

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

January 13, 1986

Mr. Thomas Novak, Deputy Director
Division of PWR Licensing-A
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

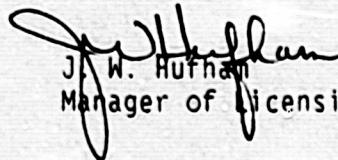
Dear Mr. Novak.

In the Matter of) Docket Nos. 50-327
Tennessee Valley Authority) 50-328
50-390
50-391

In response to your letter to H. G. Parris dated July 22, 1985, the additional information for Sequoyah Nuclear Plant is enclosed. Enclosure 1 contains the reply to the NRC questions, enclosure 2 is the revised Procedures Generation Package, and enclosure 3 is the revised Writers' Guide For the EOPs. The Watts Bar Nuclear Plant response will be submitted to you by February 3, 1986. Please telephone Fisher Campbell at FTS 858-4892, if you have any questions.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


J. W. Huffman
Manager of Licensing

Sworn to and subscribed before me
this 13th day of Jan. 1986.

Paulette L. White
Notary Public

My Commission Expires 8-24-88

Enclosures

Add:

AD - J. KNIGHT (ltr only)
EB (BALLARD)
EICSB (ROSA)
PSB (GAMMILL)
RSB (BERLINGER)
FOB (BENAROYA)

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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July 22, 1985

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Docket Nos: 50-390, 50-391
and 50-327, 50-328

4-231
R-12

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Draft Safety Evaluation Report Regarding the Procedures Generation Package for the Watts Bar and Sequoyah Nuclear Plants

The staff has reviewed TVA's Procedures Generation Package (PGP) for the Watts Bar and Sequoyah Nuclear Plants that was submitted in response to Supplement 1 to NUREG-0737 (Generic Letter 82-33), and has the need for additional information. Accordingly, enclosed is a copy of the staff's Draft Safety Evaluation Report that delineates needed information.

We ask that you provide your schedule for addressing these items within 30 days of receipt of this letter. If you have any questions concerning this matter, please contact the Sequoyah (C. Stahle) or Watts Bar (T. J. Kenyon) project managers.

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,

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

Enclosures:
As stated

cc: See next page

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ENCLOSURE 1

ATTACHMENT 1
RESPONSE TO NRC
SAFETY EVALUATION REPORT (SER)

A. TECHNICAL GUIDELINES

SER FINDING

1. Deviations from and additions to the generic technical guidelines that are of safety significance (including those required for the stated design differences) should be identified in the PGP. In addition, analysis or other technical justification supporting these deviations and additions should be provided.

SON RESPONSE

SON believes we have made the following safety significance changes to the generic technical guidelines.

1. Included Upper Head Injection (UHI) into plant specific procedures
2. Included Ice Condenser Containment into plant specific procedure
3. Revised FR-S.1, "Response to Nuclear Power Generation/ATWS" concerning tripping the turbine
4. Reactor Vessel Level Indication System (RVLIS) has been deleted from plant specific procedures
5. The following Emergency Congingency Actions (ECAs) guidelines have not been incorporated into plant specific procedures
 - a. ECA-1.1 Loss of Emergency Coolant Recirculation
 - b. ECA-1.2 LOCA Outside Containment
 - c. ECA-2.1 Uncontrolled Depressurization of all Steam Generators
 - d. ECA-3.1 SGTR With Loss of Reactor Coolant - Subcooled Recovery Desired
 - e. ECA-3.2 SGTR With Loss of Reactor Coolant - Saturated Recovery Desired
 - f. ECA-3.3 SGTR Without Pressurizer Pressure Control

6. The following event-based guidelines have not been incorporated into plant specific procedures.
 - a. ES-0.3 Natural Circulation Cooldown With Steam Void in Vessel (with RVLIS)
 - b. ES-0.4 Natural Circulation Cooldown With Steam Void in Vessel (without RVLIS)
7. Condensate Storage Tank (CST) Level Instrumentation
8. Reactor Coolant System (RCS) Wide Range Pressure

Upper Head Injection (UHI)/Ice Condenser (IC)
Containment Changes

The UHI/IC Emergency Response Guideline (ERG) Development Program was performed by Westinghouse for TVA and Duke Power Company. The program objectives were to identify the differences (system design and analysis) between the generic high pressure (HP) reference plant and the UHI/IC plant in the areas of upper head injection and containment atmosphere control and to provide recommendations on how these differences can be addressed in plant specific emergency operating procedures (EOPs). Westinghouse completed this program on July 1984 and provided TVA documentation to identify differences from the HP version of the Westinghouse Owners Group (WOG) Revision 1 ERGs. SQN used the WOG HP Revision 1 and Westinghouse UHI/IC changes in developing our plant specific EOPs in accordance with our PGP.

