

September 13, 1985

Docket No. 50-220

Niagara Mohawk Power Corporation
Attn: Mr. C. V. Mangan
Senior Vice President
c/o Miss Catherine R. Seibert
300 Erie Boulevard West
Syracuse, New York 13202

DISTRIBUTION
Docket File
Local PDR
HThompson
SNorris
ELJordan
BGrimes
Gray File
MAMcCoy

NRC PDR
ORB#2 Rdg
OELD
RHermann
JPartlow
ACRS (10)
FJLiederbach

Dear Mr. Mangan:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - PROCEDURE
GENERATION PACKAGE FOR EMERGENCY OPERATING PROCEDURES

Re: Nine Mile Point Nuclear Station, Unit No. 1

Enclosed is a draft Safety Evaluation (SE) which identifies open items discovered through review of your March 1, 1984 submittal. The review of your Procedure Generation Package (PGP) is being conducted in accordance with Generic Letter (GL) 82-33, Supplement 1 to NUREG-0737, and NRC approval of the PGP is not necessary for operating reactors prior to implementing upgraded Emergency Operating Procedures (EOP). Criteria for this review were not included in the Standard Review Plan (SRP) when this review was begun. Therefore, this review was based on NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures," the reference document for the EOP upgrade portion of Supplement 1 to NUREG-0737 (GL 82-33). Review criteria based on the guidance of NUREG-0899 have not been included in the SRP.

Please review the draft SE and contact your project manager so that a schedule and a course of resolution can be identified for the open items.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by/

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

DL:ORB#2
SNorris:ajs
09/11/85

DL:ORB#2
RHermann
09/11/85

DL:ORB#2
DVassallo
09/13/85

8509190223 850913
PDR ADOCK 05000220
F PDR

Mr. C. V. Mangan
Niagara Mohawk Power Corporation

Nine Mile Point Nuclear Station,
Unit No. 1

cc:

Troy B. Conner, Jr., Esquire
Conner & Wetterhahn
Suite 1050
1747 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

Frank R. Church, Supervisor
Town of Scriba
R. D. #2
Oswego, New York 13126

Niagara Mohawk Power Corporation
ATTN: Mr. Thomas Perkins
Plant Superintendent
Nine Mile Point Nuclear Station
Post Office Box 32
Lycoming, New York 13093

Resident Inspector
U. S. Nuclear Regulatory Commission
Post Office Box 126
Lycoming, New York 13093

John W. Keib, Esquire
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Mr. Jay Dunkleberger
Division of Policy Analysis
and Planning
New York State Energy Office
Agency Building 2
Empire State Plaza
Albany, New York 12223

DRAFT SAFETY EVALUATION
PROCEDURES GENERATION PACKAGE
NINE MILE POINT NUCLEAR STATION, UNIT 1

1. INTRODUCTION

Following the Three Mile Island (TMI) accident, the Office of Nuclear Reactor Regulation developed the "TMI Action Plan" (NUREG-0660 and NUREG-0737), which required licensees of operating reactors to reanalyze transients and accidents and upgrade emergency operating procedures (EOPs) (Item I.C.1). The plan also required the NRC staff to develop a long-term plan that integrated and expanded efforts in the writing, reviewing, and monitoring of plant procedures (Item I.C.9). NUREG-0899, "Guidelines for Preparation of Emergency Operating Procedures," represents the staff's long-term program for upgrading EOPs, and describes the use of a "Procedures Generation Package" (PGP) to prepare EOPs. Submittal of the PGP was made a requirement by Supplement 1 to NUREG-0737 - "Requirements for Emergency Response Capability (Generic Letter 82-33)." The Generic Letter requires each licensee to submit to the NRC a PGP, which includes:

- (i) Plant-Specific Technical Guidelines
- (ii) A Writer's Guide
- (iii) A description of the program to be used for the validation/verification of EOPs.
- (iv) A description of the training program for the upgraded EOPs.

