March 17, 2000

MEMORANDUM TO: Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: John A. Nakoski, Senior Project Manager, Section 1
Project Directorate IV & Decommissioning **/RA/**
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - MARCH 13, 15, AND 16, 2000, TELECONFERENCE INFORMATION PROVIDED BY LICENSEE FOR RESOLUTION OF THE REQUEST FOR ADDITIONAL INFORMATION FOR THE MULTIPART EXEMPTION REQUEST (TAC NOS. MA6057 AND MA6058)

The U.S. Nuclear Regulatory Commission (NRC) staff is in the process of reviewing the risk-informed exemption requests that the STP Nuclear Operating Company (STPNOC) submitted on July 13, 1999. As part of that process, the NRC staff issued a request for additional information (RAI) on January 18, 2000. Currently, the staff is working with STPNOC to ensure that STPNOC clearly understands the extent of the questions raised and for the NRC staff to gain a better understanding of the scope of the expected response by STPNOC. The NRC staff has agreed to participate in periodic teleconferences to discuss specific questions raised in the RAI. In preparation for these teleconferences, the licensee will frequently provide the NRC staff with information either using email or by fax. Likewise the NRC staff will frequently provide information to the licensee using similar methods. All of the information exchanged by email or fax between the licensee and the NRC during this process will be made available to the public.

Attachment 1 to this memorandum provides the licensee's draft response to RAI questions 30 and 37. Questions 30 and 37 were discussed during a March 13, 2000, teleconference between the licensee and the NRC staff. Attachment 2 provides the licensee's draft response to RAI questions 20 and 33 that were discussed during a March 15, 2000, teleconference. Attachment 3 provides the licensee's draft response to RAI questions 15, 22, 27, and 28. Questions 15, 22, and 28 were discussed during a March 16, 2000, teleconference. Question 27 will be discussed during a future teleconference. Attachment 4 provides a list of NRC and licensee participants in each of these teleconferences.

Attachments:
1. Draft Response to RAI Questions 30 and 37
2. Draft Response to RAI Questions 20 and 33
3. Draft Response to RAI Questions 15, 22, 27, and 28
4. List of Teleconference Participants

Docket Nos. 50-498 and 50-499

March 17, 2000

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Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: John A. Nakoski, Senior Project Manager, Section 1
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30. *Explain the categorization scheme for risk ranking SSCs not in the licensee's PRA and for system functions. Provide the basis for the 6-point (0 to 5) rating scale used by the plant's Working Group to risk-rank SSCs. For example, explain how "insignificant" impact is different from "minor" impact in discriminating the two points on the scale. Other examples include: "minor" impact and "low" impact, "rarely" occurring event and "infrequently" occurring event, "infrequently" occurring event and "occasionally" occurring event, "regularly" occurring event and "frequently" occurring event. Unless there is an underlying basis associated with these words to meaningfully differentiate the adjacent points on the scale, we find that some of the adjacent points on the proposed scale do not convey any intrinsically meaningful difference. If, for example, a smaller scale, i.e., 3-point scale, is used to clearly distinguish the points in the scale, discuss how such a scale might impact the risk-ranking results. In other words, provide a discussion of how a robustness of a scale affects the sensitivity of the risk-ranking results. Include in the discussion the basis of the weighting factors (and the associated numerical values) and their impact on the risk-ranking. Also include the basis for the "score ranges" for final risk ranking categorization.*

RESPONSE: (G. Schinzel)

The referenced rating scale is used in the deterministic input to the risk categorization process for both PRA-modeled and non-modeled components. <u>Deterministic input</u> is defined in procedure 0PEP02-ZA-0001, Graded Quality Assurance Process, as:

> "An assessment of risk significance based on the collective input from a panel of individuals experienced with the pertinent aspects of managing and operating a nuclear generating facility (e.g., operations, maintenance, design, engineering, and risk analysis). Deterministic input is used to supplement PRA risk rankings, and/or to compensate for PRA limitations and assumptions. Deterministic input is also used for components not modeled in the PRA."

