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Electric and Gas
Company

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U.S. Nuclear Regulatory Commission
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**CLARIFICATION OF COMMITMENT DOCKETED VIA "RESPONSE TO NRC'S
NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY"
(REF: NLR-N94194, DATED NOVEMBER 1, 1994)
DOCKET NOS. 50-272; 50-311
LICENSE NOS. DPR-70; DPR-75**

Gentlemen:

In our letter referenced above, Public Service Electric & Gas (PSE&G) provided certain commitments relative to a Notice of Violation.

As discussed with the NRC on Monday, February 27, 1995, PSE&G is submitting this letter and attachment to provide clarifying information regarding commitments in the subject letter relative to the Hagan process control "special" modules.

If you have any questions regarding this submittal, please do not hesitate to call.

Sincerely,



Attachment

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ATTACHMENT

CLARIFICATION OF DOCKETED COMMITMENT

INTRODUCTION

Our letter (REF: NLR-N94194, dated November 1, 1994) provided PSE&G's written response to a "Notice of Violation and Proposed Imposition of Civil Penalty."

In that letter, the following commitments were made with regard to the Hagan process control "special" modules:

"Unit 1 'special' modules were removed and checked for the correct electronic configuration."

and

"Unit 2 'special' modules will be removed and checked for the correct electronic configuration during the 2R8 outage. Completion is planned by December 29, 1994."

NOTE: For clarity, the term "special" as used herein refers to any Hagan process control module in which the electronic configuration has been modified from the standard arrangement.

PSE&G has identified a difference between the manner in which some module verifications were performed and the wording of the commitment for performance of that verification.

In certain cases, module verification was performed only by external visual inspection. These inspections confirmed the presence/absence of certain key physical feature(s) which could be relied upon to confirm that the appropriate "special" module for the application was in place.

The following wording would have been more appropriate:

" . . . "special" modules have been (will be) checked and, if required, removed to verify the correct electronic configuration."

Therefore, we are providing the following clarifying information regarding the implementation of that commitment.

ATTACHMENT (cont'd)

DISCUSSION OF COMMITMENT IMPLEMENTATION

As part of our investigation into the April 7, 1994 event, PSE&G became aware of a setpoint summator module at Salem Unit 1 which did not conform to the configuration documentation for the application in which it was installed. Our research identified that this component was a standard configuration module as opposed to the "special" module which was indicated in some of the applicable documentation.

Upon discovery of this disparity in module configuration, PSE&G initiated a verification of other "special" modules. These verifications were performed independently on each Salem unit and are discussed separately below:

Salem Unit 1

As a result of the Reactor trip event in April, the unit remained in COLD SHUTDOWN during the initial module verifications. Maintenance - Controls and Engineering personnel developed a list of "special" module applications (or "slot" locations). This list was applicable to both units and was used to identify and track verification activities. At the time the initial verification was performed, this list of module applications was believed to be all-inclusive.

During the initial verification of the Hagan modules, a two-tiered process was employed. The first tier established a criterion which was satisfied if the module slots (or functional applications) which required a "special" module actually contained a module which was clearly distinguishable as "special." This determination was made by relying on one of the following: 1) by observing the presence of a "special" tag/label; or 2) by recognizing some key physical attribute (e.g., a potentiometer, meter or switch unique to that application). This first method relied upon the fact that when a module's electronic configuration is modified or made "special," it is so labelled/tagged on the outside of the case.

The second tier of verification was applied when a module slot, in which a "special" module was required, contained a module which was not discernible by external inspection. In this case, the module was physically removed and its internals were visually inspected.

ATTACHMENT (cont'd)

Controls technicians performed both the external and internal inspections. When checked, approximately 75% of these slots contained modules which appropriately indicated that they were "special" modules. Having met the initial verification criterion (module was tagged "special" or contained the appropriate distinguishing feature), no other check of these modules was performed.

The remaining 25% of the modules did not meet this visual confirmation criterion and were subjected to a physical inspection. The technicians examined the module's internal electronic configuration. The internal inspection confirmed that the "as-found" modules were the appropriate "special" configuration for the application in which they were installed.

The cumulative results of both the external and internal checks confirmed that there were no other instances within this original list of applications in which a standard module was installed in a "special" module slot. These events took place prior to Salem Unit 1's restart (May, 1994).

When verification activities were complete and reported to station management in that time period, a communications breakdown occurred. Management personnel were not uniformly aware that certain modules had been considered "verified" by the external confirmation criterion described above. Some management personnel mistakenly believed that all verifications had been accomplished via physical removal and internal inspection of the modules.

Our letter of November 1, 1994 (referenced above) provided information regarding this verification process from an historical perspective. In that letter, PSE&G stated that the modules had been "removed and checked" based on this mistaken belief that the verifications had been performed in May, 1994, using the mechanism which that letter described.

Salem Unit 2

In May, 1994, Salem Unit 2 was operating at power. PSE&G committed to initially perform an external module verification (inspection) of the "special" modules, followed by an internal module examination when the unit entered its next refueling outage (2R8 - October, 1994). This approach was deemed acceptable as it provided reasonable assurance of the module's accuracy, coincident with minimizing the potential for creating a plant trip hazard by removal of these modules at power.

ATTACHMENT (cont'd)

As discussed above, a list of module applications was developed by both Engineering and Maintenance - Controls personnel. This list was applicable to both units and was used to identify and track verification activities. At the time the initial verification was performed, this list of module applications was believed to be all-inclusive. The initial external inspection was conducted using either the "match module label/tag to application slot" method, where possible, or by the verification of some unique physical characteristic method, as described above. Using the original list, these applications were determined to correctly contain modules either labelled or distinguishable as "special" by external inspection.

