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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 addi-
tional information (RAI) dated May 1, 1985, regarding the
Hope Creek Procedures Generation Package (PGP). The origi-
nal 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 sched-
uled 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.

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 tech-
nical 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 analy-
ses and tests, purge valve operability, ADS operability,
vent capacity requirements and limitation of radioactivity
releases into areas outside the primary and secondary con-
tainments. Provide a copy of any figures used by the opera-
tor 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 Proce-
dure 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 pro-
cedures is generally straightforward, many problems are
often associated with the use of flowcharts. For this rea-
son, 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 narra-
tive 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 Sec-
tion 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 dis-
cussion of: 1) purpose, 2) references, 3) definitions, and
4) responsibilities. Thus step-by-step narrative instruc-
tions 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 Proce-
dures." 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 con-
  trol room - this information is not included in the
  enclosed documents so as not to necessitate revi-
  sions of these documents should the EOP location be
  changed in the future. This is a station adminis-
  trative function, and is not required to be included
  in the PGP;

o How flowcharts are used by the operators - enclo-
  sure 1, Section 3.1;

o How many flowcharts there are - although not
  explicity 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 cor-
  rect EOP by the operator ensures that the appropri-
  ate 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, Attach-
  ment 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 nar-
rative 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 nar-
rative procedures, the PGP should state this. If not, the
PGP should indicate where the guidance for numbering narra-
tive steps is located. The use of logic terms is outlined
under "Flowchart Instruction Steps", but there is no cor-
responding guidance for narrative procedures. The writer's
guide should contain a similar section for narrative proce-
dures. 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 (Sys-
tem 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 proce-
dures 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 applic-
able 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   perative mood
throughout (see enclosure 1 to this le ter).

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 con-
tent, 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 ensur-
   ing that the EOPs are usable by operators and assur-
   ing 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 proce-
   dures; methods for identifying procedure sections
   and subsections – enclosure 1, Appendix A, Section
   4.3;

o Equipment location information – enclosure 1, Appen-
   dix 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 valida-
   tion program objective in this regard;

o Format and placement of cautions and notes – enclo-
   sure 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 pro-
cedure 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 clarifi-
cation on the use of flowcharts and narrative text in the
Hope Creek EOPs.

Pages are to be numbered as stated in enclosure 1, Appen-
dix 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 flow-
charts. 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 pro-
vided, 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 (proce-
dure 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 dis-
agrees with the position stated in the RAI that values pro-
vided in the procedure are not dictated by available instru-
mentation. 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 pro-
vided. However, ease and accuracy of movement through flow-
chart branches will be confirmed in the course of EOP edi-
torial 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 suffi-
cient 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 light-
ing 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 spac-
ing should be. For narrative procedures, this can be speci-
fied 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 valida-
tion. 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). How-
ever, this section presents an example that is contrary to
the guidance. Either convert the caution (or part) pre-
sented 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 appro-
priate 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 vali-
dation 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
EOPs, (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 descrip-
tion of the plan by which adequacy of control room instru-
mentation 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 - enclo-
   sure 1, Appendix B, Sections 2.3, 3.3, 4.3, and 4.4;

o V/V implementation process - enclosure 1, Appen-
   dix 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, Appen-
   dix 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 - enclo-
   sure 1, Appendix B, Sections 5.0 and 5.5;

o Commitment to V/V revisions to the EOPs - enclo-
   sure 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 con-
   trol; 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."
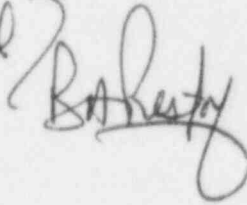
Response

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. Mittl

Enclosures

C   D. H. Wagner
      USNRC Licensing Project Manager (w/encl.)

    A. R. Blough
      USNRC Senior Resident Inspector (w/encl.)

ENCLOSURE 1