The GQA Working Group membership, as defined in procedure 0PGP02-ZA-0003, Comprehensive Risk Management, is made up of experienced personnel with diverse knowledge and backgrounds. In order to provide the Working Group members with a mechanism to collect and categorize their deterministic input in a consistent and documented manner, a set of five critical questions related to risk categorization are answered. Initially, during the development portion of the risk categorization process, these critical questions were just answered either "Yes" or "No". It quickly became evident, as experience was gained, that this method did not permit enough flexibility to adequately capture the risk insights and technical bases between various system functions or components. For example, the initiating event for loss of Essential Cooling Water has much more impact than the initiating event for loss of Instrument Air. Under the old method, both cases would only have answered "Yes" for the initiating event question, even though the risk significance impact would be quite different. Thus, the current rating scale was developed. With this scale, the Working Group has a consistent means to assign a positive response value that reflects the relative impact on the public health and safety resulting from the loss of a system function or component. By definition, the deterministic process is a subjective process based on the collective wisdom and experience of qualified individuals. The rating scale provides a consistent means to generate gradations in possible responses. The terminology used to define each gradation of the scale (having insignificant impact, minor impact, low impact, etc; or occurring very rarely, infrequently, occasionally, etc) serve as aids to the Working Group members in the selection of the proper scale value for each positive critical question response. While these terms (insignificant, minor, rarely, infrequently, etc) are not specifically defined, the terminology does provide adequate guidance to the Working Group members to arrive at consensus agreements in this subjective portion of the categorization process, and to document a technical basis for each response. As the positive response value increases through the scale from “1” through “5”, it denotes progressive increases in risk significance impact, which is reflected in the proceduralized guidelines provided for using the rating scale. Usage of a smaller scale range would result in less flexibility and therefore less accuracy allowed to the Working Group in its deterministic assessment. Considering the wide variety of system functions and components, the present rating scale provides a good balance between providing enough flexibility in the risk categorization process and the complexity associated with varying degrees of responses.

Weighting factors are used to account for the relative impacts among the five critical questions. For example, the accident mitigation question is considered to have more risk significance impact than the initiating event question, assuming both were answered with the same positive response value. The Working Group determined that the five questions could be categorized into three weighting groups. In order to utilize a maximum overall score of “100”, weighting factors of “3”, “4”, and “5” were used, as detailed in procedure 0PEP02-ZA-0001, Graded Quality Assurance Process. Thus, a maximum positive response of “5” to all five questions for a specific system function or component would result in a score of “100”. The scale was then divided into four sections corresponding with the four risk significance categories. For conservatism, only the lower 40% of the scale was reserved for NRS/LSS components and the upper 60% for MSS/HSS components. In addition, special exceptions were incorporated into the process to account for a high positive response to any one question which might be masked by a low overall score due to low values for the other four questions. For example, a maximum value for “5” for initiating event would result in a minimum risk categorization of “MSS”, even if all other questions were answered in the negative.

The Working Group developed the above process after extensive discussion. This proposed process was then presented to the Comprehensive Risk Management Expert Panel for approval prior to use. Use of the rating scale has provided risk significance categorizations that are consistent with both the Working Group members’ overall sense and judgment and that of the Expert Panel members. It should also be noted that the rating scale is provided as a guideline and the Working Group and Expert Panel can and have deviated, in a conservative manner, from the guideline, based on special circumstances.

37. *You have taken the "Graded Quality Assurance" addendum from the "Comprehensive Risk Management" procedure (Rev. 2 dated 01/02/97) and issued a new procedure on "Graded Quality Assurance Working Group Process" (Rev. 0 dated 8/12/98). The new procedure has added explicit guidance for assigning components a lower significance than the safety significance of the function they support. The licensee's current guidance is as follows:*

If the component failure will fail the function or if credit for component reliability cannot be taken, then the component is ranked at the same risk as the highest risk function it supports.

As a general rule of thumb, if redundancy or backup is available and the reliability of the associated components has been good, the critical questions for the component can be answered at a lower value than given for the highest risk function supported by the component. However, the WG [working group] should use conservative judgement when taking credit for component redundancy

You use five "critical questions" to determine risk of a system function or component ranking. These questions are related to the impact on initiating event, risk significant system, accident/transient, emergency operating procedures, and shutdown/mode change. The response to these questions is one of any points ranging from "0" to "5." For example a score of "1" denotes "positive response having insignificant impact and/or occurring very rarely" and a score of "5" denotes "positive response having high impact and/or occurring frequently."