Revised FR-S.1, "Response to Nuclear Power Generation/ATWS"
Concerning Tripping the Turbine

SQN received several 'validation and verification' comments concerning tripping the turbine within 30 seconds of an ATWS event. To alleviate these concerns, TVA has analyzed a postulated loss of feedwater ATWS for SQN assuming no automatic or manual actions within the first three minutes of the event. This analysis was performed using the RETRAN03 MOD003 computer code in conjunction with a SQN specific model. The analysis was based on reactivity parameters characteristic of unit 1 cycle 3 beginning-of-life core data to remove conservatism and credit the partial burnup benefit in the moderator temperature coefficient. Results of this analysis show that ASME pressure limits are not exceeded and, hence, no short term mitigative actions, manual or automatic, are necessary. See the attached table for a comparison of component maximum pressures as computed by this analysis and the maximum allowable pressures based on the ASME limits.

PRESSURE LIMIT COMPARISON TABLE

	Limit (lb/in ² a)	U1C3 Peak (No Turbine Trip) (lb/in ² a)
Reactor Vessel	3215	3044
Pressurizer	3885	2926
RCS Piping	3742	3042
Reactor Coolant Pump	3246	3006
Control Rod Drive Mechanism	3489	3038
RCS Pressure Boundary Valves		
Valve Bodies	4740	3042
Valve Bolting	4740	3042
Valve Disks	3166	3042

In addition, TVA has committed to implement an ATWS mitigating system actuation circuitry (AMSAC) at SQN to meet the requirements of 10 CFR 50.62 per our letter from R. H. Shell to Harold R. Denton dated October 11, 1983. The AMSAC system to be implemented is logic to actuate a turbine trip and auxiliary feedwater pump start upon sensing that steam generator water levels are below the low-low setpoint. This logic senses conditions indicative of an ATWS event when the loss of a heat sink has occurred, but actuation will not occur until after the reactor protection signals should have been generated.

Reactor Vessel Level Indication System (RVLIS)

TVA, in accordance with our letter from J. A. Domer to E. Adensam dated August 14, 1985, has implemented non-RVLIS version of EOPs at SQN. The status regarding RVLIS and its impact on EOPs, Safety Parameter Display System (SPDS) and Technical Support Center (TSC) was discussed in a meeting held on July 31, 1985 with NRC representatives. In accordance with our commitments with you, TVA will implement a RVLIS version of EOPs before startup from the unit 2 cycle 3 refueling outage.

Emergency Contingency Actions (ECAs)

TVA, in accordance with our letter from J. A. Domer to E. Adensam dated August 21, 1985, has decided to not implement the following event-based ECA guidelines at SQN:

1. ECA-1.1 Loss of Emergency Coolant Recirculation
2. ECA-1.2 LOCA Outside Containment
3. ECA-2.1 Uncontrolled Depressurization of All Steam Generators
4. ECA-3.1 SGTR With Loss of Reactor Coolant - Subcooled Recovery Desired
5. ECA-3.2 SGTR With Loss of Reactor Coolant - Saturated Recovery Desired
6. ECA-3.3 SGTR Without Pressurizer Pressure Control

We presented these multiple failure ECA guidelines to the operators for training and validation/verification during 1985 Week 2 Operator Regualification Training. However, based on the review by the operators, the ECA guidelines appear to be of such low probability and event specific that their inclusion would be detracting from the more probable E/ES procedures and the Function Restoration Guidelines (function-oriented guidelines).

