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December 26, 1985
BECO 85-228

Mr. John A. Zwolinski, Director
BWR Project Directorate #1
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

License DPR-35
Docket 50-293

Emergency Operating Procedures
Generation Package, NUREG 0737, Item 1.C.1

Dear Sir:

In response to your letter dated February 19, 1985 enclosed find our revised Writer's Guide for Emergency Operating Procedures (EOPs). Changes have been highlighted to aid in your review. This updates and completes our Procedures Generation Package previously transmitted to you by letter dated December 12, 1983. The Pilgrim Nuclear Power Station (PNPS) procedures for Verification and Validation of EOP's are also included for informational purposes. In addition please find attached our response to your individual comments contained in Section 2.0 of your draft safety evaluation by the Office of Nuclear Reactor Regulation relative to the PNPS Procedures Generation Package.

Very truly yours,

W.D. Harrington

ELC/kmc

Enclosures

- (A) Response to NRC Comments
- (B) Revised Writer's Guide
EOP Verification Procedure
EOP Validation Procedure

Add:

EB (LIAW)
PSB (L. HULMAN)
EICSB (SRINIVASAN)
RSB (ACTING)
FOB (VASSALLO)
AD - G. LAINAS (ltr only)

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Enclosure A
Response to NRC Comments

A. Plant Specific Technical Guidelines

Comment 2.A.1

Deviations from and additions to the generic technical guidelines that are of safety significance must be identified in the PGP. In addition, analyses or other technical justification supporting these deviations and additions must be provided. (See NUREG-0899, Section 2.5.2.b).

Response

There were no safety significant deviations or additions from the generic technical guidelines in the preparation of Pilgrim Nuclear Power Station specific technical guidelines. The systems and/or sections deleted from the generic technical guidelines were those systems and/or sections not contained in the Pilgrim Nuclear Power Station.

Comment 2.A.2

When there are deviations from the generic technical guidelines in the P-STG, the operator actions should be validated/verified to confirm their technical adequacy. The method PNPS plans to use to conduct this validation/verification should be described in the PGP.

Response

As outlined in (#1) above the development of the PNPS specific technical guidelines from the generic technical guidelines deleted only those systems and/or sections that are not contained at PNPS, therefore no validation/verification is required.

Comment 2.A.3

As part of the PGP process, the necessity for the adequacy of control room instrumentation and controls must be determined. Determination of operator controls and instrumentation needs, as well as determination of whether the controls and instrumentation referred to in the EOPs are actually available is necessary. Evaluation of these needs may be done as part of the Control Room Design Review as indicated in NUREG-0700. The method should be described in the PGP, or it may be described in the Control Room Design Review program and appropriately referenced in the PGP.

Response

We concur and bring to your attention the following:

Page 22, Item 4 of the implementation plan describes how validation of the EOPs will determine that the procedures, control room, and plant hardware correspond with one another. Form 3, Page 1 of the validation procedure Section II.A.3, 4 & 5 addresses the adequacy of the controls and instrumentation referred to in the EOPs. Page 32 and 34 of the implementation plan describe how this table top/walk through evaluation will be conducted.

For your information, these validations were accomplished as designated, and it was determined that the controls and instrumentation required to conduct the EOPs were adequate and available to the operator.

The CRDR was performed in accordance with guidance contained in NUREG-0700 and is documented in the BECo documentation for that project.

B. Plant Specific Writer's Guide

Comment 2.B.1

Information should be presented in procedures so that interruptions in its flow are minimal. To achieve this, each procedure should be written so that an action step, a warning (caution), or a note should be completed on the page where it began. This guidance should be included in the plant-specific writer's guide.

Response

We concur with this comment and have revised our Writer's Guide to include the guidance as outlined.

Comment 2.B.2

The examples of cautions on Page 12 in the Appendix contain action steps. These examples should be changed to agree with the definition in Section IV.C of Page 7.

Response

We concur with this comment and have revised the sample cautions to agree with the definition in Section IV.C of the Writer's Guide.

Comment 2.B.3.a

The list of acceptable action verbs in Table 1, Pages 13 - 14 should include "jog" (as in jog open and jog closed) and "synchronize," since both are discussed on Page 9 as acceptable action verbs. Table 1 should be expanded to include other acceptable action verbs.

Response

We concur with this comment and have revised the list of acceptable action verbs in the PNPS Writer's Guide to contain both "jog" and "synchronize". A preface has also been added to indicate that the list is not all inclusive.

Comment 2.B.3.b

Abbreviations, acronyms, and symbols are discussed on Pages 15 and 16. To ensure that they are recognizable by the operators a list of acceptable abbreviations, acronyms, and symbols should be included in the plant-specific Writer's Guide.

Response

We disagree with this comment. Numerous pages would be needed to list abbreviations, acronyms, and symbols that are already commonly understood by operations personnel. Further, this guidance is not included in NUREG-0899 nor is it recommended in the INPO guideline.

Comment 2.B.3.c

Guidance for section and step numbering on Pages 3 and 4 is not consistent with the section and step numbering used in the example which is numbered "A.1" rather than "I.A." This discrepancy should be resolved.