If this procedure is to be used for the proposed exemption request, explain how many points lower the "critical question" score can be assigned to a redundant component relative to the function's critical question score. For example, if a critical question score is "5" for a particular function, discuss whether a score of "4" or lower should be assigned for the relevant redundant components. Discuss whether all five (or all non-zero) critical question scores for all redundant components are scored lower than the scores for their function. If only "selected" redundant components are scored lower, provide the basis for such a decision. If only selected critical questions are scored lower, provide the basis for such a decision. If a component is placed in a lower safety significance category as a result of being assigned a lower critical question score, discuss how a justification (including a description of how a component is judged to be highly reliable) is developed.

RESPONSE: (G. Schinzel)

Component redundancy is a consideration when there are diverse, independent, alternate means of satisfying a specific system function. Merely having multiple trains of a component available in a system is NOT a definition for component redundancy consideration.

When considering whether component redundancy is a factor, the Working Group evaluates redundancy based on system operating configuration, reliability history, recovery time available, and other factors. As quoted in the text of the question, procedure 0PEP02-ZE-0001, Graded Quality Assurance Process, does not provide guidance on how many points lower each component critical question can be answered when factoring in redundancy. Typically, if credit is taken for redundancy, critical questions for the components are assigned scores of one to two points lower than the corresponding question score for the system function. However, if the function critical question is answered with a score of “1” or “2”, then the component critical question cannot be answered with a “0”. All five critical questions are typically scored lower in this manner when factoring in redundancy. The final risk of the component cannot be “NRS” if the system function is “LSS”, and cannot be more than one risk level lower than the system function.

In evaluating component redundancy, the Working Group examines the effect of the failure of the component on each system function supported by that component. The primary consideration is whether failure of the component will fail or severely degrade the function. If the answer is no, then component redundancy may be factored in, as long as the component’s reliability and that of its redundant counterpart have been satisfactory. Component reliability is subjectively evaluated through reviews of Condition Reports, System Health Reports, inputs from the System Engineer, and input from the Operations representative on the Working Group. A component could be considered reliable when the component demonstrates strong operating performance with few deficiencies, the component has no open concerns based on industry operating experience, and site operating experience reflects no negative reliability trends or concerns.

As noted in the procedure, the Working Group utilizes conservative judgment when taking credit for component redundancy. The risk categorization recommendations and their bases are not finalized until the GQA Working Group presents these recommendations to the Comprehensive Risk Management Expert Panel for review and approval.

20. (a) Explain how the common cause failure (CCF) basic event importance measure is estimated for the proposed exemptions. Explain the difference between the current method and the method reported in STP's graded quality assurance (GQA) program submittal dated August 4, 1997. Provide the basis for the new estimation method.

RESPONSE: (Moldenhauer)

STP Nuclear Operating Company uses RISKMAN® to quantify the Probabilistic Risk Assessment (PRA) model. For each full scope model quantification used in the various sensitivity studies associated with the PRA risk categorization process, a basic event importance file is generated. A full scope model quantification for the STP PRA model is a Level 1 or 2 At-Power PRA quantification including external events, internal fires and internal floods. This information contains, among other parameters, Fussell-Vesely (FV) and Risk Achievement Worth (RAW) importance values for each basic event and common cause “event” or “term” in the model.

The previous methodology for determining the PRA component risk categorization as described in an RAI dated November 6, 1997 used the following process:

- the basic event importance files were generated from each RISKMAN® sensitivity study, and

- the basic event importance measures were “rolled up” into component importance measures.

The “roll up” is accomplished as follows:

- The component FV importance is calculated as the sum of the basic event and associated common cause term FV importance values;

- the component RAW is calculated as follows: $RAW_{comp} = 1+(RAW_{be} -1)$ where RAW_{be} is the RAW value of a basic event and/or common cause term associated with the component of interest;

- the RAW_{comp} is the combined RAW value for the component as a whole, including all associated common cause failure term impacts.

The important issue here was including the complete common cause term importance value for each and every associated component in a common cause group. This approach is extremely conservative and greatly over-estimates the importance based on double counting the common cause terms.

