

The Light company

Houston Lighting & Power

South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

August 23, 1991
ST-HL-AE-3854
File No.: G02.04.02
10CFR50.62
10CFR2.205

Mr. James Lieberman
Director, Office of Enforcement
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Units 1 and
Docket Nos. STN 50-498 and 50-499
Reply to Notice of Violation and
Proposed Imposition of Civil Penalty, EA 91-074

Dear Mr. Lieberman:

This letter is in response to the Notice of Violation and Proposed Imposition of Civil Penalty, EA 91-074, transmitted to Houston Lighting and Power Company (HL&P) by letter dated July 26, 1991. HL&P agrees that the violations occurred, and full payment of the proposed civil penalty is being made by wire transfer. HL&P is taking vigorous action to improve AMSAC⁽¹⁾ system availability and reliability, and to prevent the recurrence of similar violations (see Attachment).

HL&P concurs that a higher priority should have been placed on assuring the availability of the AMSAC systems at STP. However, the safety significance of AMSAC should be kept in perspective. Due to the unique design of STP, which includes three safety trains and other special features, the safety significance of AMSAC unavailability was low. Risk assessments and engineering evaluations performed by HL&P and its Nuclear Steam Supply System vendor (described in the Attachment) demonstrate that the risks of core damage from an ATWS at STP are significantly below the target level utilized to establish the ATW rule. As mentioned during the enforcement conference, the STPEGS design merits consideration for an exemption to the ATWS rule, which HL&P may elect to pursue.

(1) ATWS - Anticipated Transient Without Scram
AMSAC - ATWS Mitigation System Actuating Circuitry

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NRC's July 26 letter suggests that HL&P ignored the safety function of this system and associated regulatory responsibilities. This is not an appropriate characterization; substantial resources have been expended to keep the Unit 1 and Unit 2 AMSAC systems operational. These actions were not completely successful. However, this was not due to any disregard for safety or regulatory responsibilities, but rather to the fact that work on safety-related systems received a justifiably higher priority.

Very truly yours,



D. P. Hall
Group Vice President,
Nuclear

AWH/nl

Houston Lighting & Power Company
South Texas Project Electric Generating Station

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Revised 07/09/91

14/NRC/

I. Statement of Violation:

10CFR50.62 requires, in part, that each pressurized water reactor must have equipment to automatically initiate auxiliary (emergency) feedwater (AFW) flow and initiate a turbine trip under conditions indicative of an anticipated transient without scram (ATWS). This equipment must be designed to perform its function in a reliable manner and be independent (from sensor output to the final actuation device) from the existing reactor trip system.

The ATWS mitigation system actuation circuitry (AMSAC) was installed in STP Units 1 and 2, in order to implement the requirements of 10CFR50.62. Section 7.8.1.1 of the (STP) Updated Final Safety Analysis Report states, in part, that AMSAC is a highly reliable system. Section 7.8.1.1.3 states in part, that automatic AMSAC initiation is provided whenever reactor power is above the C-20 interlock [approximately 40 percent power].

1. Contrary to the above, on May 16, 1991, during a walkdown of the STP Unit 2 AFW system that was conducted by NRC inspectors, the AMSAC-AFW interface circuit switches were found open, thus disabling the automatic initiation of AFW flow in the event of an ATWS and preventing the AMSAC system from performing its intended function during an ATWS event.
2. Contrary to the above, from October 19, 1989, to May 31, 1991, the STP Unit 1 AMSAC system was not reliable because the automatic initiation feature was bypassed, rendering the system unavailable, 36 percent of the time that the plant operated at greater than 40-percent power.
3. Contrary to the above, from June 19, 1989, to May 31, 1991, the STP Unit 2 AMSAC system was not reliable because the automatic initiation feature was bypassed, rendering the system unavailable, at least 15 percent of the time that the plant operated at greater than 40-percent power.

This is a Severity Level III problem (Supplement I) Cumulative Civil Penalty - \$75,000 (assessed equally among the three violations).

II. Houston Lighting & Power Position:

HL&P concurs that the violations occurred.

III. Reason for Violation:

The reasons for the first cited violation (open switches on Unit 2) are: 1) The fuse disconnects were not originally included on the Auxiliary Feedwater System (AFW) line-up list; and 2) the corrected Auxiliary Feedwater procedures were not walked down after being revised to add the disconnect switches to the line-up. Not accomplishing these two activities effectively inhibited plant operators from performing adequate verification of AMSAC system configuration.

