source of system knowledge, and providing oversight of system maintenance and surveillance testing.

- Engineering performance on operability assessments and safety evaluations needed improvement.

- Engineering performance in plant design and configuration control was inconsistent and in need of significant improvement.

- Plant design basis information was not readily accessible, design and licensing basis knowledge was limited and was not integrated well into plant processes.

- Engineers and supervisors (particularly in plant engineering) were expending significant time and resources on low value work activities.

- Many engineering programs were in need of significant attention to establish clear ownership, expectations, plans, and performance monitoring.

- Management and supervision had not reinforced the need for attention to detail and greater consistency in the area of procedural compliance.

- The transition of findings and observations from the Diagnostic Self-Assessment Team and NRC Special Evaluation Team reports to long-term performance improvement plans was incomplete.

The licensee's engineering self-assessment team also identified three areas where improvements would facilitate and enhance engineering effectiveness:

- Many engineering processes were unnecessarily cumbersome and time consuming;

- Training and qualification needed to be enhanced in several specific areas, including the use of site and engineering processes (how we do business), integrated and system-specific knowledge (particularly for system engineers), and the number of qualified and/or certified engineering personnel; and,

- Tools, resources, and support in such areas as document availability and retrieval, databases, and design basis information needed to be improved for more efficient use of an engineer's time.

The licensee's engineering self-assessment team concluded that, while some progress had been made in engineering effectiveness, significant immediate improvements were needed in several performance areas and fundamental areas.

The inspectors determined that engineering division management personnel promptly initiated actions to evaluate the team findings. The findings were discussed in a series of engineering division management meetings. Focus groups were assigned for each of the findings. The focus groups brought back their recommended corrective actions to the meetings. Corrective actions were subsequently assigned. All team findings and corrective action assignments were being tracked in the nuclear engineering division action item tracking computer database. Licensee corrective actions for the team findings will be further reviewed as part of the planned NRC engineering inspection as an inspection followup item (298/9606-01).

4 INDEPENDENT NRC INSPECTION (40501)

4.1 Design Changes

4.1.1 Inspection Scope

The purpose of this inspection was to evaluate the completeness of the reviews of selected design changes and calculations performed by the engineering self-assessment team and to determine whether the self-assessment sample provided a reasonable basis to support the team's conclusions regarding the design changes. The inspectors selected and reviewed portions of the following two design change packages and two design calculations that were reviewed by the team.

- Station Modification DC 93-024, "Diesel Generator Upgrades"

- Station Modification DC 94-212, "Check Valve Replacements," Amendment 1

- Nuclear Engineering Design Calculation 92-050BD, HPCI-REL-K33/43 "Setpoint Calculation"

- Nuclear Engineering Design Calculation 94-067-006, "Relief Valves DGSA-RV-20RV and DGSA-RV-21RV Sizing"

4.1.2 Observations and Findings

The inspectors agreed, generally, with the conclusions of the engineering self-assessment team related to the design changes and calculations that were reviewed by the inspectors. Divergent or amplifying views of the inspectors are discussed below.

4.1.2.1 Diesel Generator Upgrades

The inspectors noted that Station Modification DC 93-024, "Diesel Generator Upgrades," performed several modifications that were designed to improve diesel generator reliability, availability, and maintainability. The inspectors noted that one of the modifications changed the logic of the emergency diesel generator control air system, which was part of the starting air system, from an air-to-run configuration to an air-to-stop. The control air logic modification included modification of the fuel oil control rack linkage assembly of each diesel generator.

The reversal of the air-to-run logic was mainly accomplished by changing a governor actuator to fuel rack pneumatic linkage mechanism, known as a Bimba cylinder, Item USC-7 on Drawing SKE-DG-184, "Cooper Nuclear Station Emergency Diesel Generator 1 and 2 Composite Control Air Schematic," Revision 0, from a pressurized to run to a vented-to-run configuration. The design vented the Bimba cylinder by means of tubing connections through flow direction Valve PY7 and vent Valve FO-1. The inspectors noted that the modification introduced a new failure mechanism that could prevent the emergency start of a diesel generator. The inspectors did not find any team questions, observations, or condition reports that discussed or questioned the new failure mechanism.