For example, consider a common cause group which is represented by three similar components, (e.g., pumps) in a symmetrical functional alignment at the plant. If system success criteria requires two of three trains of the system to be successful, and the independent basic event failure modes for the three components are represented by A, B, and C, then the minimal cut sets for this function can be represented as follows: AB, BC, AC, [AB], [BC], and [AC], where the terms in brackets represent common cause failure terms. The previous method for “rolling up” the importance’s of these terms to their respective components includes the importance terms for each of the following:

- Component A: A, [AB], and [AC].
- Component B: B, [AB], and [BC].
- Component C: C, [AC], and [BC].

As can be seen in this example [AB], [BC], and [AC] are counted twice which causes an overly conservative estimate.

Thus, double counting of the doublet importance terms occurs in the overall computation of component importance measures. When more than two terms are included in a common cause group cut set, this multiple counting of the importance is further exacerbated (i.e., triple counting of three-term common cause events, quadruple counting of four-term common cause events, and so on). In reality, the common cause failure terms or cut sets are separate events in the risk model, and therefore, it is difficult to define how the importance of these dependent events should be accounted for in individual component risk categorization processes. However, it is evident that multiple counting of the importances from these events common cause is overly conservative.

In order to eliminate some of the conservatism associated with the above process, STP now splits the importance of multiple term common cause failure events evenly among their constituent components. For example, considering the case above with a common cause group with three similar components, an individual component, A, importance includes the whole contribution of the independent failure and partial contribution of the common cause event. Mathematically, the Fussell-Vesely importance for component A is represented by:

$$FV_{\text{component A}} = FV + ½*FV_{[AB]} + ½*FV_{[AC]}$$

where,

$FV_{\text{component A}}$ represent the total FV importance of component A.

$FV_{[AB]}$ represents the FV importance of the common cause event between component A and component B.

The common cause event term (e.g., $FV_{[AB]}$) is multiplied by ½ to prevent double counting.

There are two main advantages in using this approach. First, each component’s importance measure includes contributions from independent failures and common cause events with respect to both accident/transient initiation and mitigation. Second, the importance of an individual component is not overstated and more realistically represents the true importance to the overall plant. The current methodology is based on technology improvements since 1997 and removal of some of the conservatism associated with the previous approach.

20. (b) In Section 5.2.4.1 of the submittal, it is indicated that the same PRA tools used for the GQA program will be used for the proposed exemption. In addition to the method of estimating CCF, identify other changes made, if any, to the categorization process since the GQA submittal was approved on November 6, 1997.

RESPONSE: (A. Moldenhauer)

As outlined in the response to part (a), the method for PRA risk categorization has evolved to more accurately reflect a component's true importance with respect to common cause factors, accident initiation, and mitigation. The only other change in the risk categorization process, as outlined in the SER (*Graded Quality Assurance, Operations Quality Assurance Plan (Revision 13), South Texas Project, Units 1 and 2 (STP)(TAC Nos. M92450 and M92451)*, November 6, 1997), is a process outlined in section 3.2.3, <u>Qualitative Categorization Methodology</u>. The first sentence in the second paragraph states:

> "To expand the categorization to SSCs not modeled in the PRA (and accept the appropriateness of reduced QA controls on safety-related MSS-2 and LSS SSCs modeled in the PRA), the WG identifies and documents every component attribute which supports any HSS system function."

STP does not identify and document every component attribute which supports any HSS system function. However, STP does identify all the <u>critical</u> attributes of HSS and MSS <u>non-safety</u> related components. For <u>safety</u> related components, <u>critical</u> attributes for MSS and LSS are identified and documented. All attributes for HSS <u>safety</u> related components are considered <u>critical</u> attributes.

33. *In the licensee's risk categorization process, the safety significance of all system functions are determined by critical question responses assigned by the expert panel - even system functions modeled in the PRA.*

    (a) *Explain how the importance of a component in the system impacts the safety significance of that system.*

    (b) *For example, the licensee's PRA indicates that the Chemical and Volume Control System (CVCS) positive displacement pump is high safety significant, but the Working Group categorized the corresponding system function as low safety significant. We anticipated that the functions supported by a high safety significant SSC should also be categorized as high safety significant. In particular, your new method of having the expert panel directly assign grades to each system function does not seem to fully comport with assigning a safety significance to each system function based on a combination of PRA insights and deterministic insights. Please explain the source of the apparent discrepancy in the categorization. That is, what characteristics of the PRA models led to the high safety significance categorization for the Chemical and Volume Control (CVCS) pump, and how do these contrast with the characteristics assumed by the expert panel in assigning the grades to eventually end up with a low safety significance designation for the corresponding system function? Moreover, explain how such a designation would impact the risk-ranking of a component in the CVCS.*