This report describes the review of Niagara Mohawk Power Corporation's response to the Generic Letter related to development and implementation of EOPs for Nine Mile Point Unit 1 (Section 7 of Generic Letter 82-33).

Our review was conducted to determine the adequacy of the licensee's program for preparing and implementing EOPs. Criteria for the review of this PGP were not contained in the Standard Review Plan (SRP) when this review was begun. Therefore, this review was based on NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures," the reference document for the EOP upgrade portion of Supplement 1 to NUREG-0737 (Generic Letter 82-33). Review criteria based on the guidance of NUREG-0899 are now included in the SRP. Section 2 of this safety evaluation report briefly discusses the four parts of the licensee's submittal, the staff review methods, and the acceptability of the submittal. Section 3 contains the conclusions of this review.

As indicated in the following sections, our review determined that the procedure generation program for Nine Mile Point Nuclear Station Unit 1 is acceptable with the exception of the items described in Section 2. The licensee should address these items in a revision to the PGP, or justify why such revisions are unnecessary. The results of our review of the licensee's response to these items will be reported in the SER. The revision of the PGP, and subsequently of the EOPs, should not impact the schedule for the use of the EOPs. The revisions should be made in accordance with the licensee's administrative procedures.

2. EVALUATION AND FINDINGS

In a letter dated March 1, 1984, from T. E. Lempges to D. B. Vassallo, the licensee submitted its PGP. The PGP contained the following four attachments:

Method for Developing Plant Specific Emergency Operating Procedures (EOPs) from Generic Emergency Procedure Guidelines

Emergency Operating Procedure Writer's Guide

Verification/Validation Program Description

Training Program Description

A discussion of these Sections, including concerns identified during the staff's review, follows:

A. Plant-Specific Technical Guidelines

The plant-specific technical guidelines program was reviewed to determine if it provided acceptable methods to meet the objectives of NUREG-0899. The licensee described a process that will utilize Revision 3 of the Boiling Water Reactor Owners' Group (BWROG) Emergency Procedures Guidelines (EPGs) with appropriate changes to develop plant-specific technical guidelines from which the EOPs will be developed. The NRC staff reviewed Revision 3 of the EPGs (BWROG-8262, dated December 22, 1982), and concluded in a November 22, 1983 letter from D. Crutchfield to T. Dente of the BWR Owners Group that these guidelines are acceptable for implementation.

The licensee identified the following plant-specific technical and reference documents for use in generating the EOPs:

- BWROG EPGs
- FSAR
- Technical Specifications
- Existing Special Operating Procedures
- Normal Operating Procedures
- As-built plant drawings

The EOPs will be developed by following the EPGs in a step-by-step fashion and adding plant-specific information, details, and nomenclature as required. Except for the following items, the process described for converting the generic guidelines into EOPs appears adequate. These items should be addressed in the P-STG.

1. Potentially safety-significant deviations from and additions to the generic guidelines must be identified in the P-STG. In addition, the analyses or technical justification that support the acceptability of these deviations and additions must be provided.
2. Any additions to or deviations from the generic guidelines included in the P-STG should be verified/validated. This verification/validation step can be accomplished separately or as a part of the EOP verification/validation program. The PGP should discuss how the additions and deviations are to be verified/validated (NUREG-0899, Subsection 4.2).
3. A description of the process for using the EPGs and background information to identify control room operator tasks and information and control needs should be provided. This process can be described in either the revised PGP or in the Detailed Control Room Design Review (DCRDR) Program Plan.
4. The basis should be provided for the value selected for the primary containment pressure limit, including consideration of structural analyses and tests, purge valve operability, vent capacity requirements, limitation of radioactivity release rates into areas outside of the primary and secondary containments, and consideration of depressurization rate during venting to limit suppression pool flashing.
5. A number of figures that should be included in the P-STGs are missing, e.g., the figure for drywell spray initiation pressure limit. These figures must be provided in order for the staff to complete its review.

