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July 29, 1985

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20814

Attention: Mr. Walter Butler, Chief
Licensing Branch 2
Division of Licensing

Gentlemen:

HCGS SER OUTSTANDING ISSUE 14-PROCEDURES GENERATION PACKAGE
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

Pursuant to closure of the subject SER outstanding issue, enclosed for NRC review is Public Service Electric and Gas Company's (PSE&G's) response to the NRC request for additional information (RAI) dated May 1, 1985, regarding the Hope Creek Procedures Generation Package (PGP). The original PGP for Hope Creek was submitted to NRC in a letter from R. L. Mittl (PSE&G) to A. Schwencer (NRC) dated January 28, 1985, and was incorporated into Amendment 10 of the Hope Creek Final Safety Analysis Report (FSAR).

Enclosure 1 to this letter is the revised PGP, which will replace the original PGP referenced above in the next scheduled amendment to the FSAR (Amendment 12). Enclosures 2 through 5 relate to specific items of the RAI as discussed below.

Please note that RAI items 1 through 4 below refer to a document known as the Hope Creek Plant Specific Technical Guidelines (P-STG), which is closely related to but separate from the PGP. (The P-STG was submitted to NRC in a letter from R. L. Mittl to A. Schwencer dated April 10, 1985). The RAI, however, requests that the PGP be revised to reflect the identified concerns with the P-STG. RAI items 5 through 38 below refer to a Hope Creek Plant Specific Writer's Guide (P-SWG), which comprises Appendix A of both the original and revised PGP.

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RAI Item No. 1

"Though there is no requirement to validate the P-STGs, safety significant deviations from the Emergency Procedure Guidelines (EPGs) should be validated to ensure their technical adequacy. The method for validating these deviations should be described in the PGP."

Response

Please refer to page 6 of the revised PGP (enclosure 1) for the requested information.

RAI Item No. 2

"Provide a summary of the calculation used to derive the drywell spray initiation pressure limit and the flow rate with one loop. Provide a copy of the figure used by the operator to define the safe area for spray initiation."

Response

Please refer to enclosure 2 for the requested information.

RAI Item No. 3

"Discuss the bases for selecting the value for the Primary Containment Pressure Limit for the Hope Creek Station. The discussion should include consideration of structural analyses and tests, purge valve operability, ADS operability, vent capacity requirements and limitation of radioactivity releases into areas outside the primary and secondary containments. Provide a copy of any figures used by the operator to define the venting criterion in P-STGs step PC/P-7."

Response

Please refer to enclosure 3 for the requested information. It should be noted that the Hope Creek Primary Containment Pressure Limit is based on the same considerations as those described in Revision 3 of the generic BWR Emergency Procedure Guidelines accepted by NRC.

RAI Item No. 4

"Provide copies of all figures referenced in the Hope Creek Emergency Operating Procedures (EOPs) if different from those referenced in the EPGs."

Response

Please refer to enclosure 4 for the requested information.

RAI Item No. 5

"The use of flowcharts represents a major portion of the EOP implementation. While the implementation of narrative procedures is generally straightforward, many problems are often associated with the use of flowcharts. For this reason, it is important to provide a detailed description of the method used for implementing the flowcharts, including, but not limited to, what the flowcharts will look like, how large the flowcharts will be, where they will be located in the control room, how they are used by the operators (e.g., how they are related to the division of responsibilities), how many there are, how they will be distinguished for easy access, and how transitions between flowcharts and narrative procedures are handled. A sample flowchart should be provided as an attachment to the PGP."

Response

Prior to directly addressing the requested information, the following clarification is provided in order to enable a more clear understanding of the use of flowcharts and narrative text in Hope Creek Emergency Operating Procedures (EOPs).

The guidance provided in the enclosed PGP applies only to the series 100 and 200 EOPs, which are classified as "EOP Control and Contingency Procedures." As explained in Section 3.1 of Appendix A to enclosure 1 of this letter (the P-SWG), all series 100 and 200 procedures use flowcharts exclusively to describe the necessary operator actions. Narrative portions of these procedures are limited to discussion of: 1) purpose, 2) references, 3) definitions, and 4) responsibilities. Thus step-by-step narrative instructions are not provided in series 100 and 200 procedures.

Such step-by-step narrative instructions are provided in series 300 EOPs, which are classified as "EOP Support Procedures." Series 300 procedures are written in the format of Hope Creek System Operating Procedures, guidance for which is provided as enclosure 5 to this letter.

