

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-498/94-15
50-499/94-15

Licenses: NPF-76
NPF-80

Licensee: Houston Lighting & Power Company
P.O. Box 1700
Houston, Texas

Facility Name: South Texas Project Electric Generating Station, Units 1 and 2

Inspection At: South Texas Project Electric Generating Station

Inspection Conducted: April 26-29, 1994

Inspector: P. M. Qualls, Reactor Inspector, Plant Support Branch,
Division of Reactor Safety

Approved: *William A. Mitchell Jr*
W. P. Ang, Chief, Plant Support Branch,
Division of Reactor Safety

6/3/94
Date

Inspection Summary

Areas Inspected (Units 1 and 2): Routine, announced inspection of fire protection and prevention issues, spare parts control and inspection followup.

Results (Units 1 and 2):

- Subsequent to an NRC Diagnostic Evaluation Team (DET) inspection conducted March 29 through April 30, 1993, the Unit 2 fire protection computer system had undergone hardware and software changes to enhance usability. As a result, the operator distraction attributed to the fire protection system computer false and nuisance alarms that was observed by the DET had decreased significantly. Changes to computer alarm descriptions have improved system effectiveness (Section 2.1.2).
- The licensee had reduced the backlog of open fire protection system maintenance items to a reasonable level (Section 2.2.2).
- The licensee's corrective actions to reduce the problems in the spare parts system appeared to be effective in reducing the number of occurrences of incorrect parts being issued for plant work (Section 3.2).

Summary of Inspection Findings:

- Inspection Followup Item 498;499/9331-17 was closed (Section 3.4).
- Inspection Followup Item 498;499/9331-22 was closed (Section 3.5).
- Inspection Followup Item 498;499/9331-58 was closed (Section 4.3).
- Inspection Followup Item 498;499/9349-25 was closed (Section 4.3).
- Inspection Followup Item 498;499/9349-27 was closed (Section 4.3).

Attachment:

- Attachment - Persons Contacted and Exit Meeting

DETAILS

1 PLANT STATUS

During this inspection period, Unit 1 was operating at power. Unit 2 was being prepared for restart.

2 FIRE PROTECTION AND PREVENTION (64704)

2.1 Fire Detection and Computer System

2.1.1 Background

During an NRC Diagnostic Evaluation Team (DET) inspection conducted March 29 through April 30, 1993, the team concluded that the fire detection and computer system had the potential to distract control room operators from their safety-related duties and responsibilities. This resulted from the observation of excessive spurious system failure and false alarms generated by the system during a normal shift. The team also concluded that the potential existed to delay action to mitigate the consequences of an actual fire, should the control room operators become desensitized by repetitive false alarms. A modification of the fire protection alarm system was planned to address the cause of the spurious false alarms, but the installation is not scheduled for completion until 1996.

2.1.2 Improvements to the Fire Protection Data Acquisition Computer

Subsequent to the DET, the licensee identified an undesirable condition related to the fire protection computers in both units. Computer alarm messages were vague and at times misleading. Therefore, the control room operators sometimes failed to respond rapidly to the condition identified by the alarm. The licensee initiated and implemented a modification which changed the fire protection data acquisition computer alarm descriptions for Unit 2. Every point was modified to provide clear and improved information to operators. This change was implemented by service request FA 168148. The inspector observed that the revised computer alarm messages were a significant improvement over the previous format and content. Additional information was available from the adjacent printer. The present system provided operators with clear descriptions of the location and the device actuated and a clear reference to the fire pre-plan. These improvements allowed the operator to quickly assess false and nuisance alarms and significantly decreased the operators distractions that had been attributed to the fire protection computers.

The inspector noted that the licensee had replaced the monochrome monitor at the computer interface terminal with a color monitor. The new monitor showed system trouble alarms and fire alarms in different colors. This provided operators a quicker assessment of the severity of the problem causing the alarm.

2.1.3 Conclusions

The inspector determined that the licensee's efforts to improve operator response to fire alarms by improving the computer has been completed. The inspector concluded that the current performance of computer system should not be an issue affecting the scheduled startup of Unit 2.

2.2 Fire Detection and Suppression Systems Maintenance Backlog

2.2.1 Background

According to the DET inspection report, the licensee did not resolve numerous fire protection issues in a timely manner. The issues included a large backlog of service requests on fire protection systems. Management did not adequately oversee and direct the efforts to resolve this issue in a timely manner. At the time of the evaluation, the licensee had a total backlog of 361 open service requests for fire protection systems which included approximately 130 for Unit 2. These backlogged service requests were associated with fire detection and suppression systems. The large backlog suggested that the reliability of fire protection systems was questionable.