The inspectors discussed the new failure mechanism with the licensee. The licensee confirmed that the emergency diesel generators would not be capable of an automatic emergency start if the Bimba cylinder did not vent for any reason, including flow blockage in the vent flow path. The inspectors inquired about the testing performed on the emergency diesel generators to determine if the vulnerability was being periodically tested. The inspectors were informed that the only test that verified the venting of the Bimba cylinder in conjunction with an automatic emergency start of an emergency diesel generator was the 18-month surveillance tests. The inspectors inquired about any preventive maintenance activities that may have been added, as a result of the design change, that would periodically ascertain a vent path for the Bimba cylinders. However, no new preventive maintenance activities were added.

The inspectors concluded that the design change fulfilled its intended purpose and that NRC requirements and licensee commitments had been met. However, the inspectors also concluded that the design change introduced a new vulnerability that should be periodically tested and/or maintained. The

licensee agreed to evaluate the need for additional tests and/or preventative maintenance activities to ascertain the vent path for the Bimba cylinders on both emergency diesel generators. This evaluation will be followed as an inspection followup item (298/9606-02).

4.1.2.2 Diesel Generator Fuel Oil Day Tank Level Switch Settings

In an unrelated design change, that was part of the emergency diesel generator system reviewed by the self-assessment team, the inspectors noted that the team questioned the diesel generator fuel oil day tank low level alarm and fuel oil transfer pump start level switch settings. The team questioned why the setpoints were less than the day tank fuel oil level/volume that would be required for 6-hours of diesel generator operation that was assumed in the 10 CFR Part 50, Appendix R, analysis. Design engineering responded to the question by explaining that the level switch settings were based on accident analysis requirements for 1-hour of emergency diesel generator operation. Design engineering further stated that the 6-hour diesel generator operation assumption in the 10 CFR Part 50, Appendix R, analysis was provided by administrative procedural controls that verified that sufficient volume of fuel oil was contained in the day tanks after each operation of the diesel generators. Design engineering explained that changing the level switch settings for a 6-hour volume of fuel oil would require the relocation of the level switch taps, which would be a difficult and potentially hazardous modification. The self-assessment team accepted this response.

The inspectors discussed the question and the design engineering resolution of the question with members of the self-assessment team and the licensee's design engineers. The inspectors noted that the response met NRC requirements and fulfilled licensee commitments.

4.2 System Walkdowns

4.2.1 Inspection Scope

The inspectors performed visual inspections of portions of the diesel generator system and high pressure coolant injection system to assess the validity of the engineering self-assessments team's conclusions regarding the physical condition of the systems.

4.2.2 Observations and Findings

The licensee's engineering self-assessment team concluded that the emergency diesel generator and the high pressure coolant injection systems were capable of performing their intended functions in accordance with the licensing basis. The team identified poor material condition and housekeeping in both the diesel generator rooms and the high pressure coolant injection pump room. Oil leaks, unrestrained ladders, tool boxes, and spool pieces were observed by the team.

The inspectors agreed, generally, with the conclusions of the engineering self-assessment team. Specific observations views of the inspectors are discussed below.

4.2.2.1 Emergency Diesel Generator Rooms

The inspectors observed similar conditions that the team observed. The inspectors noted that painting preparation work was in progress in the room that contained Emergency Diesel Generator 2. Old paint had been chipped from the walls and ceiling, and scaffolding was being erected. The inspectors noted that housekeeping was not being well maintained. Paint chips, bottle caps, and scrap tape pieces were observed in several areas in the room. The overhead chainfall, that had been previously used by the scaffolding erection crew, was observed draped across the diesel generator upper structure access ladder. The emergency diesel generator system engineer, who accompanied the inspector, acknowledged the poor housekeeping condition and initiated actions for clean up of the area by the work crew. The system engineer informed the inspector that the work crew was expected to clean up their work area when they had completed their task and at the end of the shift.