Information requested in the RAI can be found in the enclosures as follows:

- o Appearance and size of flowcharts - enclosure 1, Appendix A, Sections 3.1.8.2 and 5.7;
- o Where they (flowcharts) will be located in the control room - this information is not included in the enclosed documents so as not to necessitate revisions of these documents should the EOP location be changed in the future. This is a station administrative function, and is not required to be included in the PGP;
- o How flowcharts are used by the operators - enclosure 1, Section 3.1;
- o How many flowcharts there are - although not explicitly stated as such in the enclosures, there will be a single flowchart for each series 100 and 200 EOP (see enclosure 1, Appendix A, Section 3.1.8). The series 100 and 200 EOPs are listed in enclosure 1, Appendix B, Section 1.2;
- o How flowcharts will be distinguished for easy access - since there is to be a single flowchart for each series 100 and 200 EOP, selection of the correct EOP by the operator ensures that the appropriate flowchart is used.
- o How transitions between flowcharts and narrative procedures are handled - enclosure 1, Appendix A, Section 4.3.2;
- o Sample flowchart - enclosure 1, Appendix A, Attachment 6.

RAI Item No. 6

"The use of both flowcharts and narrative procedures requires that complete guidance be provided for both methods of presentation. The Writer's Guide layout and subtitles make it difficult to know where guidance is relevant to narrative and where it is relevant to flowcharts. Although sections are designated "EOP", "Procedure", and "Flowchart",

it is difficult to know what guidance is relevant to each. For example, under flowcharts, is step numbering relevant to narrative procedures? If this guidance is relevant to narrative procedures, the PGP should state this. If not, the PGP should indicate where the guidance for numbering narrative steps is located. The use of logic terms is outlined under "Flowchart Instruction Steps", but there is no corresponding guidance for narrative procedures. The writer's guide should contain a similar section for narrative procedures. It would seem that some renaming of sections or relocation of guidance would make the writer's guide much clearer. In addition, it is not clear (in Section 2.3) how Attachment 2 of procedure "OP-AP.ZZ-001 Q" relates to or integrates with the P-SWG. Attachment 2 appears to provide guidance for an entirely different class of procedure (System Operation). All writing guidance pertinent to EOPs (narrative and flowcharts) should be contained in the P-SWGs. Since the EOP Support Procedures are defined as a part of the EOPs, any guidance for preparing those procedures should also be included in the PGP and suitably interfaced with other guidance."

Response

Please refer to the response to RAI Item No. 5 above for a clarification of the use of flowcharts and narrative text in the Hope Creek EOPs, as well as for clarification of applicable guidance documents.

RAI Item No. 7

"The PGP should be written in the imperative (command) mood (i.e., using the auxiliary verbs "shall" or "should") as a document which prescribes guidance."

Response

The PGP has been rewritten to use the imperative mood throughout (see enclosure 1 to this letter).

RAI Item No. 8

"The PGP should describe: the use, content, and format of entry conditions; how operator actions are organized in a logical fashion; how tolerances will be expressed; the content, format, and use of referencing other procedures;

methods for identifying procedure sections, subsections; equipment location information; how to write various types of action steps (e.g., steps performed concurrently with other steps); structuring EOPs so that a minimum of control room personnel are necessary to properly execute them; and the format and placement of cautions and notes."

Response

Information requested in this RAI item can be found in the enclosures as follows:

- o Use, content and format of entry conditions - enclosure 1, Section 3.1; enclosure 1, Appendix A, Section 3.1.8.2.a;
- o How operator actions are organized in a logical fashion - enclosure 1 Section 6.2 describes the EOP validation program objectives, which include ensuring that the EOPs are usable by operators and assuring that the procedures work;
- o How tolerances will be expressed - enclosure 1, Appendix A, Sections 4.4.3.f and 5.5;
- o Content, use and format of referencing other procedures; methods for identifying procedure sections and subsections - enclosure 1, Appendix A, Section 4.3;
- o Equipment location information - enclosure 1, Appendix A, Section 4.6;
- o How to write various types of action steps (e.g., steps performed concurrently with other steps) - enclosure 1, Appendix A, Section 4.3.2;
- o Structuring EOPs so that a minimum of control room personnel are necessary to properly execute them - enclosure 1, Section 6.2 describes the EOP validation program objective in this regard;
- o Format and placement of cautions and notes - enclosure 1, Appendix A, Sections 3.1.8.2.d and e.