Response

This discrepancy has been resolved in the revised PNPS Writer's Guide.

Comment 2.B.3.d

The P-SWG should include guidance for units of measure for use in instructional steps, and they should be the same as the rules for the use of units of measure in tables and figures (page 10 of the P-SWG).

Response

We concur with this comment and have revised the PNPS Writer's Guide to provide guidance for the incorporation of units of measure for use in instructional steps.

Comment 2.B.3.e

Guidance should be provided for locating figures, tables, flowcharts, and attachments within the EOPs. In addition, figures in the Appendix (pages 19 and 20) should be consistent with typing format instructions in Section VI.F of the P-SWG.

Response

We agree and have revised the PNPS Writer's Guide to provide guidance for locating figures, tables, flowcharts, etc. within the EOPs.

Comment 2.B.3.f

Section III, Page 2, of the P-SWG specifies that a single column format be used; however, in the Appendix (pages 19 and 20), a double column format is used to provide graphic information. The reason for this difference should be clarified or the difference corrected.

Response

We agree and have revised the PNPS Writer's Guide to contain an example of single column format.

Comment 2.B.3.g

The P-SWG specifies line spacing on Page 17 in Section VI.C. The example in the Appendix should conform to this guidance.

Response

We agree and have revised the PNPS Writer's Guide to contain an example page illustrating specified line spacing format.

Comment 2.B.4.a

Instructions should be written for various types of action steps that an operator may take to cope with different plant situations. Thus, the P-SWG should address the definition and formatting for use of the following types of action steps:

Steps that are used to verify whether the objective of a task or sequence of actions has been achieved. (See NUREG-0899, Section 5.7.2).

Response

As stated in the PNPS Writer's Guide, "the level of detail is that detail a newly trained and licensed operator would require during an emergency condition." By requiring instructions to the level of detail needed for a new operator to successfully complete a task, we assure ourselves that the objective will be met.

Comment 2.B.4.b

Steps of a continuous or periodic nature. (See NUREG-0899, Sections 5.7.3, 5.7.5, and 5.7.6).

Response

N/A. The PNPS EOPs do not contain any steps of a continuous or periodic nature.

Comment 2.B.4.c

Steps for which a number of alternative actions are equally acceptable. (See NUREG-0899, Section 5.7.4).

Response

The specified use of logic terms and logic flow diagrams in the PNPS Writer's Guide call attention to alternative combinations of conditions and alternative operator actions.

Comment 2.B.4.d

Steps performed concurrently with other steps. (See NUREG-0899, Section 5.7.7).

Response

The PNPS EOPs explicitly indicate which steps are to be performed concurrently with other steps.

Comment 2.B.5

The extent of intended use of logic flow graphics in EOPs is not made clear in the P-SWG. The guide should clarify whether the same information is supposed to be presented using both logic flow graphics and textual material or whether some types of information are to be presented in the text while other information is to be provided in logic diagram form. On Page 5, the P-SWG states that, "when multiple operator actions and responses are possible, logic sequence diagrams may be used to facilitate operator reaction to system conditions." It is not clear how this guidance was applied, for example, to establish why the action steps on Appendix Page 7 should be in sentence form while the action steps on Page 10 are in logic graphic form. Guidance needs to be provided in the plant-specific writer's guide on how to make these selections.

Response

We agree with this comment and have revised the PNPS Writer's Guide to provide additional guidance pertaining to the extent of intended use of logic flow diagrams, and the application of this guidance.

Comment 2.B.6

The logic diagrams in the Appendix are confusing and hard to interpret. For example: On Page 10, an action box states, "when conditions warrant return to this step." That step will probably not be read because the preceding step tells the operator to leave the logic graphic. In addition, it is not clear what "conditions warrant" means. The logic diagrams in the Appendix should be made clear.

Response

We agree with this comment and have revised the PNPS Writer's Guide with better examples of logic flow diagrams. Further, we have changed the format such that the diagrams are no longer included as an appendix, but are embodied within the appropriate sections.

Comment 2.B.7

To minimize confusion, delay, and errors in execution of EOP steps, the following concerns should be addressed in the P-SWG: (1) EOPs should be structured so that they can be executed by the minimum shift staffing and minimum control room staffing as required by the Technical Specifications, (2) EOPs should be structured so that operator roles specified in the EOPs and in the training program are consistent with preestablished leadership roles and division of responsibilities, (3) action steps should be structured to minimize physical conflicts between personnel and to minimize the amount of movement needed for carrying out the steps, and (4) action steps should be structured to avoid unintentional duplication of tasks. (See NUREG-0899, Section 5.8).

Response

We agree with this comment and have revised the PNPS Writer's Guide to provide guidance such that roles and actions must adequately consider the actual number and type of shift personnel in the Control Room, Plant and Radwaste.

C. Validation and Verification

Comment 2.C.1

The Implementation Plan states on pages 28 and 32 that "EOP verification (validation) will follow, to the extent applicable to Pilgrim, the INPO guidelines." Since this is to be the plan for what will be done, the plan should be self sufficient and the methods that are to be used at PNPS must be included in the PGP. The plant should describe the verification and validation methodologies to be used.