RESPONSE (part a): (A. Moldenhauer)

Deterministically, a component's importance is directly attributable to the importance of the function supported by the component. However, a component's importance is based not only on deterministic insights, but also includes probabilistic insights if the component is credited in the plant specific PRA. Deterministically, a component's importance is based on the relative contribution that the component provides in support of the system functions. For example, if the function of a check valve is to prevent reverse flow through a centrifugal pump and is not required for containment isolation, then the valve's importance would be based on the function it supports (i.e., protect the pump) and not on the containment isolation function. Probabilistically, a component's importance is based on its function to mitigate an accident or to prevent an initiating event. This includes both the reliability and availability of the component, which impacts the risk categorization of the component.

Response (part b): (A. Moldenhauer)

The functions of the Chemical and Volume Control system (CVCS) positive displacement pump (PDP) are to hydrotest the Reactor Coolant System (RCS), to add chemicals to the RCS for pH and oxygen control, and to provide seal injection flow if both centrifugal charging pumps become inoperable. The Probabilistic Risk Assessment (PRA) credits the PDP pump only when seal injection flow is not available from the centrifugal charging pumps. Use of the PDP pump requires operator action to start the PDP and to maintain flow to the individual RCP seal injection lines. For event sequences that include failure of plant offsite power, success also requires that the Technical Support Center diesel generator be available to power the PDP.

The PRA categorizes the PDP pump as HIGH due to previous poor performance. Both availability and reliability have continued to improve, and it is expected that updated risk categorization studies will result in the PDP being reclassified. The PRA risk categorization process is a compilation of sensitivity studies. The sensitivity studies demonstrate the robustness of the risk categorization process by providing analysis of the following:

- effects of scheduled maintenance,
- removal of operator recovery,
- removal of common cause failures,
- increased failure rates over multiple systems, and
- reduced steam generator tube rupture frequency on large early release frequency.

The average At-Power Probabilistic Risk Assessment (PRA) risk categorization, along with the above sensitivity studies, are used to produce a final PRA component risk categorization.

The basis for the HIGH categorization of the PDP is its importance during certain scheduled maintenance activities. The PDP had high importance in five of the twenty-one sensitivity studies. In all other studies (e.g., removal of operator recovery, removal of common cause failures, etc.), the PDP was ranked no higher than MEDIUM. These sensitivity studies also included the average CDF and LERF where the PDP was categorized LOW.

The importance calculation affecting the categorization for the PDP is the Fussell-Vesely (FV) importance. FV measures the fraction of the overall risk involving sequences in which the component (i.e., PDP) is postulated to fail.

- FV is a better indicator of component reliability on the selected figure-of-merit (i.e., core damage frequency);
- FV doesn't emphasize those components with high reliability and low overall fractional importance even though the impact of removing these from service could have significant impact; and
- Conversely, FV does highlight those components with low reliability levels which result in high fractional importance although the associated reduction in risk, given component success, is small.

It is expected that with the PDP's recent improved reliability and availability, the PRA importance categorization will result in a lower classification. Consideration for the low reliability and availability of this component demonstrates the robustness of the GQA risk categorization process.

15. *What is the mechanism and time frame to identify any changes in risk categorization of components from LSS/NRS to MSS or HSS that may be a result from operating experience or plant facility modifications? What is the time frame that these components will then return to the scope of the appropriate special treatment and how will a demonstration be made that shows the performance or condition of the components are being effectively controlled through the performance of appropriate special treatment?*

RESPONSE: (G. Schinzel)

The mechanism for identifying potential changes to component risk categorization resulting from both in-house and industry operating experience utilizes the Corrective Action Program (CAP) and the six-month review process. The Corrective Action Program is controlled by procedure 0PGP03-ZX-0002 and permits anyone at the plant site who identifies a deficiency to document that condition for correction. These documented deficiencies are available for review each day by Station personnel, and are available for appropriate remedial/corrective actions to be taken. The six month review process is governed by procedure 0PGP02-ZA-0003, Comprehensive Risk Management.