2.2.2 Licensee Corrective Action to Resolve Backlog Issue

The licensee initiated a review of the corrective maintenance backlog. The scope of the review included open work requests and system walkdowns for the following systems:

- Fire Water Suppression Systems,
- Halon Fire Suppression Systems, and
- Fire Detection Systems.

The primary criterion for this review was the projected reliable operation of the systems for the next 18 months by evaluating the cumulative effects of open service requests on system operability. This review was conducted as a part of the licensee's startup readiness review program in April 1993 and resulted in the generation of additional work requests.

The licensee had completed work on all fire suppression and detection items which were open at the time of the DET inspection with two exceptions, which were interference items to be installed as plant components are reinstalled at the completion of the current outage. The inspector noted that the licensee had 49 open work items for the Unit 2 fire detection and suppression systems and that most had been open for less than 2 months.

2.2.3 Conclusions

The inspector concluded that the licensee had adequately identified the work necessary to address the concern about the material condition of the fire detection and suppression systems. The inspector noted that, although not all work was completed, the backlog of outstanding work items appeared to be restored to a reasonable size and duration.

3 RECEIPT, STORAGE, AND HANDLING OF EQUIPMENT AND MATERIALS PROGRAM (38702)

3.1 Background

The DET found numerous deficiencies in the licensee's spare parts system, including the lack of parts and the use of wrong parts. These deficiencies contributed to inefficient use of maintenance resources and negatively impacted equipment operability. The licensee's process to determine the correct replacement part was extremely difficult and cumbersome. The computerized parts reference system consisted of two databases requiring the viewing of multiple screens. Numerous part numbers were "flagged" for revision because of the large engineering document backlog. Sometimes part numbers, as in some Rockwell valve components, were wrong.

3.2 Receipt, Storage, and Handling of Equipment and Materials Program

The inspector reviewed licensee procedures concerning control of material. The inspector noted that parts received in the warehouse were assigned a Houston Power and Light (HP&L) part number, the work order number (for which they were requested) and a storage bin number. These numbers were bar coded, placed on labels and attached to the part. The part was tracked in the warehouse by using scanners which transmit to the licensee's computer. The licensee discussed with the inspector that, at the time of the DET, the computer would often show that parts were not available for unplanned work, although the parts were available in the warehouse, because the computer would have already allocated existing spare parts to planned maintenance items. The computer software was changed to allow use of these spare parts for unplanned work and to reorder the parts for future planned work items.

The licensee stated that the computers for the warehouse personnel and for the maintenance planners were upgraded. A local area network (LAN) was being used and the software on the computers had been upgraded to use a "Windows" operating environment. The improved software and hardware allowed the planners to identify a part number from their database and to switch to the HP&L part numbers without having to log out of the first program. The licensee stated that this greatly improved efficiency in the department.

The inspector reviewed the licensee's station problem reports (SPR's) for the period of April 1, 1993 through March 30, 1994. During the calendar quarter April 1, 1993 through June 30, 1993, 9 of 36 SPR's appeared to be related to improper parts being issued. The inspector noted, that in the time period

after the licensee's corrective actions had been implemented (January - March, 1994), that only one of 26 appeared to be related to improper parts issue and that one appeared to be the result of two numbers in the part number being transposed.

The inspector reviewed Licensee Procedure NPMMP-7.3Q, Returning/Delivering Materials to NPM. The inspector noted, through review of procedures and discussion with licensee personnel, that the person returning an item determined whether it would be restocked in the warehouse. The warehouse person receiving the part only follows instructions from the person returning an item. The procedure appeared to be adequate to ensure proper restocking of items in the warehouse.

The inspector toured the warehouse and noted that the facility appeared to be well organized and good housekeeping appeared to be maintained. The inspector randomly inspected several bins to see if the proper parts were in the designated bin and found no discrepancies. The inspector noted that upon receipt in the warehouse, the safety related and non-safety related materials were kept segregated. The inspector found no evidence that non-safety related parts had been issued improperly for safety related work.

The inspector noted that receipt inspections appeared to be performed as required for safety related items received into the warehouse and that the documentation reviewed by the inspector appeared adequate.

The inspector reviewed the actions taken to correct the excessive backlog of engineering document changes. The licensee stated that at the time of the DET there were approximately 1000 items needing updating with the oldest being over 3 years old. The licensee instituted a tracking method to monitor the backlog and has reduced the backlog such that the oldest item is less than 60 days old.