Event-based Guidelines

TVA has decided to not implement the following event-based ES guidelines at SQN:

1. ES-0.3 Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS)
2. ES-0.4 Natural Circulation Cooldown with Steam Void in Vessel (without RVLIS)

The purpose of these procedures was to cooldown and depressurize during natural circulation (without an accident in progress) under conditions that allow for the potential formation of a void in the upper head region. These procedures were written due to limited AFW supplies (condensate storage tank [CST]) at some plants and for these plants to respond to Generic Letter 81-21 (per WOG background document). These procedures may not be required if plants have sufficient supply of condensate-grade AFW to support their cooldown method. Our response to Generic Letter 81-21 (reference 3) states the following:

The condensate-grade auxiliary feedwater is the preferred source of cooling water to the steam generator. The minimum reserved volume of the condensate storage tank (CST) described in chapter 10 of the FSAR and required in technical specifications is based on reaching the RHR cut-in (350°F) within 6 hours after reactor trip. Because the Westinghouse natural circulation cooldown analysis allows a T_{cold} plant to cooldown at 50°F/h, Sequoyah will be able to remain at hot standby (547°F) for 2 hours before beginning cooldown and still meet the FSAR assumptions.

Additionally, the ERCW system is provided as the alternate source of cooling water. The ERCW is designed to deliver an essentially unlimited volume of cooling water at sufficient flow rates to the auxiliary feedwater (AFW) system, such that the AFW system can remove residual heat over the entire range of reactor operation and cool the plant to RHR cut-in.

For these reasons, we conclude that Sequoyah may be cooled down safely in the natural circulation mode.

NRC's safety evaluation for SQN based upon our response to Generic Letter 81-21 agrees that sufficient condensate-grade AFW is available to support our cooldown method. This cooldown method using WOG ERG ES-0.2, Natural Circulation Cooldown, will preclude the formation of a void in the upper head. These procedures are therefore not required.

Condensate Storage Tank (CST) Level Instrumentation

The WOG Generic Instrumentation requires at least two channels of a delta P measurement system are available to monitor the level in each CST. SQN CSTs have one level indicator per tank, however, the tanks are tied together via the supply to AFW pumps. In addition, per FSAR 10.4.7.2 and 9.2, the ERCW system is considered the safety-grade supply to AFW pumps. SQN therefore finds this deviation acceptable.

Reactor Coolant System (RCS) Wide Range Pressure

The WOG Generic Instrumentation states that the RCS is assumed to have at least two wide range pressure transmitters connected to the RHR hot leg suction lines. This instrumentation is assumed to be subject to adverse containment conditions. SQN, in its review of the needed characteristics (e.g. accuracy) for this instrument (RCS wide range pressure and RCS subcooling), decided that a more accurate indication is required than would be provided if located inside containment (due to the harsh environment). SQN has therefore relocated the transmitter outside containment. This parameter does meet the WOG guidelines with respect to range and number.

SER FINDING

2. Any additions to or deviations from the generic guidelines 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.

SON RESPONSE

The WOG performed a verification/validation on the generic technical guidelines; therefore, there is no need for each utility to perform this step. SQN performed verification/validation on plant-specific procedures per Section IV of our PGP which therefore included additions to or deviations from the generic guidelines.

SER FINDING

3. A meeting was held between the staff and the WOG Procedures Subcommittee on March 29, 1984, to discuss the task analysis requirements of Supplement 1 to NUREG-0737. The summary of the meeting is contained in an NRC memorandum from H. Brent Clayton to Dennis L. Ziemann dated April 5, 1984. At the meeting, the owners group made a presentation on the background of the Emergency Response Guideline (ERG) development program as it relates to the issue of task analysis. The presentation included a description of the (1) ERG background documents, (2) development of Revision 1 to the ERG, (3) interactions with NRC requirements, Supplement 1 to NUREG-0737, and (4) an overview of how the WOG had responded to the requirements. Based on the presentations, the staff commented that Revision 1 of the ERG and background documents provided an adequate basis for generically identifying information and control needs. As a result of the above meeting, the staff has made the following additional comments that should be acted upon by TVA and submitted as part of the PGP:

SER FINDING

- a. TVA should describe the process for using the generic guidelines and background documentation to identify the characteristics of needed instrumentation and controls. For the information of this type that is not available from the ERG and background documentation, TVA should describe the process to be used to generate this information (e.g., from transient and accident analyses) to derive instrumentation and control characteristics. This process can be described in either the PGP or the Detailed Control Room Design Review program plan with appropriate cross-referencing.