On a once-per-six-month frequency, the Operating Experience Group evaluates all conditions generated within the previous six months against each specific risk-categorized system designator, and reports the results to the Working Group. This report includes information for the current reporting period, as well as the two previous reporting periods. The Working Group is tasked with determining if any risk categorization revisions are warranted based on:

- a degradation of equipment performance,
- System Engineer input, or
- Licensing, Quality, or Operations organization input.

Any proposed risk categorization changes are submitted to the Expert Panel for approval. Once approved, the risk categorization change is reflected electronically in the controlled Master Equipment Database and through a revision to the Risk Significance Basis Document for that system. In addition, if the risk categorization was changed from LSS/NRS to MSS or HSS, a new condition report would be generated to assess the impact of returning the subject component to the scope of the appropriate special treatments. This assessment would include an evaluation of activities performed on, with, or for the component during the time that the component was excluded from the scope of special treatment requirements. The condition report remains open until corrective actions, if any, are implemented as appropriate. The component's performance would continue to be monitored as part of future six-month reviews to ensure that the applied controls are effective.

Potential risk categorization changes resulting from plant modifications are identified either during the development of the modification or during the periodic six-month review performed by the Working Group on the associated system. Potential impacts to component categorization identified during the modification development phase are documented on a condition report and forwarded to the Working Group for evaluation. Any risk categorization changes resulting from plant modifications are implemented as described in the six-month review process discussed above.

It should also be noted that the above process does not preclude the Working Group from acting upon condition reports associated with potential risk categorization changes more frequently than every six months.

22. *During the review of the Safety Injection (SI) system at STP, the staff noted that the system binder contained a general note allowing the limit switches which are used in actuation of critical components to be rated as LSS. However, upon inquiry from the NRC staff, the licensee stated that this note has been revised by a new note and the new note does not generalize the categorization of limit switches used for actuation of other components. Upon review of the SI system binder, it was determined that the SI system review was done based on the original note in the binder and was not based on the revised note.*

    (a) *Describe the general quality assurance program that is being or will be applied by STPNOC, and what corrective actions are being taken, on its risk categorization process to avoid these types of errors.*

    (b) *The staff also requests that the licensee justify this discrepancy not only for the SI system, but for all other systems where the old note has been listed in the system binder.*

    (c) *Also, the licensee should provide assurance that any other general note which has been revised such that it can affect the categorization of components, has been evaluated for the affected systems and the categorization of the components has been corrected if needed.*

RESPONSE (part a): (R. Chackal)

The provisions of the Operations Quality Assurance Plan (OQAP), Chapter 15.0, Quality Oversight Activities, govern the oversight of the risk categorization process. The program implemented by Chapter 15 provides for independent oversight activities (including audits, assessments, evaluations, performance monitoring, and surveillances) to ensure that the requirements of the Operations Quality Assurance Program are being properly implemented.

STP has performed a focused assessment on application of General Notes affecting limit switches. In addition, STP will perform a broader review of all General Notes to ensure consistency and appropriateness in the application of the General Note. Procedural guidance will also be added to 0PEP02-ZA-0001, Graded Quality Assurance Process, to clarify control, use, and revision of General Notes in the risk categorization process.

As detailed in the additional responses that follow, a condition report has been initiated to specifically re-evaluate limit switches that support actuation of components. The Corrective Action Program (CAP) supports the implementation of the OQAP, Chapter 13.0, Control of Conditions Adverse to Quality. This process requires that conditions be evaluated and resolved, that generic implications be addressed, and that actions to prevent recurrence are implemented, as appropriate.

RESPONSE (part b): (R. Chackal)

As with the risk categorization methodology, the development of the existing set of General Notes was an evolutionary process. Initially, STP used General Notes as a means to more efficiently document the risk bases for large numbers of similar components, such as vent and drain valves and indication-only instruments. General Notes were developed each time a new system was evaluated for risk categorization, and the developed General Notes were specific to that system.

Over time, it became apparent that improved consistency, justification, and efficiency could be obtained if one set of General Notes applicable to all systems was developed. This set of “Generic Notes” was specifically approved by the Expert Panel, and use of Generic Notes began in mid-1999. The Safety Injection system was one of the last systems to utilize the old-format notes.

