50-498/499

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 14, 1997

Mr. William T. Cottle
Executive Vice-President &
General Manager, Nuclear
Houston Lighting & Power Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

References:
1. Letter from W. T. Cottle to U.S. Nuclear Regulatory Commission dated March 28, 1996, "Submittal of Revised Quality Assurance Plan" (ST-HL-AE-5321)
2. Letter from T. W. Alexion to Houston Power and Lighting dated August 16, 1996, "Review of revised Quality Assurance Plan, South Texas Project, Units 1 and 2 (STP)" (TAC NOS. M92450 and M92451)
3. Letter from S. L. Rosen to U. S. Nuclear Regulatory Commission dated October 30, 1996, "Response to Request for Additional Information Regarding the South Texas Project's Graded Quality Assurance Program Questions" (ST-HL-AE-5434)
4. Letter from L. E. Martin to U. S. Nuclear Regulatory Commission dated January 21, 1997, "Submittal of The Revised Graded Quality Assurance Operations Plan" (ST-HL-AE-5545)

SUBJECT: REVIEW OF REVISED OPERATIONS QUALITY ASSURANCE PROGRAM, SOUTH TEXAS PROJECT, UNITS 1 AND 2 (STP) (TAC NOS. M92450 AND M92451)

Dear Mr. Cottle:

The staff has reviewed your revised Operations Quality Assurance Program (OQAP) (Reference 4) that was submitted in accordance with 10 CFR 50.54(a). The revised OQAP considered the staff's comments (Reference 2) on an OQAP revision proposed earlier (Reference 1). The staff's earlier set of review comments included a general concern that the quality assurance (QA) program to be applied to low safety significant structures, systems, and components (SSCs), the BASIC program, was not described in a sufficient level of detail within the OQAP so that the staff could evaluate the appropriateness of the proposed QA controls. From the staff's perspective, the most recent revision of the OQAP has provided very little additional descriptive information about the QA controls for the BASIC program relative to the previous submittal. The staff had difficulty in understanding the set of minimum QA controls that would be applied to safety-related SSCs that fall under the BASIC program. We believe that your OQAP description is a significant departure from the regulatory guidance that is being prepared by the staff as was discussed at the March 1997, ACRS meeting, and is also not consistent with applicable regulatory requirements. Further, there appears to be a potential diminution of QA controls for the SSCs in the FULL program.

The staff has also reviewed your response (Reference 3) related to Probabilistic Risk Assessment (PRA) questions raised by the staff. The

response indicates that HL&P's guidelines for categorizing SSCs continue to rely heavily on the assumption that SSCs under current Appendix B controls will retain the same reliability under reduced Appendix B controls. The staff believes that the assumption that SSC reliability will not change results in the placement of too many high-safety-significant SSCs (e.g., SSCs with very high risk achievement worths) in the low-safety-significant category.

The staff recognizes that HL&P's STP PRA has been extensively reviewed and, as indicated by your response to question number 3-1 in our August 16, 1996, Request for Additional Information (RAI), that a program is in place to verify and maintain the quality of the PRA and the validity of the results. The staff is currently reviewing the PRA information that HL&P provided to the staff to support Technical Specification change requests for applicability to the graded QA submittal, and has not yet developed any formal questions to include in the attached RAIs. Following our review, we anticipate a site visit, in about the late April or May timeframe, to discuss technical aspects of the PRA relevant to the risk insights used to support the graded QA SSC categorization process. Formal RAI's on PRA quality will be developed, if necessary.

Enclosed are the staff's specific questions on the OQAP revision. A meeting has been scheduled for April 21, 1997, between the staff and HL&P personnel to discuss these questions and concerns in detail. We envision that a site visit can then be scheduled to review in more detail available information on the safety categorization process and the graded QA controls methodology. Should you have any questions, please contact Suzanne Black at (301) 415-1017.

Sincerely,

ORIGINAL SIGNED BY:

Thomas W. Alexion
Project Directorate IV-1
Division of Reactor Projects III & IV
Office of Nuclear Reactor Regulation

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Docket Nos. 50-498 and 50-499

Enclosure: RAI on Graded QA OQAP Revision

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cc w/enclosure: See next page

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Project Directorate IV-1
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Docket Nos. 50-498 and 50-499

Enclosure: RAI on Graded QA OQAP Revision

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HOUSTON LIGHTING AND POWER COMPANY
SOUTH TEXAS PROJECT
OPERATIONAL QUALITY ASSURANCE PROGRAM
REQUEST FOR ADDITIONAL INFORMATION
REGARDING ST-HL-AE-5545, DATED JANUARY 21, 1997

QUALITY ASSURANCE:

1. In Attachment I, "Regulatory Guide Table", shown in Chapter 2.0, all the regulatory guides and endorsed ANSI standards to which the STP OQAP is committed are identified. All the exceptions taken by STP applicable to the FULL and BASIC programs are also indicated. Based on the staff's assignment of the criteria given in the introduction to Attachment I, it was determined that each of the following regulatory guides and ANSI standards contain "shalls" that are changed to "shoulds" for SSCs in the BASIC program, and possibly also for SSCs in the FULL program, thereby resulting in an undefined QA program for those activities addressed:

   - R. G. 1.33; ANSI N18.7-1976/ANS-3.2 (BASIC only)
   - R. G. 1.38; ANSI N45.2.2-1972 (BASIC and FULL)
   - R. G. 1.39; ANSI N45.2.3-1973 (BASIC and FULL)
   - R. G. 1.64; ANSI N45.2.11 (BASIC and FULL)
   - R. G. 1.88; ANSI N45.2.9 (BASIC and FULL)
   - R. G. 1.94; ANSI N45.2.5-1974 (BASIC and FULL)
   - R.G. 1.116; ANSI N45.2.8-1975 (BASIC and FULL)
   - R. G. 1.123; ANSI N45.2.13-1976 (BASIC and FULL)
   - R. G. 1.144; ANSI N45.2.12-1977 (BASIC and FULL)

   It is requested that the licensee provide an identification of the intended assignment of the criteria in the OQAP (Attachment I) for each of the regulatory guides and ANSI standards listed.

   For SSCs in the BASIC program, it is expected that specific commitments to the QA controls will be included in the applicable procedures. For regulatory purposes, however, it is also necessary that such commitments to be included in the OQAP description as stipulated by 10 CFR 50.34(b)(6)(ii). Please provide a description of these commitments.

ENCLOSURE

For SSCs in the FULL program in accordance with the definition provided in §3.1 of Chapter 2.0, it is expected that the QA controls would be in full compliance with the current commitments to meet the requirements of 10 CFR 50, Appendix B. The listing given above seems to make that expectation questionable. Please explain.

2. In addition to the concerns identified in 1. above, it is noted that the Scope section of each chapter includes the following statement:

   "The requirements of this chapter are applicable for structures, systems and components to an extent consistent with their importance to safety."

   While this statement addresses the STP philosophical approach to graded QA, it results in a questionable and undefined program for BASIC SSCs with regard to the practicalities of implementation. In addition, it could mean that elements for SSCs in the FULL program may also be graded in an undefined manner. Please clarify.

3. The qualifications of inspection, examination, and testing personnel will not meet the requirements of ANSI N45.2.6 for the BASIC program. Rather, personnel selected for these activities will be "experienced, task qualified journeymen or supervisors that did not perform or directly supervise the activity being inspected, examined, or tested." These personnel shall meet the "training and qualification requirements of the discipline training program." Please describe how the training these personnel receive under 10 CFR 50.120 is augmented with regard to these added inspection responsibilities. Further, it is the staff's position that, for situations in which non-QA organization personnel perform inspections, the inspection procedure, personnel qualification criteria, and independence from undue cost and schedule pressures should be reviewed and found acceptable by the QA organization prior to the initiation of the activity. This commitment should be added to the OQAP.

4. In Chapter 13.0, conditions adverse to quality for SSCs that are categorized as BASIC should be treated as follows:

   - an apparent cause determination should be conducted and failures trended to assist in evaluating the need for a more detailed root cause analysis, if excessive failures occur, and proper corrective action, and

   - particular consideration should be given to assessing potential generic implications of certain deficiencies in SSCs in the BASIC program with regard to similar SSCs in the FULL program.

5. In Chapter 7.0, reference is made to EPRI NP-5652 (NCIG-07) for the dedication of commercial grade items for service in safety-related applications. This document has been granted conditional endorsement by NRC in Generic Letter 89-02, dated March 29, 1989. Recognition should be given in the OQAP to the provisions of the generic letter to assure that supplementary NRC expectations are met. Please clarify the extent of applicability of the generic letter provisions to the FULL and BASIC programs.

6. In Chapter 7.0, §5.4.2, a commitment is made to perform "periodic" evaluations of vendors on the Approved Vendors List. The prior commitment was to perform such evaluations "at least once each 12 months" which is consistent with regulatory position C.3.b.(2)(third paragraph) in R.G. 1.144. The removal of the specific frequency is considered an unacceptable reduction in commitment for SSCs in the FULL program. An alternate acceptable position is to perform continuous, on-going evaluations of suppliers as information becomes available as described in an NRC letter to NEI dated October 24, 1996. The OQAP should be revised accordingly.

7. In Chapter 10.0, §5.1.1, peer inspections would be permitted without some of the supplementary controls previously specified. Deleted are:

   - the inspector could not report to the same supervisor as does the performer.

   - if the inspector reports to the same supervisor, a functional test must be performed if the activity involves breaching a pressure-retaining item, and the qualifications of the inspection personnel must be approved by the QA organization.

   This is considered a reduction in commitment for SSCs in the FULL program and is not acceptable to the NRC due to a potential loss of independence.

8. The qualification of NDE personnel for both the FULL and BASIC programs will meet the requirements of SNT-TC-1A-1980, which has not been endorsed by the NRC due to the excessive number of requirements that were downgraded by the use of "should" in lieu of "shall", instead of the 1975 edition. Please provide more definitive requirements for the training and qualification of these personnel.