SON RESPONSE

TVA has discussed the process to identify the characteristics of needed instrumentation and control during a meeting with the staff held on December 4, 1984 concerning Detailed Control Room Design Reviews (DCRDR) for all of TVA's nuclear facilities. (Refer to letter from Thomas J. Kenyon to TVA dated December 27, 1984). TVA will revise its DCRDR program plan and submit it to the NRC.

SER FINDING

- b. For potentially safety-significant plant-specific deviations from the ERG instrumentation and controls, TVA should provide in the PGP a list of the deviations and their justification. These should be submitted in the P-STG portion of the PGP, along with other technical deviations.

SON RESPONSE

SON has reviewed the WOG Generic Instrumentation and Reference Plant Description Background Information and has determined that our response to question 2.A.1 includes potentially safety-significant plant-specific deviations from the ERG instrumentation and controls.

SER FINDING

- c. For each instrument and control used to implement the EOPs, there should be an auditable record of how the needed characteristics of the instruments and controls were determined. These needed characteristics should be derived from the information and control needs identified in the background documentation of Revision 1 of the ERG or from plant-specific information.

SNR RESPONSE

As part of the Sequoyah detail Control Room Design Review, task analysis is being performed on the symptom-based EOPs. As part of this task analysis, an EOP worksheet is prepared for each step/task in the procedure. This worksheet not only identifies the necessary instrumentation and controls but also the required attributes/characteristics. SNR believes this worksheet provides the record of the needed characteristics of the controls and instruments used to implement these EOPs.

B. WRITERS' GUIDE

SER FINDING

1. The writers' guide should clearly indicate what the layout and organization of the EOPs will be. Section B.1 (page 21) discusses procedure organization, but it only describes the coversheet, operator actions, and the foldout page.
 - a. The need for and location of entry conditions, automatic actions, immediate operator actions (discussed on page 24), and attachments also should be discussed in the writers' guide. See NUREG-0899, Section 5.4, for additional guidance.
 - b. Once the overall organization of the procedures is determined, the major headings for the procedures should be specified. In addition to what the headings are, the format and numbering (if any) of the headings should also be specified in the writers' guide.

SON RESPONSE

Section B has been revised to identify the overall organization of the procedures. The major sections are:

- a. Plant Cover Page
- b. Procedure Cover Page
- c. Instruction Step Pages
- d. Foldout Page
- e. Appendix
- f. Figures
- g. Status Trees

Examples of the format of the Cover Pages, Instruction Step Page, and Status Tree are included. In general, we have retained the same basic organization as the Westinghouse Owner's Group (WOG) guidelines. Consequently, sections such as automatic actions and immediate operator actions have not been included.

SER FINDING

2. 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 or a note should be completed on the page where it began. This guidance should be included in the writers' guide.

SON RESPONSE

Section C.1 has been revised to state that each action step should be completely contained on one page. For those infrequent occurrences when a step must be continued on the subsequent page, the continuation will be identified on all pages that the step appears.

Section C.5 has been revised to state that each note and caution should be completely contained on one page.

SER FINDING

3. Placekeeping aids can assist the operators in keeping track of their position within a procedure. They are of particular importance when performing concurrent steps or procedures and in the situations where the user's attention may be diverted. The writers' guide should specify the use of some type of placekeeping aid.

CON RESPONSE

Section C.11 has been included to address the use of placekeeping aids.

SER FINDING

4. The relationship of how the EOPs are written with regard to control room staffing considerations is very important. While it is indicated in the writers' guide (subsection C.1.1, page 23) that such characteristics should be taken into account, these should be discussed in detail. Thus, the writers' guide should address the following issues:
 - a. EOPs should be structured so that they can be executed by the minimum shift staffing and minimum control room staffing required by the Technical Specifications.
 - b. Instructions for structuring EOPs should be consistent with the roles and responsibilities of the operators.
 - c. Action steps should be structured to minimize the movement of personnel around the control room while carrying out procedural steps.
 - d. Action steps should be structured to avoid their unintentional duplication by different operators.

See NUREG-0899, Section 5.8, for additional guidance.

CON RESPONSE

The guidance provided in NUREG-0899, Section 5.8, has been incorporated into the writers' guide Section C.12.

