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Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

February 22, 1994
ST-HL-AE-4704
File No.: G02.04
10CFR2.201

Mr. L. J. Callan
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8084

South Texas Project Unit 2
Docket No. STN 50-499
Reply to Notice of Violation 9354-01
Regarding the Work Process Program

Dear Mr. Callan:

Houston Lighting & Power has reviewed Notice of Violation 9354-01 dated January 20, 1994 and submits the attached reply.

In the past several months, we have carefully reviewed the causes of human performance issues at South Texas and have taken several steps to achieve improved performance by site personnel. These efforts have focused on two major areas: enhancement of the corrective action program's ability to identify true root causes and the removal of barriers to effective performance. The primary actions taken to remove barriers to performance include training, simplification of the work control process, emphasis on effective line management and supervision, clear definition and communication of expectations, and assigning two supervisors per crew.

During the investigation of the events described in the cited violation, Houston Lighting & Power determined that the guidance provided in the work control program procedures was sufficiently clear that if a reasonable effort had been made to observe the procedure requirements, these events would not have occurred. Further, the individuals involved were aware of their personal responsibilities, yet failed to comply in spite of the prior extensive communication and training they had received. Thus, the primary corrective action for these events focused on the failure of the individuals involved to adhere to management expectations and written guidance that had been communicated to them.

94-0560

Project Manager on Behalf of the Participants in the South Texas Project

Houston Lighting & Power has also reviewed other factors that could have contributed to these occurrences to assure that training, procedure and work document guidance, and supervisor oversight provided appropriate support to the field personnel. As noted in the attached response, several actions have been taken to enhance support for field workers. In particular, substantial efforts have been made to further communicate and reinforce management's expectations with respect to pre-job briefings, self-verification, procedure content, attention to detail, and maintaining a questioning attitude. This communication has been provided primarily by training and a substantial increase in line management involvement in day-to-day activities and field supervisor oversight. Through worker interviews and third party observations, Houston Lighting & Power has confirmed that these efforts have been successful in communicating management's expectations for accountability and ownership to the workers.

Communication among management, supervisors, and site personnel on these topics will continue to be emphasized in consonance with the communication improvements described in the South Texas Project Business Plan. We will carefully monitor our performance and adjust our actions as warranted.

If you have any questions or would like to discuss this issue further, please contact Mr. J. J. Sheppard at (512) 972-8757 or me at (512) 972-8434.

Sincerely,

W. T. Cottle
Group Vice President, Nuclear

Attachment: Reply to Notice of Violation 9354-01.

c:

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Reply to Notice of Violation (50-499/9354-01)

I. Statement of Violation

Technical Specification 6.8.1.a requires, in part, that written procedures shall be established, implemented, and maintained, including the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Item 9.a of Appendix A includes procedures for performing maintenance. Paragraph 3.7.2.5 of Procedure 0PGP03-ZA-0090, Revision 7, dated August 24, 1993, "Work Process Program," requires that the work supervisor shall conduct a pre-job briefing prior to work start. Step 3.7.2.16 of this procedure, states, in part, "Work group personnel shall verify that the station component identification matches the component specified as requiring maintenance in the work document."

Contrary to the above, the following two examples of failure to follow the requirements of the work process program procedure were identified.

1. On December 6 and 7, 1993, craft personnel did not receive pre-job briefings for the performance of two temperature switch calibrations (Preventive Maintenance Tasks IC-2-HG-89002458 and IC-2-HM-87004581). As a result, the different quality classes of the two temperature switches and the reasons for keeping them segregated, and precautions related to working the switch in the diesel generator room without electrical isolation were not addressed.

2. On November 22, 1993, valve maintenance technicians failed to verify that the station component identification tag on Motor Operated Valve Actuators 2SI-MOV-0001A and 2SI-MOV-0001B matched the component specified as requiring maintenance in Service Requests 208071 and 208072, respectively. This resulted in the technicians working on the wrong valve operators, one of which was energized.

These examples constitute a Severity Level IV violation.

II. Houston Lighting & Power Position:

Houston Lighting & Power concurs that the violation occurred.

III. Reason for violation:

Example 1. The incorrect installation of temperature switches was caused by the workers not following procedures. The workers were aware of the procedural requirements, yet failed to comply with these requirements in spite of extensive communication and training.