Response

The verification and validation methodologies used on the Pilgrim EOPs are described in the respective documents entitled "Emergency Operating Procedures Verification Procedure," and "Validation Procedure for Emergency Operating Procedures," copies of which are attached. These documents are self sufficient and follow, to the extent applicable to Pilgrim, the INPO guidelines. We do not agree with the IIRC position that this information be repeated in the Implementation Plan, so that the plan will be self sufficient.

For consistency the sentence has been removed from the Implementation Plan.

Comment 2.C.2

The EOPs are to be exercised on the Dresden Simulator, which is a generic, non plant-specific simulator. PNPS must determine which EOPs, or parts of EOPs, can be validated on the simulator and describe in the program the validation method(s) for the parts of the EOPs that cannot be validated on the simulator.

Response

All of the EOPs were validated on the Dresden Simulator. Those sections of the EOPs which could not be validated at Dresden were validated during control room mockup walk through training, which followed simulator training.

Comment 2.C.3

The Implementation Plan should indicate those involved in the verification and validation processes and what the roles of the participants are to ensure that technical and human engineering adequacy of the EOPs is achieved. As a minimum, those involved should include plant operators, subject matter experts, and procedure writer's.

Response

The aforementioned documents, "Emergency Operating Procedure Verification" and "Emergency Operating Procedure Validation" indicate those responsible for the verification/validation process and what the roles of the participants are to ensure that the technical and human engineering adequacy of the EOPs is achieved. It is not our intent to repeat this information in the Implementation Plan.

Comment 2.C.4

The plan should provide criteria for the selection of scenarios that will be used to exercise EOPs. The scenarios should include simultaneous and sequential failures, so that the EOPs are validated on multiple failure events.

Response

Scenarios were written to incorporate multiple failures. This ensured that the EOPs were exercised to their fullest extent. We disagree with the need to have this criteria specified in the plan.

Comment 2.C.5

Section VI, EOP VALIDATION, states that any discrepancies discovered during the validation process will be corrected. The verification and validation program descriptions should be revised to include criteria or methods for determining the need to reverify and revalidate changes to the EOPs.

Response

Licensed operator requalification training provides for review of any changes to abnormal, emergency procedures, and EOPs in the "plant status update" sessions, which are held whenever needed. Any change to the EOPs is considered important and is covered during the subsequent requalification training sessions.

Comment 2.C.6

The validation program should address how the EOPs will be validated with the minimum control room staffing.

Response

We agree, the validation program did not address EOP validation with minimum control room staff. However, since INPO guidelines mandate "team" training with normal control room staffing, the EOPs are being reviewed during simulator requalification training scheduled during November and December of 1985.

Comment 2.C.7

The validation and verification programs should determine if the information and controls needed by the operator to perform procedural actions, as determined by task analysis, are available in the control room. A discussion of how this will be accomplished should be included in the program description. (This task may be done in conjunction with the Control Room Design Review.)

Response

This section of the process was addressed during the control room mockup walk through training, conducted following simulator training.

D. Training

Comment 2.D.1

All operators must be trained on all EOPs before the EOPs are implemented. This should be explicitly stated in the training program description.

Response

The training plan states that all shifts of operators and STAs will receive training on EOPs. All licensed operators and STAs received training in EOPs before the EOPs were implemented.

Also, see response 2.D.3 concerning level of detail in training program.

Comment 2.D.2

The Implementation Plan states on pages 30 and 34 that the process of validation has been coordinated with simulator and plant walk-through training. If major changes are made in the EOPs as a result of the training feedback, the program should describe how PNPS will insure that needed retraining will be controlled and performed.

Response

Licensed operator requalification training provides for review of any changes to abnormal, emergency procedures, and EOPs in the "plant status update" sessions, which are held whenever needed. Any change to the EOP's is considered important and is covered during the subsequent requalification training sessions.

Comment 2.D.3

It is not clear from the training program description whether all operators will be trained on all EOPs at the simulator and whether all operators will be trained on all procedures during the control room walk-throughs. The training program should be revised to clarify the extent of operator training on EOPs at the simulator and in control room walk-through.

Response

We disagree with the need to include such detail in our training program. The training program serves as a basic outline and is not intended to be all inclusive. For your information, all operators were trained on EOPs at the simulator and all operators walked through the procedures in our control room "mock-up."

Comment 2.D.4

The training program description should be revised to include a wide variety of scenarios, incorporating multiple and sequential failures, to be used for training purposes.

Response

The concerns stated in this item were addressed during the conduct of training on EOPs. Records documenting the extent of training conducted are available for inspection.

See response to Comment 2.C.4 and 2.D.3.

Comment 2.D.5

The training program should be revised to describe the methods for evaluating operators following the training program and for appropriate followup training for any deficient areas.

Response

See response to comment 2.D.3. For your additional information, the EOP training was conducted as part of the license operator requalification training program. Deficiencies identified as a result of the annual requalification examination are dealt with in accordance with the PNPS Training Manual.

Enclosure B

- PNPS Writer's Guide for EOPs
- PNPS Validation Procedure for EOPs
- PNPS EOP Verification