SER FINDING

5. Instructions should be written for various types of action steps that an operator may take to cope with different plant situations. The format for simple action statements should therefore be included in the writers' guide. In addition, the writers' guide should address the definition and format of the following types of action steps:
 - a. Steps that are used to verify whether the objective of a task or sequence of actions has been achieved.

SON RESPONSE

An example of the format of instruction steps is included in Figure 4. Instruction steps which require verification are denoted by the use of the appropriate action verbs such as verify or ensure. This guidance is included in the writers' guide Section C.1.

SER FINDING

- b. Steps of a continuous or periodic nature (repeatedly performed).

SON RESPONSE

The WOG writers' guide dated September 1, 1983, Section 3.3.2, Continuous Steps, states:

Many of the operator actions provided in a guideline imply continuous performance throughout the remainder of the guideline. This intent is conveyed by the use of appropriate action verbs such as monitor, maintain, or control.

We have incorporated the WOG guidance in the writers' guide Section C.1.

SER FINDING

- c. Steps for which a number of alternative actions are equally acceptable.

SON RESPONSE

The WOG writers' guide dated September 1, 1983, Section 4.2.2, states:

The right-handed column is used to present contingency actions which are to be taken in the event that a stated condition, event, or task in the left-hand column does not represent or achieve the expected result. Contingency actions will be specified for steps or substeps for which useful alternatives are available.

We have incorporated the WOG guidance in the writers' guide Section C.3.

SER FINDING

- d. Steps performed concurrently with other steps. See NUREG-0899, Section 5.7, for additional guidance.

SON RESPONSE

The WOG writers' guide dated September 1, 1983, Section 4.2, states:

Actions required in a particular step should not be expected to be complete before the next step is begun. If assigned tasks are short, then the expected action will probably be completed prior to continuing. However, if an assigned task is very lengthy, additional steps may be performed prior to completion. If a particular task must be completed prior to continuation, this condition must be stated clearly in that step or substep.

We have incorporated the WOG guidance in the writers' guide Section C.1.

SER FINDING

6. It is important that an operator be able to quickly access the relevant EOPs or portions of EOPs. The writers' guide should address the availability and accessibility of the EOPs and their various parts and sections. See NUREG-0899, Subsections 5.5.7 and 6.1, for additional guidance.

SON RESPONSE

Portions of NUREG-0899 Section 6.1 have been included in the writers' guide Section I. The NUREG recommendation to provide a technique to access specific sections within a procedure was not included because the procedures are very short (average length less than 8 pages). Also, the NUREG recommendation to provide procedures at all locations where equipment is to be manually operated was not included because all local operation is directed by the control room and the control room has access to the procedures.

SER FINDING

7. When major changes occur in the plant design, the Technical Specifications, the technical guidelines, the writers' guide, or the plant procedures, then the EOPs may need to be revised. These revisions should be subject to the PGP process. A statement of commitment to do this should be included in the writers' guide or elsewhere in the PGP.

SON RESPONSE

The guidance provided in NUREG-0899 Sections 6.2.1 to 6.2.4 for maintaining EOPs has been incorporated into the writers' guide Section H, Maintaining EOPs (previously Procedure Revisions).

SER FINDING

8. To ensure that the reproduction or binding does not obscure material and to enhance the readability of the EOPs, the spacing of margins and lines within the procedure should be adequate and should be specified in the writers' guide.

SON RESPONSE

Section B has been revised to include page margins and/or examples of page formats.

SER FINDING

9. Conditional statements and logic statements will need to be used in the EOPs to describe a set of conditions or a sequence of actions. These statements have the possibility of being confusing, depending on the conditions that need to be observed. Thus, in addition to the information presented in Section C.4 (page 26), the following items should be addressed in the writers' guide:
 - a. The format and style of the logic statements should be included.
 - b. Some combinations of logic statements have significant potential for misinterpretation. Thus, to make it more clear to the procedures writer, examples of ambiguous logic statements that should be avoided should be included (i.e., combinations of AND and OR).

See NUREG-0899, Subsection 5.6.10, for additional guidance.

SON RESPONSE

The guidance provided in NUREG-0899 Section 5.6.10 and Appendix B has been incorporated into the writers' guide Section C.4.