The reason for the second and third cited violations (AMSAC unavailability in Unit 1 and Unit 2, respectively) was a lack of supervisory attention and assignment of a low priority to a system required by NRC regulations. This resulted in the AMSAC being out of service for an extended time awaiting spare parts. Operating practices are also a contributing factor in that the AMSAC is generally placed in bypass when the "test problem" light is noted and may remain in bypass until the cause for the light is determined. This practice is a caution to minimize risk of an inadvertent plant trip from an AMSAC malfunction.

The fact that lower priority was assigned does not, however, mean that safety or regulatory responsibilities were ignored. HL&P was expending substantial resources, prior to the time these violations were identified, to keep the STPEGS AMSAC systems operable. This effort included identification of a number of enhancements to the AMSAC, correction of problems with power supplies, identification of the need for additional spare parts, and assignment of an additional system engineer. Action to give AMSAC and other important non-safety systems higher priority (described below) was initiated before the violations were identified.

IV. Corrective Action

The corrective action for the first violation was to close the Unit 2 disconnect switches and verify that the Unit 1 disconnect switches were closed. To reduce the potential for a similar event, HL&P will require that changed items in operating procedures which add new components or change component positions be field verified. This will be implemented by September 5, 1991.

With regard to the other two violations, HL&P has taken aggressive action to assure proper priority is given to AMSAC and other important non-safety related systems of regulatory and reliability importance. These systems have been assigned a station priority higher than other non-safety related items. Other systems in this category are Station Blackout mitigating equipment, post accident sampling system, and fire protection systems.

IV. Corrective Action (Cont'd)

Other actions have been taken to improve the availability of AMSAC:

1. Pre-prepared work instructions have been created to expedite troubleshooting AMSAC "test problem" lights, thereby minimizing the time the AMSAC is put in bypass.
2. Additional AMSAC spare parts have been ordered.
3. Improvements have been made in the AMSAC power supplies.
4. An AMSAC Task Force has been established to identify improvements to increase system availability.
5. Availability of AMSAC will be tracked to provide a performance history.
6. Enhanced training will be provided for personnel involved with operating/maintaining the AMSAC.
7. End-to-end testing of AMSAC will be performed at each refueling outage.

V. Date of Full Compliance:

Operational system tests of the AMSAC demonstrate that the system is in compliance at this time. This is confirmed by system availability data gathered since the July 2, 1991, enforcement conference.

HL&P will reconfirm compliance with end-to-end testing. For Unit 2, this will occur at the end of the refueling outage in December, 1991. For Unit 1, this will occur at the next shutdown or during the refueling outage currently scheduled to be completed in December, 1992.

During the July 2, 1991, enforcement conference, the Regional Administrator tasked HL&P with defining system operating limitations and appropriate NRC notification. HL&P analyses show that ATWS is not a significant contributor to risk at STPEGS. Accordingly, plant operating limitations based upon AMSAC availability are not necessary. To comply with the Regional Administrator's request regarding NRC notification, the resident inspector will be advised if the AMSAC is out of service for more than seven consecutive days during times it is required.

VI. Safety Significance

The results of the ATWS evaluation described in the STPEGS Probabilistic Safety Analysis (PSA), which has been reviewed by the NRC, shows that an ATWS event contributes about 6×10^{-7} /yr to the STPEGS core damage frequency, which is substantially less than the 1×10^{-5} /yr⁽¹⁾ used as the basis for 10CFR50.62. The PSA takes no credit for AMSAC; consequently, the STPEGS design met the probabilistic basis for the ATWS rule regardless of AMSAC unavailability.

Comparison of the STPEGS design and the STPEGS PSA ATWS evaluation to the basis for the ATWS rule shows that the STPEGS PSA results ensue from several factors, many of which are unique to STPEGS:

- 1) High reliability of the reactor trip system.
- 2) The four-train auxiliary feedwater system.
- 3) The three-independent-train safety and actuation systems.
- 4) Effective emergency operating procedures and operator training in the events leading to an ATWS transient (i.e., entry into POP05-EO-FRS1 when a reactor trip is not verified and manual trip is not effective).

In addition, the STPEGS design includes a motor-driven startup feedpump which is not included in the PSA, but which provides another feedwater flow source for the steam generators upon loss of the turbine-driven feedwater pumps.

HL&P reemphasizes that this is not a defense for rule non-compliance. It does demonstrate that unavailability of AMSAC did not have the potential for significant impact to the public health and safety.

(1) Achievement of a risk of core damage from ATWS on the order of 1×10^{-5} /yr was the probabilistic basis for 10CFR50.62 as documented in SECY-83-293.