On December 6, 1993, two Instrumentation & Control technicians removed two temperature switches from their wall mountings, and transferred them to the Instrumentation and Controls shop for calibration as permitted by procedure OPMP08-ZI-0011, "Generic Temperature Switch Calibration (Filled Element)". Following calibration of the two switches, the technicians replaced the switches. A Quality Control inspector determined that the technicians had installed the switches in the wrong locations. Although a pre-job briefing had been conducted when the task was assigned, the supervisor conducting the briefing did not address issues related to concurrently working switches of differing safety classes or the precautions related to working the diesel generator temperature switch without electrical isolation. The supervisor did not address these issues in his briefing because: the work was routine preventive maintenance; the technicians, as certified craftsmen, were knowledgeable of material separation requirements; and the precautions related to working on energized equipment were a "skill of the craft". No additional briefing was given the next day when a new technician was assigned. This was the result of the supervisor's failure to fully understand the intent of the pre-job briefing requirement contained in procedure OPGP03-ZA-0090, "Work Process Program," Revision 7. Although the pre-job brief could have been more comprehensive, the subsequent incorrect installation of the temperature switches occurred because the technicians did not observe the barriers contained in the applicable work process control procedures, including specific instructions to verify the component identification.

Example 2. Personnel did not use self-verification techniques on which they had been extensively trained.

On November 22, 1993, ITI MOVATS day shift personnel were assigned to perform a preliminary inspection of the limit switch assemblies for Containment Spray system valves 2CS-MOV-0001A and 2CS-MOV-0001B. The day shift technicians completed the inspection and corrected several minor deficiencies, but were unable to complete the final close-out inspection, thus turning this portion of the task over to the night shift. The night shift technicians entered the plant and worked on a "0001A" valve. Personnel subsequently determined that the closeout inspection had been performed on a valve in the Safety Injection system. In performing the

work on the wrong valve, several programmatic barriers intended to prevent this type of event were violated. Each of the personnel involved had been extensively trained on the programmatic barriers. The violations of these programmatic barriers included: component identifications were not verified against the work package; equipment configuration discrepancies were not reported to supervision; and the radiological conditions at the work location, which were different from the work instructions, were not reported to supervision.

IV. Corrective Actions:

The following corrective actions have been taken to correct the causes of this violation:

A. Example 1.

1. An Event Review Team and a Human Performance Review Board were established to investigate the causes of the event.

2. Based upon the failure to observe and adhere to procedure requirements, personnel involved were appropriately disciplined per the Houston Lighting & Power Constructive Discipline Program.

3. Maintenance supervisors have been provided with more specific training on the expected content of pre-job briefings.

4. Instrumentation and Controls personnel have been retrained on requirements relating to verification of component identification, work practices, and use of self-verification techniques, as well as expectations regarding pre-job briefs.

B. Example 2.

1. A stop work order was issued for motor operated valve activities.

2. An Event Review Team and a Human Performance Review Board were established to investigate the causes of the event.

3. Based upon the failure to observe and adhere to procedure requirements, personnel involved were appropriately disciplined per the Houston Lighting & Power Constructive Discipline Program.

4. Motor operated valve group field implementation personnel were re-trained on self-verification, equipment clearances, and general work practices.

5. The work package traveler used for motor operated valves was modified to require dual verification of component identification prior to work start each shift.

V. Date of Full Compliance

Houston Lighting & Power is in full compliance.

VI. Additional Information:

Inspection Report 93-54 noted that the two events related to the cited violation involved numerous instances of nonperformance of procedural barriers. Further, the Inspection Report requested that the Response to the Violation discuss the causes and corrective actions for these barrier failures and the need for generic corrective actions to address the problems with self-verification at South Texas. Specific examples which were identified include:

A. Failure to adhere to barrier requirements contained in 0PGP03-ZA-0090, "Work Control Program." Specifically:

1. Comprehensive pre-job briefs were not always conducted; (3.7.2.5)

2. Component identifications were not verified against the work package description; (3.7.2.16)

3. Supervision was not notified of configuration discrepancies; (3.7.2.2)

4. Precautions for working on energized equipment were not included in a pre-job briefing; (3.7.2.4)

5. The intent of a job was changed without revising the work package or writing a Service Request; (3.7.2.20)

6. Shift turnover information was not complete; and (3.7.3.2)

7. The Work Supervisor did not verify the qualifications of the personnel assigned to a task; (3.7.1.2)

B. Failure to adhere to barrier requirements contained in 0PGP03-ZI-0021, "Electrical Safety." Specifically:

1. No precautions were provided in the work procedure for working on energized electrical equipment; and (4.3, 4.4)

2. Electrical safety checks were not conducted on components to be worked. (4.2, 4.3)

C. Failure to adhere to the barrier requirements contained in 0PGP03-ZP-0013, "Purchase Order/Contract Management, Monitoring, Reporting, and Rating." Specifically:

1. Contractor technicians were not formally trained on work control administrative procedures; and (4.1.2.3)

2. The Contract Technical Coordinator failed to monitor the day-to-day coordination of Vendor work activities. (3.2.1, 4.1.2.3)

Improving human performance has been an ongoing initiative at South Texas. In recent months, Houston Lighting & Power has taken several steps to achieve improved performance by site personnel. These efforts have focused on two major areas: enhancement of the corrective action program's ability to identify true root causes and the removal of barriers to effective performance. The primary actions taken to remove barriers to performance include training, simplification of the work control process, emphasis on effective line management and supervision, clear definition and communication of expectations, and assigning two supervisors per crew.

In addition, a significant effort has been expended to raise the level of awareness of personal accountability issues, such as self-verification and attention to detail. There have been numerous presentations, newsletter items, site bulletins, meetings and training sessions providing information on self-verification techniques, the need for improved attention to detail, and adherence to work documents and procedures; each specifically aimed at communicating expectations for personal accountability. This approach has been based on the recognition that both clear expectations and consistent reinforcement are necessary to assure correct work completion.

When the events described in the cited violation were identified and investigated by Houston Lighting & Power, our investigators noted that while there were other causal factors, there was an absence of procedure causal factors. The guidance that was provided was sufficiently clear that if a reasonable effort had been made to observe the procedure barriers, these events would not have occurred. Further, the investigators concluded that the individuals involved in these two events were aware of their responsibilities related to personal accountability, yet failed to comply with these requirements in spite of the extensive communication and training they had received. Therefore, Houston Lighting & Power has concluded that the root cause of the violation of the procedure barriers in these events was the failure of the personnel involved to adhere to the requirements contained in station procedures. As a result, the primary corrective action for the violation of these barriers was the application of the constructive discipline program to the personnel involved.

There were also additional actions taken in response to causal factors that may have contributed to these incidents. For example, Maintenance supervisors have been provided with more specific training on the expected content of pre-job briefings. Maintenance personnel were trained on component verification requirements and self-checking techniques. The motor operated valve traveler package was revised to require the use of a voltage potentiometer to verify that circuits are de-energized. Supervisor presence in the field has been increased by assigning two maintenance supervisors per crew for each discipline. The Contract Technical Coordinator duties for the ITI MOVATS contract have been reassigned to a field supervisor to increase day-to-day oversight. The Purchase Order/Contract Management Procedure (OPGP03-ZP-0013) has been revised to more clearly define the responsibilities of the Contract Technical Coordinator and the Coordinators of open field contracts have been trained on these responsibilities.

Because of Houston Lighting & Power's strong desire to use positive rather than negative incentives to improve human performance, an independent assessment was conducted to determine if human performance expectations were clearly understood by station personnel. A series of questions were asked during interviews of more than 100 station personnel. While the assessment concluded that most groups have assimilated and understand these expectations, a few individuals have not. Therefore, reinforcement of the message will continue by means of group and individual discussions. Verification of component identity, the need for adherence to procedure barriers, reporting job problems or discrepant conditions to supervisors, and the use of self-checking techniques will be stressed.

While the actions described above address the root cause and secondary causal factors contributing to the violations of procedures, Houston Lighting & Power's ongoing actions play a major role in the effort to improve human performance. In addition to improved organizational support, increased supervision in the work place, improvements in documentation content, and continued training on self-verification, several new actions have been taken as listed below.

1. All non-essential work on the Station was stopped on January 22, 1993. Work crews were not released to resume independent work until their work practices were reviewed and critiqued by their supervisors and managers.

2. Station personnel were provided training by means of a videotape on the inherent challenges of the nuclear power industry.

3. Lessons learned from recent human performance events were discussed with personnel and their supervisors. This training included specific examples of deficient work practices related to individual work groups and discussed how basic work principles should have acted as barriers in these events.

4. Shop meetings were conducted to reinforce expectations related to attention to detail, self-checking, and accountability. Periodic meetings will be conducted to refresh personnel in the fundamental attributes needed to achieve quality work.

5. Appropriate use of the Houston Lighting & Power Constructive Discipline Program has been emphasized to managers and supervisors.

Houston Lighting & Power is committed to ongoing communication and enhancement of procedures, training, and guidance in order to ensure that personnel performance is optimized. These enhancements are initiatives described in the South Texas Project Business Plan. The implementation and effectiveness of these initiatives are monitored and adjustments to the initiatives will be made as warranted.