SER FINDING

10. Abbreviations and acronyms are discussed in Section F.6 (page 32), and a list of approved abbreviations and acronyms is provided in Table 2. Since a procedure or subprocedure can be entered at a location other than the beginning, because of branching instructions, the meaning of an unfamiliar abbreviation could be missed by the operator. Therefore, Section F.6 should be changed to state the only abbreviations and acronyms from the approved list (Table 2) may be used in the procedures. See NUREG-0899, Subsection 5.6.2, for additional guidance.

SON Response

Section F.6 has been revised to state that abbreviations and acronyms not on Table 2 should not be used.

SER FINDING

11. Since copies of the EOPs should be complete (contain all of the information from the original) and legible, the criteria regarding completeness and legibility of the reproduced copies should be addressed in the writer's guide. See NUREG-0899, Subsection 6.2.2, for additional guidance.

SON RESPONSE

The guidance provided in NUREG-0899, Section 6.2.2 has been incorporated into the writers' guide Section H, Maintaining EOPs (previously Procedure Revisions).

SER FINDING

12. Graphs, charts, tables, and figures are discussed in the writers' guide in Section C (page 33). In addition to the information presented in Section G, the writers' guide should also include information on the content (when they should be used and for what purpose), format, and location of the aids.

SON RESPONSE

Section G has been revised to state that the instruction steps should explain the purpose and when graphs, charts, tables, and figures should be used. Section C establishes the margins for appendices and figures. Sections C and G state the location of appendices, graphs, charts, tables, and figures.

SER FINDING

13. The writers' guide correctly states in Section C.8 (page 28) that cross-referencing of procedures should be minimized. However, for those times where referencing is needed, the writers' guide should provide content and format instructions for the referencing. See NUREG-0899, Subsection 5.2.2, for additional guidance.

SON RESPONSE

The guidance provided in NUREG-0899, Section 5.2.2 has been incorporated into the writers' guide, Section C.8.

SER FINDING

14. Section F.5 (page 32) discusses numerical values. Two additional items should be included in this section:
- a. If a numerical value is used that includes decimal information (as opposed to fractions), and the numerical value is less than 1 and greater than -1, then the decimal point should be preceded by a 0 (e.g., 0.25 or -0.25 rather than .25 or -.25).

SON RESPONSE

Section F.5 has been revised to incorporate this SER concern.

SER FINDING

- b. Sub-part c of this section states that tolerances should be specified in parenthesis, while sub-part f states that adverse containment values will be enclosed by brackets. Due to the potential confusion to procedure writers, typists and operators, an alternative system should be considered (e.g., enclosing "Adv. cntmt. conditions" with the appropriate value).

SON RESPONSE

Section F.5.c has been revised to delete the use of parentheses for tolerances. Section F.5.f has been revised to state that the phrase FOR ADVERSE CNTMT will be enclosed with the setpoint.

SER FINDING

15. Critical Safety Function Status Trees are discussed in Section E (page 30). Format and content information regarding the Status Trees should be included in the writers' guide.

SON RESPONSE

Section B has been revised to reference an example of the status tree format. Section E states that the status tree content should be consistent with the generic guideline.

SER FINDING

16. The writers' guide appears to present inconsistent information regarding the way the operator is expected to move through the EOPs. In Section C.1.e (page 23) it is stated that, "Actions required in a particular step is begun unless specifically so stated." However, in Section C.2.c (page 24) it is stated that, "The user would normally move down the left hand column when the expected response to a particular step is obtained." These statements are somewhat contradictory, depending upon the definition of "expected response to a particular step." The criteria for moving through the action steps should be stated more clearly in the writers' guide.

SQL RESPONSE

We have incorporated the WOG Writers' guide information regarding the way the operator is expected to move through the EOPs. A cross-reference is provided below:

WOG Writers' guide dated September 1, 1983 (ERG Executive Volume Background Document)	SQL Writers' guide Section number
1) Section 4.2 page 17 1st paragraph from top of page	1) Section C.1.e
2) Section 4.2.1 page 19 1st paragraph from top of page	2) Section C.2.c
3) Section 4.2.1 page 19 3rd paragraph from top of page	3) Section C.2.d
4) Section 4.2.2 page 19 5th paragraph from top of page	4) Section C.3
5) Section 4.2.2 page 20 5th paragraph from top of page	5) Section C.3.d
6) Section 4.2.2 page 20 7th paragraph from top of page	6) Section C.3.f
7) Section 4.2.2 page 21 1st paragraph from top of page	7) Section C.3.g

SER FINDING

17. Page identification information is discussed in Section B.2.d (page 22). The location on the page of the page identification information should be specified.