9. The NRC staff has indicated that an acceptable graded quality assurance program must include a means to reassess the safety significance categorization of SSCs and QA controls as new information becomes available, such as through operating experience or changes to plant design, to assure application of the proper QA controls. Please describe your plans to implement this criterion.

SSC CATEGORIZATION:

10. Please refer to question 3-6c in our August 16, 1996 RAIs. HL&P's categorization process for SSCs in the PRA appears to rely on individual basic event importance measures; e.g., if the individual measures are above or below a set of defined numerical guidelines, the SSC is "high" or "low" respectively. The categorization process for SSCs not in the PRA appears to rely on assigning weighing factors to several deterministic questions and combining the results into a safety "score", and categorizing each SSC based on the score.

    The staff's current position is that safety-significance is best developed for system functions, not individual SSCs. System function safety significance may be determined by comparing contributing basic event importance measures to

numerical guidelines. This determination should be done with the recognition that the importance of system functions will always be at least equal to the largest individual basic event's importance measure. As system redundancy increases, the system function importance may become much greater than individual basic event importance.

The safety significance categorization assigned to SSCs (including support system functions which can be treated as component functions for categorization) should be based on the safety significance of the function(s) the SSC supports. SSCs which support only low-safety-significant functions should be classified low-safety-significant. The safety significance of SSCs supporting high-safety-significant functions need not always be high, but each such categorization as low-safety significant should be explicitly evaluated and documented and generally done in conformance with licensee defined guidelines.

Justification for categorizing a SSC supporting a high-safety-significance function as low-safety-significant based on high reliability alone will not be acceptable because the high reliability of the SSC could be a result of the QA program. For basic events in the PRA, this means that a high risk achievement worth (RAW) is a strong indication that the SSC should be categorized as "high", regardless of the SSC's Fussel-Vesely (FV). Similarly, the scoring of SSCs not in the PRA should initially emphasize the consequence of the failure, and only consider a reduced category after evaluating the potential impact of reduced QA on that SSC and the possibility to detect unacceptable reductions in performance through performance monitoring and feedback mechanism.

For the reasons given above the staff believes that HL&P's SSC categorization process does not provide reasonable assurance that the SSCs are appropriately categorized consistent with their importance to safety. Please modify your categorization process such that a low FV does not automatically place SSCs in "low" regardless of the RAW, and make corresponding changes in the non PRA SSC scoring guidelines.

11. Please refer to Question 3-6e in our August 16, 1996 RAI. HL&P stated that possible unacceptable common cause failure (CCF) increase in "low" ranked SSCs will be controlled through evaluation and monitoring for Repetitive Maintenance Preventable Functional Failure (RMPFF).

Please provide a description of this process including a discussion on (a) the overlap in the coverage of the SCCs in the Maintenance rule program and the graded QA program and (b) the ability of the process to systematically identify potential common cause failures in a timely fashion for groups of nominally identical SSCs classified as low-safety-significant, yet whose failure could fail high-safety-significant functions. This question may be addressed in the context of the apparent cause determination discussed in question above.

12. Please refer to question 3-10 in our August 16, 1996 RAI. As presented by the NRC staff to the ACRS, one of the principles being suggested to guide risk informed regulation is that any proposed increase in risk is small and does not cause the NRC safety goals to be exceeded. Although the risk impact of grading

QA elements on individual SSCs is expected to be minimal, a large number of SSCs may be subject to reduced QA requirements. It is recognized that limited data is available to define the impact of quality assurance programs on SSC reliability. Accordingly, licensees may chose to provide a qualitative evaluation addressing principle four directly, eg. that any increase in risk will be small and the safety goals will not be exceeded. Alternatively, the licensee may use a quantitative evaluation based on, for example, sensitivity studies to show that the change in CDF and LERF as a result of the implementation of the graded QA program will be small. Please explain how HL&P plans to address the aggregate impact of the graded QA program on risk.

13. Please refer to question 3-9 in our August 16, 1996 RAI. The RAI stated that the use of PRA in regulatory matters must maintain the philosophy of defense in depth. HL&Ps response that the PRA is the proper tool for evaluating defense in depth does not fully address staff concerns.

As presented by the NRC staff to the ACRS, an acceptable set of guidelines for making the assessment that the philosophy that defense in depth is maintained might include addressing the following items.

- A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation.
- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided.
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency and consequences of challenges to the system (e.g., no risk outliers).
- Independence of barriers is not degraded.
- Defenses against human errors are preserved.

The staff recognizes that implementation of graded QA control will have a minimal impact on several of these items. For example, the GQA process will not result in changes to the plant configuration and thus no existing plant barriers will be removed. Please provide a brief discussion illustrating why HL&Ps implementation of graded QA will maintain the defense in depth philosophies.

14. What level of detail with respect to the process and guidelines developed to determine the safety-significance categorization of all SSCs within the graded QA program will be described? The staff expectation is that a general description of the process be included in the QQAP or some other document. If it is described in another document, will it be incorporated by reference into the QQAP such that it will be considered to be legally part of the FSAR and therefore subject to the relevant change control requirement (i.e., 50.54(a))?