6. For procedural step DW/T-3, provide the drywell spray flow rate and the basis for the choice of this flow rate.

With satisfactory resolution of the above items, the licensee's P-STG program should provide acceptable methods for meeting the objectives of NUREG-0899 and, therefore, should provide adequate guidance for translating the BWROG EPGs into P-STGs, which can serve as the basis for the EOPs for Nine Mile Point Nuclear Station, Unit 1. The staff will confirm that the licensee adequately addresses these items and will report the results of its review in a subsequent safety evaluation report.

B. Plant-Specific Writers Guide (P-SWG)

The P-SWG was reviewed to determine if it provided acceptable methods to meet the guidance of NUREG-0899. The licensee stated the purpose of the writer's guide was to specify the conventions to be employed in the preparation of the EOPs for Nine Mile Point Nuclear Station, Unit 1 (NMP-1). The licensee stated that these conventions are established to ensure consistency in the organization format, style, and content of the EOPs. The writer's guide addresses the specifics of procedure identification, format and content applicable to all EOPs for NMP-1.

Our review of the P-SWG identified the following concerns that should be addressed in the guide:

1. Section 3.1 on page 5 of 30 states that headings should be in all capital letters. The example of page 6 of 30 shows another format. Section 2.2 on page 2 of 30 states that each EOP shall be assigned an identification number having the form "N1-EOP-1." The example on page 6 of 30 shows still another format. If a figure or example is to be used to depict procedural information, the figure or example

should provide only information which corresponds to the written instructions. Modify the examples on page 6 of 30 and any other figures or examples to reflect the writers guide format and content instructions.

2. Guidance for preparing figures and tables (e.g., margin spacing, line spacing, instructions on when to use full or partial size figures) should be included in the P-SWG.
3. A number of conditions and requirements for steps, cautions and notes are addressed in the P-SWG. However, Section 3.2 of the P-SWG permits division of the text of a step between two pages. To reduce the possibility for an operator to miss a portion of a step, caution or note, the P-SWG should be modified to require a step, caution, or note to be complete on a page and not continued onto a new page.
4. Operators need to have a means of keeping track of the current action step while they are performing the designated operator actions, especially since the operator may be carrying out several subprocedures concurrently. Therefore, some type of place keeping aid should be used (e.g., a line for checkoffs in front of the action step). The place keeping method(s) should be specified in the P-SWG.
5. Conditional statements and logic statements are used in EOPs to describe a set of conditions or a sequence of actions. Logic terms and definitions are shown on page 23 of 30. Since these logic statements have the possibility of being confusing, depending on the conditions that need to be observed, modify the writer's guide to provide examples of how logic sequences are to be written as well as sequences that should be avoided.

6. Operators need to know where to find all of the instrumentation, components, and controls that are referred to in the EOPs. In order to reduce the memory requirements on operators, the writer's guide states in Section 4.7 that "Component locations shall be specified if the components are infrequently used or if there would otherwise be a possibility of confusion." Modify the P-SWG to provide instructions on how this information is to be presented.
7. Action steps need to be written for a variety of situations. Most of these situations are covered adequately in the writer's guide. However, the writer's guide also should include content and formatting instructions regarding steps for which a number of alternative actions are equally acceptable. For example, in Section 3.3 on page 8 of 30, the first example on the page instructs the operators to "Commence and slowly increase injection into the RPV with the following systems:" and then lists (in order) the condensate booster pumps, the condensate pumps, and the control rod drive. This statement is ambiguous to the extent that it is not clear whether the operator is to use all three systems at the same time, or whether the operator is to use the first one and only go to the second (third) if the first (second) does not work, or whether the operator can choose which of the three he wants to use first. Modify the writer's guide to resolve this concern.
8. A vocabulary list is presented on pages 28 and 29 of 30. It would be helpful to the procedure writer if this list also included words to avoid. In line with this comment, Section 4.9 states that words should have precise meanings, and it is specifically stated to avoid words like "slowly." However, on pages 8 and 22 of 30, the word slowly is used in two examples of action steps. These examples should be changed to reflect the guidance in Section 4.9.