RESPONSE (part c): (R. Chackal)

As stated, STP has reviewed all evaluated systems that utilized the old-format notes to ensure consistency with the approved General Notes. Specific for the categorization of limit switches, none of the other systems’ notes made reference to limit switches except for the Fuel Handling Building HVAC (HF) system,. For the HF system, the limit switch note references indication-only switches. This General Note specifically excluded switches involved only in the actuation of components.

STP has evaluated the noted NRC concern on the Safety Injection (SI) limit switches involved in the actuation of critical components. STP concludes that these switches should receive the same risk as their associated component, if their failure could prevent the actuation of that component. We have initiated a condition report to effect this change, to review all previously evaluated systems for this occurrence, and to revise the generic notes to specifically refer to this determination.

Recognizing that the Risk Significance Basis Document (RSBD) is a “living” document, STP had, prior to identification of this NRC concern, initiated a mechanism for identifying and capturing needed changes to the RSBDs, utilizing the Corrective Action Program. As part of this program, STP intends to revise the affected RSBDs to reflect the current generic notes, among other updates, during the 6-month review process. The revision process will ensure that the risk categorization of previously evaluated components is consistent with the system’s revised set of general notes, and, if not, that the risk is revised as needed or appropriate justification is provided.

27. During the staff's recent visit to the STP plant site, a sample comparison was completed for risk rankings in the risk-significance basis documents for two heating, ventilation and air conditioning (HVAC) systems. These systems included the electrical auxiliary building (EAB) HVAC and fuel handling building (FHB) HVAC.

A sample comparison of risk rankings for fire dampers for the EAB HVAC and FHB HVAC systems, respectively, showed that EAB HVAC system dampers were assigned a risk ranking of "Medium" while FHB HVAC system dampers were assigned a risk ranking of "Low." Provide the bases for the differences in risk rankings. [The licensee has frequently cited fire dampers as an example of components brought into scope to receive "special treatment."]

Compare the risk rankings of the filtration fans, HEPA filter and carbon filter in both the EAB HVAC and FHB HVAC systems (i.e., a comparison of components that are typically covered by Technical Specifications) and provide the bases for any differences. Select two other examples where the risk rankings differ and provide the bases for the differences.

RESPONSE:

The EAB HVAC (HE) system fire dampers were ranked MEDIUM due to the potential consequences for the spread of fire resulting from a failed fire damper are more severe in this system than they are in the Fuel Handling Building HVAC (HF) system. In the HE system, it could not be assured that failure of a fire damper in one train would not prevent the fire from spreading to another train (another risk significant area). The design of the HF system is different than the HE system in that the functions with the highest risk (MEDIUM) are associated with providing cooling air to essentially self-contained rooms such as the Safety Injection (SI) and Containment Spray (CS) pump rooms. In addition, there are 3-hour rated fire barriers (walls) between the three trains of SI/CS pump rooms. The rest of the system, including the supply and exhaust of air to/from the Fuel Handling Building is categorized LOW or NRS. Thus, failure of a fire damper in one area of the HF system would not be assumed to result in the spread of fire to another area categorized as MEDIUM.

In addition, the number and percentage of HE components ranked HIGH/MEDIUM far exceed those for the HF system, as shown below:

Sys	High	Medium	Total (all risks)
HE	90 (4.7%)	92 (4.7%)	1,970
HF	0 (0%)	6 (0.8%)	755

Comparison of similar components between the HE and HF system produced the following results:

Type	PRA Risk		Determ. Risk		Final Risk		Basis	
	HE	**HF**	**HE**	**HF**	**HE**	**HF**	**HE**	**HF**
FAN	High	N/A	Med.	Low	High	Low	Deterministic risk based on component's support of system functions ranked Medium, including the smoke purge function. PRA risk based on high Risk Achievement Worth (RAW) and/or Fussell-Vesely (FV) values. Refer to PRA analysis for further details. Final risk is highest of PRA or deterministic.	Deterministic risk based on component's support of functions ranked Low, including exhausting Fuel Handling Building air to the main vent stack. The PRA does not rank this component as it falls below its threshold for Low risk.
HEPA Filter	Med.*	N/A	Med.	Low	Med.	Low	Deterministic risk based on component's impact on system functions ranked Medium, including the potential to impede cooling airflow if the filter is clogged. PRA risk based on similar considerations, resulting in relatively high RAW values (100.0 > RAW ≥ 10.0). Note: the asterisk in the PRA risk indicates that the Full QA program is to be applied to those critical attributes of the component that are associated with the RAW value.	Deterministic risk based on component's support of functions ranked Low, including the filtering of exhaust air to remove radioactive particulate. The PRA does not rank this component as it falls below its threshold for Low risk.
Carbon Filter	N/A	N/A	Med.	Low	Med.	Low	Deterministic risk based on component's impact on system functions ranked Medium, including the ability to make-up fresh air. The PRA does not rank this component as it falls below its threshold for Low risk.	Deterministic risk based on component's support of functions ranked Low, including filtering of exhaust air to remove radioactive iodine. The PRA does not rank this component as it falls below its threshold for Low risk.