NOTE:

The RAI items listed below refer to specific sections of the original PGP submittal. Since the PGP has been extensively revised, pertinent sections are renumbered as shown in the responses.

RAI Item No. 9

"Section 2.3.6 - Clarify, in the P-SWG, the meaning of "procedure responsibilities." Does this phrase mean operating crew responsibilities?"

Response

Yes. Please refer to enclosure 1, Appendix A Section 3.1.7 for details.

RAI Item No. 10

"Sections 2.4-2.7 - The P-SWG should clarify whether this page numbering guidance applies to flowcharts. Section 4.1.1 seems to indicate otherwise; however, it is not clear from the section title and the definition of "procedures" used in the PGP. The statement that "all pages of the procedure text shall be numbered sequentially . . ." (p. 4) should indicate that each page of the procedure/flowchart includes the total number of pages in the procedure/flowchart (i.e., p. __ of __)."

Response

Please refer to the response to RAI Item No. 5 for clarification on the use of flowcharts and narrative text in the Hope Creek EOPs.

Pages are to be numbered as stated in enclosure 1, Appendix A, Section 3.1.2.

RAI Item No. 11

"Sections 3.1 and 3.2 appear to apply only to narrative procedures. If so, they should be designated as such."

Response

These sections (now renumbered as sections 2.1 and 2.2, respectively) do apply to procedures that contain flowcharts. Please refer to the response to RAI Item No. 5.

RAI Item No. 12

"Section 4.2 - Some of the information contained in this section is also relevant to narrative procedures. Does guidance exist elsewhere for narrative procedures (OP-AP.ZZ-001)? The P-SWG should clarify the procedure type(s) this section pertains to and how, if at all, dual guidance (i.e., the use of OP-AP.ZZ-001 and the P-SWG) is used."

Response

Please refer to the response to RAI Item No. 5.

RAI Item No. 13

"Section 4.2.3/a - This guidance, potentially could allow several actions in a step. Specific guidance should be provided, e.g., no more than two actions per step. Also, this guidance should be coordinated or combined with that for Section 4.2.3/c, where use of the word "numerous" is too vague."

Response

Please refer to enclosure 1, Appendix A, Section 4.4.2 for revised guidance on this concern. Although the number of actions per step should be minimized, it is considered inappropriate to arbitrarily specify a limit for all cases.

RAI Item No. 14

"Section 4.2.4/a - Guidance in content, format, location, etc., should be provided for graphs contained in narrative procedures. Also, how does the flowchart preparer (procedure writer) know what is "adequate" for readability and extraction of values? It is necessary to be more specific here."

Response

Please refer to enclosure 1, Appendix A, Sections 3.1.8.2.c and 4.4.3.e for information pertaining to content, format and location of graphs. (Note: these sections apply to flowcharts, not narrative procedures). Adequacy of graphs for readability and extraction of values will be confirmed in the course of EOP verification and validation.

RAI Item No. 15

"Section 4.2.4/b - Is it intended that the value in the procedure should be the same as that available from the instrument, that is, in the same units as the instrument, within the range of the instrument, or to the same number of significant digits available on the instrument (or all of the above)? More specific guidance should be provided here, remembering that the values in the procedures are dictated by information requirements of the operators as derived from the task analysis and technical guidelines, not by the available instrumentation."

Response

Guidance with respect to numerical values used in procedures is provided in enclosure 1, Appendix A, Sections 4.4.3.f and 5.5.e and f. It should be noted, however, that PSE&G disagrees with the position stated in the RAI that values provided in the procedure are not dictated by available instrumentation. Compatibility of procedures with available instrumentation is considered essential for correct and timely implementation of any procedure that calls for the use of such instrumentation.

RAI Item No. 16

"Section 4.3.2/a - Clarify, in the P-SWG, how the major symbol blocks should be made readily detectable and discriminable."

Response

The referenced section is now renumbered as Section 4.1.2.a of Appendix A of enclosure 1. Flowchart symbols are depicted and described in Attachment 3 to Appendix A.

RAI Item No. 17

"Section 4.4 - This section also seems relevant to narrative procedures. See comments 6 and 12 which concern integrating guidance on flowcharts and narrative procedures."