9. The writer's guide should address the following considerations relative to the relationship of how the EOPs are written in regards to control room staffing considerations:
 - a. Structure of the EOPs allows the minimum shift crew required by technical specifications to complete all actions.
 - b. The preestablished roles and divisions of responsibilities among the control room crew.
 - c. Minimization of physical conflicts between control room staff in carrying out the action steps.
 - d. Avoidance of unintentional duplication of tasks by control room staff.
10. Section 3.8 does a good job of providing format instructions for figures and tables. This Section should also provide guidance on when figures and/or tables should be used in an EOP.
11. Page identification is discussed in Section 3.5 on pages 11 and 12 of 30. The page identification information should also include unit designation.
12. The list of standard abbreviations given on page 30 of 30 does not appear to be complete. This list should include all acceptable abbreviations, acronyms, and symbols that can be used in the EOP (e.g. ACCUM, AO, APLHGR, APRM, TAF, BOF, BWR, etc.)
13. The writer's guide discusses branching from one part of the procedure to another. In order to facilitate rapid movement from one part to another, some method for easily identifying Sections or subsections in the EOP (such as the use of tabbing) should be specified.

14. The quality of EOP copies should approximate the quality of the original copy to preclude operator difficulty in reading the EOP. Criteria regarding quality of EOP copies should be included in the writer's guide.
15. The PGP should include a statement of commitment to use the PGP process in developing and revising the EOPs.
16. In order to save time, reduce the potential for confusion and to have it for ready reference during the completion of an action step, the entire caution statement should be placed before the action step to which it pertains. Format instructions for including the caution statements in the above manner should be provided in the writer's guide.
17. Tables are discussed in Section 3.8 on pages 16 and 17 of 30. Since it is possible that a table can be used which does not correspond to any single control room instrument, the writer's guide should specify that a consistent set of units of measure be used in these cases. When a table is to be used in conjunction with a specific control room instrument, then that instrument should be specified in the EOP and the same units of measure as used on the instrument should be used in the table as designated in the figures.
18. The EOPs should be uniquely identifiable, so that the operators can access them quickly during an emergency situation. Section 2.0 on page 2 of 30 says that the procedure will be uniquely identifiable via the procedure title, procedure number, and revision number. However, this method of identification does not allow the EOPs to be distinguished easily from other procedures unless they are taken out of the procedures rack and examined for title, etc. Some other method of uniquely identifying the EOPs from other procedures should also be provided.

With satisfactory resolution of the above items, the licensee's writer's guide should meet the guidance of NUREG-0899 and provide adequate direction for translating the plant-specific technical guidelines into EOPs that will be usable, accurate, complete, readable, convenient to use and acceptable to control room operators. The staff will confirm that the licensee adequately addresses these items and will report the results of its review in a subsequent safety evaluation report.

C. Validation/Verification

The validation and verification program descriptions were reviewed to determine if adequate methods are described to accomplish the objectives of NUREG-0899. The verification program described in the PGP has two objectives: (1) to confirm the written correctness of the EOPs, and (2) to ensure that applicable generic and/or plant-specific technical aspects have been properly incorporated. The objective of the licensee's validation program is to determine that the actions specified in the EOPs can be performed by the operators to manage emergency conditions effectively. Our review of the Validation/Verification Program identified the following concerns:

1. The Sections on validation and verification of EOPs discuss general goals and considerations. However, the methods by which these goals will be met have not been included as part of the program description. Statements are provided to indicate that INPO 83-004 will be considered in setting up the verification program and that INPO 83-006 will be considered in setting up the validation program, but no description of the information that is to be used from these sources is provided.