3.3 Conclusions

The inspector concluded that the licensee corrective actions had been effective in improving the efficiency of the warehouse and parts control system. The inspector noted that the number of problems reported had been reduced to almost none, the backlog of engineering documents had been reduced to a manageable level, and the age of items awaiting action had been reduced to less than 60 days.

4. FOLLOWUP - PLANT SUPPORT (92904)

4.1 (Closed) Inspection Followup Item 498;499/9331-17: Chronic Fire Protection Issues

The licensee did not resolve several chronic fire protection issues in a timely manner. The issues included excessive shrinkage of penetration seals, an unreliable fire alarm system, a large backlog of service requests on fire

protection systems, and inadequate control of transient combustibles in the plant.

As discussed in NRC Inspection Report 50-498/93-37; 50-499/93-37 the licensee had adequately addressed the problems of penetration seal shrinkage, unreliable fire alarm system and control of transient combustibles. The reduction of the backlog of open fire protection issues as discussed in Section 2.2 above resolves this issue. This item is closed.

4.2 (Closed) Inspection Followup Item 498;499/9331-22: Numerous Fire Protection Issues

The licensee did not resolve numerous fire protection issues in a timely manner. The issues included excessive shrinkage of penetration seals, an unreliable fire alarm system, a large backlog of service requests on fire protection systems, and inadequate control of transient combustibles in the plant.

These identical issues are addressed in Sections 2.2 and 4.1 above. This item is closed.

4.3 (Closed) Inspection Followup Item 489;499/9331-25: Modification to the Fire Protection Computer

A program modification to the fire protection computer revising over 1000 alarm messages to a more user friendly format which provides the type and location of each fire alarm device and automatically provides a hard copy printout of the associated fire pre-plan document number for ease of reference will be installed.

The completion of the fire protection computer modification as discussed in Section 2.1 above resolves this issue. This item is closed.

4.4 (Closed) Inspection Followup Item 498;499/9349-25: Spare Parts System Deficiencies

The DET team found numerous deficiencies in the spare parts system, including the lack of parts and the use of wrong parts. These deficiencies contributed to inefficient use of maintenance resources and negatively impacted equipment operability.

The licensee corrective actions documented in Section 3.1 above resolves this issue. This item is closed.

4.5 (Closed) Inspection Followup Item 498;499/9349-27: Cumbersome Computerized Parts Referenc. System

The process to determine the correct replacement part was extremely difficult and cumbersome. The computerized parts reference system consisted of two databases requiring the viewing of multiple screens. Numerous part numbers

were "flagged" for revision because of the large engineering document backlog. Sometimes part numbers, as in some Rockwell valve components, were wrong.

The licensee corrective actions documented in Section 3.2 above resolves this issue. This item is closed.

ATTACHMENT

1 PERSONS CONTACTED

1.1 Licensee Personnel

C. Beavers, System Engineering, Supervising Engineer
H. Butterworth, Operations Manager, Unit 1
J. Calloway, Participant Services
T. Cloninger, Vice President Nuclear Engineering
W. Cottle, Group Vice President, Nuclear
R. Fast, Maintenance Manager, Unit 1
J. Groth, Vice President, Nuclear Generation
M. Hardt, Director, Nuclear Division
S. Head, Senior Construction Engineer
T. Jordan, Manager, Systems Engineering
J. Labuda, Supervisor, Fire Protection
R. McRae, Manager, Safety
M. Meier, Assistant to VP Nuclear
A. Mikus, Supervisor Engineering
L. Myers, Plant Manager, Unit 1
G. Parkey, Plant Manager
P. Parrish, Senior Specialist, Nuclear Licensing
H. Pate, Licensing Engineer
S. Rosen, Vice President, Nuclear Relations
C. Stephenson, Licensing Engineer, Nuclear Licensing
J. Sheppard, General Manager, Nuclear Licensing
S. Talwar, Consulting Engineer
R. Tennant, Director NPMM
S. Thomas, Manager, DED
D. Valley, Staff QA Specialist
L. Walker, Licensing Engineer, Nuclear Licensing
D. Wiegand, Fire Protection System Engineer
D. Wohleber, Department Manager

The personnel above attended the exit meeting. In addition to the personnel listed above, the inspector contacted other personnel during this inspection period.

1.2 NRC Personnel

D. Loveless, Senior Resident Inspector
C. Paulk, Reactor Inspector

2 EXIT MEETING

An exit meeting was conducted on April 29, 1994. During this meeting, the inspector reviewed the scope and findings of this 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 inspector.