Response

This section (renumbered as enclosure 1, Appendix A, Section 5.6) applies to flowcharts only. Please refer to the response to RAI Item No. 5 for clarification.

RAI Item No. 18

"Section 4.4.1 - Examples of the conditional statements with the various logic words would be helpful in the P-SWG."

Response

An example of a conditional statement is provided in enclosure 1, Appendix A, Section 4.5.f.

RAI Item No. 19

"Section 4.4.3 - Specific instructions for using punctuation in flowcharts to aid the user should be provided in the P-SWG."

Response

Please refer to enclosure 1, Appendix A, Section 5.3.2 for the requested information.

RAI Item No. 20

"Section 4.4.4/a - This section says that the entire step is underlined. Is this really what is intended? Later it is implied that only the logic terms are underlined (5.2). Clarify."

Response

Please refer to enclosure 1, Appendix A, Sections 4.5 and 5.3.3 for the requested information.

RAI Item No. 21

"Section 4.4.4/b - An acceptable list of commands/verbs would be helpful as a reference. Also, this section seems redundant with 5.3. Clarify the intended use of each section and make any necessary changes to the P-SWG."

Response

Please refer to enclosure 1, Appendix A, Attachment 5 for a list of commands. Command guidance is now located only in Appendix A, Section 5.3.3.

RAI Item No. 22

"Section 4.5.1/a - Specifically state what spacing is acceptable."

Response

As stated in enclosure 1, Appendix A, Section 4.3.1.a, spacing shall be sufficient to provide a minimum of clutter to allow easy and accurate movement through flowchart branches. A specific numerical spacing criteria is not provided. However, ease and accuracy of movement through flowchart branches will be confirmed in the course of EOP editorial verification (see enclosure 1, Appendix B, Section 3.8, Item 59).

RAI Item No. 23

"Section 4.6.1/a - Specifically state what size is sufficient under the conditions described."

Response

The verification and validation, and training programs will demonstrate the ability to use the procedures under normal lighting conditions. The lighting survey portion of the control room design review will verify that adequate lighting exists in the control room during emergency lighting conditions.

RAI Item No. 24

"Section 4.6.2/a - There are many styles that meet this criteria, but the stated criteria allow a mix. Revise the P-SWG to specify which style should be used."

Response

As explained in enclosure 1, Appendix A, Section 5.6.2.b, consistency of character style is required. A single style, however, is not specified.

RAI Item No. 25

"Section 4.6.2/b - This section states an objective but does not provide guidance on how to accomplish the objective. Clarification is needed here, i.e., indicate what the spacing should be. For narrative procedures, this can be specified in terms of "pitch"."

Response

Confirmation of having met the objective of this section (now renumbered as 5.6.2.c of enclosure 1, Appendix A) will be provided in the course of EOP verification and validation. No numerical criterion for meeting the objective is provided, however.

RAI Item No. 26

"Section 4.6.4 - This section requires "high quality" copies of flowcharts. What does "high quality" mean? Be more specific."

Response

Please refer to enclosure 1, Appendix A, Section 5.6.4 for the requested information.

RAI Item No. 27

"Section 4.7.1/a - Specify how a flowchart should be designed to permit tracking of movement through its branches."

Response

Please refer to enclosure 1, Appendix A, Section 5.7.3 for the requested information.

RAI Item No. 28

"Section 4.7.1/b - Specify what the size should be for flowcharts."

Response

As explained in enclosure 1, Appendix A, Section 3.1.8.2, the entire flowchart will appear on one page. Thus, size of flowcharts will vary according to the amount of information required.

RAI Item No. 29

"Sections 5.1/j2 - As correctly indicated earlier in the P-SWG, cautions should not contain commands (actions). However, this section presents an example that is contrary to the guidance. Either convert the caution (or part) presented in the example to an action step or take the action out of the caution."

Response

Please refer to enclosure 1, Appendix A, Section 4.4.1.e for the requested information.

RAI Item No. 30

"Section 5.2 - This section indicates that logic terms will be highlighted by underlining. However, in all the examples in this section, logic terms are capitalized and sometimes underlined. The P-SWG should be consistent and examples should reflect the approach to be used in the EOPs. In addition, the use of examples of logic steps in the appropriate format would be very helpful."

Response

Please refer to enclosure 1, Appendix A, Section 4.5 for the requested information.