- a. Modify the Validation and Verification Program descriptions to describe the methods that will be used to verify that the EOPs are written correctly as compared to the P-SWG and that they technically reflect the P-STG. The types, qualifications and roles of the personnel involved should be specified. These individuals should include plant operators, subject matter experts and procedure writers.
 - b. Modify the description to describe whether the Validation/Verification Program includes methods for determining that there is a correspondence between the procedures and the control room/plant hardware, [i.e., controls, equipment, and indications that are referenced and available (inside and outside the control room), use the same designations, use the same units of measurement, and operate as specified in the procedures.]
2. Describe how it is determined that the EOPs are usable and compatible with minimum control room staffing [i.e., whether they can be understood and followed without confusion, delays, errors, etc.] for the given level of qualifications, training, and experience of the control room staff. Describe whether this determination is made by one or a combination of the following methods: seminars, workshops, and operating team review; simulator exercises; and control room walkthroughs (dynamic).
3. Describe how it is determined that there is a high level of assurance that the procedures will work [i.e., that the procedures guide the operator in mitigating transients and accidents]. Describe whether this determination is made by one or a combination of the following methods: desk-top review review; seminars, workshops, and operating team review; simulator exercises; and control room walkthroughs (dynamic).

4. Modify the validation program description to include a description of the criteria that will be used to select the scenarios to be run during the validation process. The criteria should be developed on the basis of what is needed to validate the procedures. The criteria should ensure that single, sequential, and concurrent failures are included. Then, a review of the capabilities and the limitations of the simulator will identify what can be validated on the simulator. Describe the methods that will be used to validate the parts of the EOPs that cannot be validated on the simulator, (e.g., control room walk-throughs and mock-up walk-throughs).
5. Describe how validation/verification program will determine if the information that is needed by the operator is available in the control room. (This task may be performed in conjunction with the Detailed Control Room Design Review.)
6. The PGP indicates that feedback from simulator exercises and classroom will be incorporated into the EOP validation program. The validation program description should be expanded to describe how this will be accomplished.

Resolution of the above items should result in verification and validation programs that meet the guidance of NUREG-0899 and should provide assurance that the EOPs adequately incorporate the guidance of the writer's guide and the generic technical guidelines and will guide the operator in mitigating emergencies. The staff will confirm that the licensee adequately addresses these items and will report its review in a subsequent safety evaluation report.

D. Training Program

The licensee's description of its plan for training the operators on the EOPs was reviewed against the objectives of NUREG-0899. The training program described in the PGP consists of a combination of self-study, classroom, and plant-reference simulator training. Our review of the training program for EOPs identified the following concerns:

1. The PGP should indicate that all operators will train on all EOPs prior to implementing the EOPs.
2. The training portion of the PGP should specify that the operators will be trained in their planned operator roles and teamwork.
3. The PGP should specify that the training will involve the use of a wide variety of scenarios that incorporate multiple and sequential failures, and the PGP should indicate the criteria for selecting the scenarios.
4. The PGP should specify how the operators will be trained on the EOPs for portions of the EOPs that are not covered by simulator exercises.
5. The PGP should contain a statement of commitment to evaluate operators after training.

Resolution of the above items should result in a training program that meets the guidance of NUREG-0899 and should provide assurance that the operators are adequately trained on the EOPs prior to implementation. The staff will confirm that the licensee adequately addresses these items and will report its review in a subsequent safety evaluation report.

3. CONCLUSIONS

Based on our review, we conclude that, with the exceptions noted in Section 2 of this draft SER, the Niagara Mohawk Power Corporation PGP for the Nine Mile Point Nuclear Station Unit 1 meets the requirements of Supplement 1 to NUREG-0737 and provides acceptable methods for accomplishing the objectives of NUREG-0899. The PGP should be revised to address the items described in Section 2 and resubmitted. These revisions should be made in accordance with the licensee's administrative procedures and should not affect the licensee's schedule for implementation of upgraded EOPs.

This evaluation was performed with the assistance of Battelle Pacific Northwest Laboratories' personnel.