The inspectors observed that scaffolding, that was being erected in the vicinity of Diesel Generator 2, had lateral braces that were attached to electrical conduits/conduit supports. The system engineer immediately contacted the responsible civil engineer, who immediately instructed the work crew to correct the observed condition. The responsible civil engineer informed the inspector that: (1) The scaffolding crew had been instructed not to attach scaffolding to plant components without prior approval during the prejob briefing, (2) The scaffolding erection had not yet been completed, and (3) The erected scaffolding was required to be inspected by the civil engineer upon work completion. The civil engineer initiated Condition Report 1-20288 to identify the condition. A responsible electrical engineer immediately reviewed the condition and determined that the affected conduits contained nonsafety-related electrical circuits.

The inspectors concluded that the observed conditions represented poor housekeeping and scaffolding erection work practices. However, the inspectors also noted that the observed conditions were of minor safety significance and were immediately corrected by the licensee.

5 REVIEW OF UPDATED FINAL SAFETY ANALYSIS REPORT COMMITMENTS

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the Updated Final Safety Analysis Report descriptions. While performing the independent inspections discussed Section 4 of in this report, the inspectors reviewed the applicable portions of the Updated Final Safety Analysis Report that related to the areas inspected. The inspectors verified that the Updated Final Safety Analysis Report wording was consistent with the observed plant practices, procedures, and/or parameters.

ATTACHMENT

1 PERSONS CONTACTED

1.1 Licensee Personnel

M. Boyce, Engineering Support Manager, Engineering Assessment Team Leader
D. Buman, Design Engineering Manager, Response Team Leader
F. Diya, Civil Design Engineering Supervisor
J. Gausman, Plant Engineering Manager
R. Godly, Licensing Manager
P. Graham, Senior Engineering Manager
T. Hottovy, Procurement Engineering Supervisor
T. Hough, Independent Review Group Advisor
R. Jones, Safety Assessment Senior Manager
J. MacKinnon, Independent Assessment Group Chairman
J. Mueller, Site Manager
O. Olson, Core Cooling Supervisor
F. Remick, Independent Assessment Group member
D. Robinson, Quality Assessment Manager
J. Salisbury, Balance-of-Plant Engineering Supervisor
G. Seeman, Senior Mechanical/Heating, Ventilating, and Air Conditioning Design Engineer
R. Sessoms, Quality Assurance Division Manager
D. Shelton, Independent Assessment Group member
M. Unruh, Instrumentation and Control Design Engineering Supervisor
B. Victor, Licensing/Compliance Specialist
D. Weed, Nebraska Public Power District Board Member

1.2 NRC Personnel

M. Miller, Senior Resident Inspector
C. Skinner, Resident Inspector
C. VanDenburgh, Chief, Engineering Branch

The personnel listed above attended one or more of the onsite interim exit meetings and/or the final exit meeting that was conducted by telephone. In addition to the personnel listed above, the inspectors contacted other personnel during the inspection period.

2 EXIT MEETING

Interim exit meetings were conducted onsite on February 15 and April 26, 1996, and a final exit meeting was conducted by telephone on June 12, 1996. During those meetings, the inspectors reviewed the scope and findings of the report. The licensee did not express a position on the inspection findings documented in this report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.

ATTACHMENT 2

Engineering Self-Assessment Team Observations, Questions and Condition Reports Reviewed by the Inspectors.

Observation/Question No.	Associated Condition Report No.
O-001	CR3 96-0103
O-008	CR4R 96-0098
O-013	CR4R 96-0119
O-015	CR4R 96-0126
O-016	CR4R 96-0115
O-016	CR4R 96-0116
O-016	CR4R 96-0117
O-016	CR4R 96-0118
O-018	CR4T 1-14666
O-019	CR4R 96-0112
O-034	CR4R 96-0125
O-078	CR3 96-0137
O-101	CR4T 1-21148
O-103	CR4R 96-0141
O-116	CR3 96-0139
O-152	CR3 96-0163
O-234	CR4R 96-0151
O-235	CR4R 96-0165
O-241	CR4R 96-0150
O-261	CR[illegible] 96-0140
O-295	CR[illegible] 96-0164
O-004	NONE
O-029	NONE
O-045	NONE
O-233	NONE
Q-102	NONE
Q-121	NONE
Q-146	NONE