During the 2R8 refueling outage, a unit-specific list of module applications was developed by Maintenance - Controls technicians. This list was used to track completion of the module verification process. Unit 2 Controls technicians completed the committed "remove and verify" activities prior to the end of the 2R8 outage using this list.

This verification confirmed the "as found" condition of the identified, installed components to actually be "special" modules, as was required for their applications.

RECENT INFORMATION & ACTIONS TAKEN

Since these initial verifications, PSE&G has continued to review the Hagan process controls "special" applications. Research of plant configuration and vendor documents was performed independently and in parallel by both Maintenance - Controls and Engineering personnel. From this research, we determined that there were additional applications (beyond those identified in the original common and subsequent unit-specific lists) which required the installation of "special" modules. As a result of this determination, the following actions were taken:

Salem Unit 1

During the recent Unit 1 outage, Maintenance - Controls personnel re-performed the verification process on the applicable modules from the expanded list. This process required previously unidentified modules to be verified (either by the unique physical characteristic criterion, or by internal inspection where needed). To date, all but eight Unit 1 modules have been so verified. One additional Unit 1 discrepancy has been found, however, this did not affect the operability of the module.

ATTACHMENT (cont'd)

The remaining eight modules will undergo this same level of verification once Unit 1 has returned to stable, full power operation. PSE&G has determined that this approach is acceptable for the following reasons:

1) Of these eight modules, six must physically be removed to perform the verification. Plant conditions will be established which support removing these units from service. More importantly, all six modules have been routinely subjected to and passed quarterly functional tests. This provides assurance that these modules can and will satisfy the functional requirements they are expected to perform.

2) The remaining two modules are "negative signal" units. As such, these must have a negative voltage signal applied at their input to operate. If a unit were installed in that slot which was not a "negative signal" module, the negative voltage signal applied at the input would have prevented the module from operating. This non-functioning condition would have been immediately evident to the installing technician when calibrating the module as part of the installation work package. As currently installed, these "negative signal" modules have been demonstrated operational, thus providing assurance that the correct "special" modules are in place.

Nonetheless, these "negative signal" modules will likewise be subjected to the same removal and inspection verification as described above when plant conditions permit.

Salem Unit 2

During the recent Unit 2 outage, Maintenance - Controls personnel re-performed the verification process on the applicable modules from the expanded list. This process required previously unidentified modules to be verified (either by the unique physical characteristic criterion, or by internal inspection where needed).

To date, all but two Unit 2 "special" modules have been so verified with only one discrepancy identified, as described below. The remaining two modules are "negative signal" units. Both have been demonstrated operational. Based on this observation and the discussion provided for Unit 1 above, reasonable assurance exists that the correct "special" modules are installed in these applications.

ATTACHMENT (cont'd)

These "negative signal" modules will also be subjected to the same removal and inspection verification as described above when plant conditions permit.

During performance of this most recent supplemental review of Unit 2's "special" modules, one instance of an anomalous module installation was uncovered. In this instance, a standard module was incorrectly labelled as "special" and was installed in a slot which required a "special" module. However, our examination revealed that the installed standard module was "functionally identical" in its electrical performance to the "special" module which was required in that application.

The "functionally identical" determination was based on the fact that the standard module differed from the "special" configuration by the presence of a different input resistor value. The different resistor value altered the sensitivity of the gain potentiometer adjustment. However, the gain potentiometer was adjustable within its range to compensate for the resistance variant. The net effect was that the module's electronic behavior was indistinguishable from its "special" equivalent.

PSE&G'S ASSESSMENT OF THIS OCCURRENCE

PSE&G has examined the circumstances in this case to determine what caused a miscommunication between the docketed commitment and the actual actions taken.

The principal contributing factor to this occurrence was a communications breakdown between the station personnel who performed the verification work and management personnel responsible for verifying the commitment activity. Elements of this breakdown occurred both during the assignment of the activities and when those activities were reported as completed.

During the assignment of verification work, it was not clearly communicated, down to the technician level, that the commitment provided a verification criterion for this activity which required that all "special" modules to be physically removed and checked. Secondly, the communication process failed when the report that the verification was complete was exchanged between the technical and managerial levels. This communication failure resulted in the incorrect conclusion and belief that the modules had been physically removed and verified when, in fact, some had been verified by confirming the presence of key external physical components.

ATTACHMENT (cont'd)

PSE&G considers this an isolated occurrence in which the actions taken differed from the commitments which were communicated to the NRC.

RESULTING ACTIONS

Salem Station management has discussed this occurrence with Station personnel and has re-emphasized their expectations relative to communications. This discussion specifically addressed the importance of proper understanding and verification of commitments.

In addition, the Manager - Licensing & Regulation will issue a letter to Nuclear Business Unit (NBU) personnel. This letter will discuss this occurrence and the lessons learned from it. In particular, it will emphasize the importance of proper validation of committed actions.

ASSESSMENT OF IMPACT

PSE&G has evaluated this occurrence and determined that it posed no consequences which had the potential to adversely affect Station operation. This determination is based on the following:

- 1) The verification methods employed provided adequate assurance of functional performance, commensurate with the safety-significance of the applications involved.
- 2) Having completed confirmatory examinations and/or internal inspections when necessary, we have uncovered only two additional instances, out of a large population, wherein modules were incorrectly applied.
- 3) The Hagan process control modules were subjected to installation calibration procedures which established their capacity to effect the functions for which they were installed. Additionally, in the case of Technical Specification instruments, these were functionally surveilled at the required frequencies and found to perform their required functions satisfactorily.