RAI Item No. 31

"Section 5.4/a and b - If the "common usage" is not the same as that used on the boards, it appears that "a" and "b" can be in conflict. Provide instructions to deal with this situation."

Response

Please refer to enclosure 1, Appendix A, Section 4.6 for the requested information.

RAI Item No. 32

"Section 6.5/c - The number of significant digits should be dictated by the information needs of the operators as derived from the technical guidelines (see comment 15 above)."

Response

Please refer to the response to RAI Item No. 15 above.

RAI Item No. 33

"The NRC has not reviewed the INPO guidance for either validation or verification. Although the general objectives specified in the PGP are acceptable, a more detailed description of the programs for verification and validation is necessary. Specifically, we need to know the methods used (e.g., desk-top reviews, simulator exercises, etc.), the process for implementing the V/V, including the V/V team makeup, the roles played by team members, and the nature of scenarios to be used. In addition, (a) indicate how areas not covered by simulator exercises undergo V/V, (b) describe the process for using the results of the V/V to revise the EOP's, (c) provide a commitment to validate/verify revisions to the EOPs, (d) indicate that the EOPs will be compatible with minimum control room staffing, (e) provide a description of the plan by which adequacy of control room instrumentation and controls will be determined, (f) provide a description of the plan by which correspondence between EOPs and control room instrumentation and controls will be determined."

Response

Information requested in this RAI item can be found in the enclosures as follows:

- o Verification/Validation (V/V) methodology - enclosure 1, Appendix B, Sections 2.3, 3.3, 4.3, and 4.4;
- o V/V implementation process - enclosure 1, Appendix B, Sections 2.6, 2.7, 3.6, 3.7, 4.8, and 4.9;
- o V/V team makeup and team member roles - enclosure 1, Appendix B, Sections 2.4, 3.4, and 4.6;
- o Nature of scenarios to be used - enclosure 1, Appendix B, Section 4.5;
- o V/V for areas not covered by simulator exercises - enclosure 1, Appendix B, Section 4.9;
- o Revision process for EOPs based on V/V - enclosure 1, Appendix B, Sections 5.0 and 5.5;
- o Commitment to V/V revisions to the EOPs - enclosure 1, Appendix B, Section 2.2, 3.2, and 4.2;
- o Compatability of EOPs with minimum control room staffing - enclosure 1, Section 6.2, Appendix B, Section 4.1;
- o Adequacy of control room instrumentation and control; correspondence between EOPs and control room instrumentation and controls - these concerns will be addressed in the course of the ongoing Control Room Design Review, as stated in enclosure 1, Section 8.0.

RAI Item No. 34

"During training, all operators should have the opportunity to work with the full complement of EOPs. Such a commitment should be included in the training section of the PGP."

Response

Please refer to enclosure 1, Section 7.4.1 for the requested commitment.

RAI Item No. 35

"The PGP should contain a commitment to train operators on the EOPs prior to their implementation."

Response

Please refer to enclosure 1, Section 7.4 for the requested commitment.

RAI Item No. 36

"The PGP should contain a commitment to evaluate the operators' knowledge of and performance using EOPs after training."

Response

Please refer to enclosure 1, Section 7.4.2 for the requested commitment.

RAI Item No. 37

"Although simulator exercises are mentioned in the PGP (p. 16), they are not differentiated from walkthroughs. It is unclear whether or not the dynamic aspects of procedures will be adequately evaluated using the proposed plan. Provide a description of the process that will be used to ensure that the dynamic aspects of the procedure will be evaluated."

Response

Please refer to enclosure 1, Sections 7.3.4, 7.3.5, 7.4.1, and 7.4.2 for the requested information.

RAI Item No. 38

"The effectiveness of implementing EOPs is, in part, a result of operators knowing what their responsibilities (roles) are during an event and the ability of operators to work together (teamwork). The training program description should address operator roles and teamwork as a part of the simulator training."

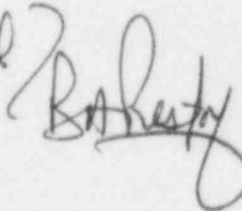
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Response

Please refer to enclosure 1, Section 7.4.2 for the requested information.

Should there be any questions or concerns in regard to the above responses or to the enclosed material, please contact us.

Very truly yours,

R. L. Mittel 

Enclosures

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USNRC Licensing Project Manager (w/encl.)

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USNRC Senior Resident Inspector (w/encl.)

ENCLOSURE 1