SON RESPONSE

Section B.2.d has been incorporated into Section A.3. Section A.3 has been revised to reference an example of the page identification information.

SER FINDING

18. Vocabulary is discussed in Section F.4 (page 31) and a glossary is included in Table 1 (pages 35 and 36). In addition to the words listed in the glossary, the following words should be included because their use is discussed in the writers' guide: begin, close, open, place, start, and stop.

SON RESPONSE

Table 1 has been revised to include this SER concern.

SER FINDING

19. The instructional step numbering system discussed in Section B.3 (page 22) requires operators to review the document to obtain the entire step identifier, and does not provide the operators with a good perspective of where they are in relation to the entire document. This section should be revised to specify a numbering system that allows the complete step identifier to precede each step (i.e., substep "a" of step 2 would be written 2.a).

SON RESPONSE

We have incorporated the step numbering system recommended by the WOG guideline.

C. VERIFICATION/VALIDATION

SER FINDING

1. Subsections IV.D.1a, 2, 4, and 5 state that the various objectives of the verification/validation program "can" or "may" be met by a variety of means. These subsections should state specifically which method will be used to meet the objectives.

SON RESPONSE

Subsections IV.D.1a, 2, 4, and 5 have been revised to incorporate this SER concern.

SER FINDING

2. The EOPs will require a certain number of operators to carry out the various activities and steps as specified. Subsection IV.D.5 (page 10) should indicate that the EOPs will be exercised, during simulator exercises or control room walkthroughs, with the minimum control room staff size required by the facility Technical Specifications.

SON RESPONSE

Subsection IV.D.5 has been revised to incorporate this SER concern.

SER FINDING (3 & 4)

3. To assure verification/validation of all EOPs, the program description should include an indication that the full complement of EOPs will be exercised, including the use of multiple (simultaneous and sequential) failures.
4. The validation program should be expanded 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 and should ensure that single, sequential, and concurrent failures are included. A review of the capabilities and the limitations of the simulator will then identify what can be validated on the simulator. For the parts of the EOPs that cannot be validated on the simulator, the criteria for selecting any additional validation that may be needed and the methods to be used, such as a control room walkthrough or a mock-up walkthrough, should be described.

SON RESPONSE (to SER 3 and 4)

Per the PGP, Section IV.D.3, the verification and validation was performed by conducting simulator exercises, using the Westinghouse recommended test sequences. As a final conclusion by Westinghouse in its summary report on Emergency Response Guidelines Validation Program (WCAP - 10204), the total number of test sequences can be reduced to that suggested in Table V-10. This test sequence was suggested by Westinghouse because it exercised a full compliment of procedures minimizing the occurrence of performing redundant steps in similar procedures. Test sequence number 11 on inadequate core cooling (FR-C.1) could not be performed on the SQN simulator. Table top review was therefore performed for this guideline. Test sequence 13 on Natural Circulation Cooldown (bubble in vessel head) was not performed since this procedure was not implemented. The Natural Circulation cooldown was however performed.

WCAP - 10204
TABLE V-10

Reduced Test Sequence List for Future Test Programs

1. Spurious SI
2. Loss-of-Reactor Coolant
3. Secondary break inside containment
4. Secondary break outside containment
5. Steam generator tube rupture
6. ATWS
7. Loss of all A.C. electrical power
8. Loss of all feedwater after reactor trip
9. Loss of all feedwater after SI (small LOCA)
10. Unexpected criticality
11. Inadequate core cooling
12. Excessive RCS cooldown
13. Natural circulation cooldown
(Bubble in vessel head)
14. LOCA plus secondary break
15. LOCA plus SGTR
16. Secondary break plus SGTR

SER FINDING

5. A description should be provided of the method by which multiple units and facilities will be handled in the verification/validation process to account for differences, if the differences are significant.

SON RESPONSE

There are no significant differences between the SON units which would effect verification and validation.

SER FINDING

6. Section IV.F (page 11) discusses resolution of discrepancies detected during the verification/validation program. This section should include the criteria or methods that will be used for determining the need to reverify and revalidate any resultant changes in the EOPs.

SON RESPONSE

Section IV.F of the PGP has been revised to incorporate this comment.