	HE	HF	HE	HF	HE	HF	HE	HF
Heater	N/A	N/A	Med.	Low	Med.	Low	3V111VHX012, C Train Battery Room Reheat Coil - Deterministic risk based on component's impact on system functions ranked Medium, including the function to maintain room temperatures within the design range (areas containing risk significant equipment). The PRA does not rank this component as it falls below its threshold for Low risk. This heater is required to remain operational during a LOOP.	3V121VHX007C, Fuel Handling Building Exhaust Filtration Unit Heater 13a - Deterministic risk based on component's support of functions ranked Low including the function to provide heating of the exhaust air to reduce moisture which could impact the carbon filters. The PRA does not rank this component as it falls below its threshold for Low risk.
Backdraft Damper	High	N/A	Med.	Low	High	Low	3V111VDA224, EAB Main Air Handling Unit 11a Outlet Backdraft Damper – Deterministic risk based on component's impact on system functions ranked Medium, including the function to maintain room temperatures within the design range (areas containing risk significant equipment). PRA risk based on high Risk Achievement Worth (RAW) and/or Fussell-Vesely (FV) values. Refer to PRA analysis for further details. Final risk is highest of PRA or deterministic.	3V121VDA151, FHB Main Exhaust Fan 11a Discharge Backdraft Damper - Deterministic risk based on component's impact on system functions ranked Low, including the function to exhaust FHB air to the main vent stack under accident conditions. The PRA does not rank this component as it falls below its threshold for Low risk.

28. Please describe how the licensee's risk determination process evaluates the significance of all areas covered by the Maintenance Rule scope (50.65(b)(1), (b)(2)(i), (b)(2)(ii), and (b)(2)(iii), and associated industry guidance). If the risk determination process does not cover the Maintenance Rule scope, provide appropriate justification as the staff will need to fully understand and evaluate the differences.

RESPONSE: (R. Chackal)

The risk significance determination process encompasses all structures, systems, and components (SSCs) covered by the Maintenance Rule scope as described in the referenced regulations and associated industry guidance. For each system that is reviewed under this process, all "tagged" components (refer to RAI question no. 1 response for additional discussion), whether safety related or non safety-related, are categorized via the risk significance determination process. Any SSC that has not yet been risk categorized (i.e., a component in a system that has not yet been reviewed) will not be subject to relaxation of applicable special treatment requirements until such time that the risk categorization is performed.

The risk significance determination process is detailed in STPNOC procedures 0PGP02-ZA-0003, Comprehensive Risk Management, and 0PEP02-ZA-0001, Graded Quality Assurance Working Group Process. Generally, the process consists of blending the PRA risk for a component with a deterministic evaluation to reach an overall risk significance categorization. The deterministic evaluation consists of answering a set of five critical questions similar to those identified in the referenced regulation. The answers to these questions are weighted to provide an appropriate degree of significance, depending upon the importance of each question. In order to provide a consistent and robust approach, the system functions are first risk categorized through this process, followed by the relationship identification between each component and the system function(s) it supports, and finally, by the risk categorization of the component itself. Additional details can be found in the above referenced procedures and in other responses elsewhere in this RAI.

Based on the above, STP's position is that the risk significance determination process fully covers, and in fact exceeds, the scope of the Maintenance rule.

LIST OF PARTICIPANTS IN
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ON STP MULTIPART EXEMPTION RAI RESPONSE

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Glen Schinzel	Project Manager, GQA Implementation	STPNOC
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LIST OF PARTICIPANTS IN
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Attachment 4

LIST OF PARTICIPANTS IN
MARCH 16, 2000, TELECONFERENCE
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