SER FINDING

7. Subsection IV.D.3 (page 9) lists several problem areas that are to be addressed during EOP verification/validation. Most of these items deal with evaluating the operator performing the procedure, not with evaluating the procedure itself. This subsection should address verification/validation of the procedure.

SON RESPONSE

The PGP has been revised to clarify this draft SER question.

D. TRAINING PROGRAM

SER FINDING

1. Although the PGP states that the SQN/WBN simulator will be used for operator training, it is our understanding that the simulator differs significantly enough from WBN so as not to be used for licensing examination purposes. Thus, it is important that the training program description be expanded to address the following items separately for SQN and WBN:
 - a. Discuss the method to be used to train the operators in areas where the simulator is not like the control room or does not react like the plant and in parts of the EOPs that cannot be run on the simulator. Specify that walkthroughs will be used where differences exist between the plant and the simulator.

SQN RESPONSE

The simulator is modeled after SQN Unit 1. When modifications are made to SQN Unit 1 control room instrumentation, they are subsequently made to the simulator. As stated in the PGP, the simulator model is not designed to run all scenarios required to fully exercise the upgraded EOPs. TVA is in the process of revising the simulator model to increase its EOP procedure coverage. Section V.D.2 of the PGP has been revised to specify classroom instruction and/or walkthroughs will be performed when the simulator cannot be used for certain aspects of the EOPs.

SER FINDINGS (b and c)

- b. Indicate the use of a wide variety of scenarios, including multiple and sequential failures, to fully exercise the EOPs on the simulator or during the walkthroughs and thus expose the operators to a wide variety of EOP uses.
- c. Indicate that all EOPs will be exercised by each operator.

SQN RESPONSE

Table 1 provides the simulator exercises utilized during regualification training to exercise the upgraded EOPs. As can be seen from Table 1, the operators were exposed to a wide variety of EOP uses/scenarios including multiple and sequential failures. In addition, NUREG-0737 I.A.2.1. identifies the scenarios required for the operator regualification training program. These scenarios will also expose the operator to a wide variety of EOP uses in the future. The PGP, Sections V.D.2 and V.E have been revised to include a reference to SQN Response to NUREG-0737 item I.A.2.1. (Letter from L. M. Mills to A. Schwencer dated 7/31/80) of EOP coverage for operator regualification training.

According to the WOG procedure usage guideline, the operator is expected to remain within the Optional Recovery Guidelines unless a red or orange condition is detected on a status tree. The operator is allowed to decide whether or not to implement any yellow condition (low priority) Function Restoration Guidelines (FRGs). Because the yellow condition FRGs do not require mandatory operator actions and the operator's attention should not be directed away from a more serious condition or optional recovery guideline, many of the yellow condition FRGs were not exercised by every operator on the simulator. This philosophy of procedure usage is consistent with the WOG guidance. It should be noted that all EOPs within the capabilities of the simulator have been exercised on the simulator.

Although not all instructions were exercised by every operator on the simulator, the following programs demonstrated the operator's proficiency with EOPs.

1. The operators were trained on all EOPs during winter and spring regualification training of 1984 and 1985.
2. The operator must acknowledge the review and understanding of revisions to EOPs (except yellow path FRGs).
3. The operator's regualification training conducts simulator scenarios which demonstrates EOP usage.

Section V.F of the PGP has been revised to include the SQN policy for the review of revisions to EOPs.

TABLE 1

<u>INITIAL CONDITIONS</u>	<u>MALFUNCTIONS</u>	<u>EOPs UTILIZED</u>	<u>PERFORMED</u>
1. 100% RTP, EOL	D/G Starting Air Failure Inadvertent Charging Pump Trip Main Generator Trip	E-0, ES-0.1	1984 Week 1 SQN Requal Trng
2. 100% RTP, EOL	Inadvertent Safety Injection Loss of Offsite Power	E-0, ES-0.3	1984 Week 1 SQN Requal Trng
3. 100% RTP, MOL	Loss of Condenser Vacuum Steam Generator Tube Leak S/G PORV Fails Open	E-0, E-3	1984 Week 1 SQN Requal Trng
4. 100% RTP, 85% BU	MSLB (Inside Cntmt)	E-0, E-1, E-2, ES-0.2	1984 Week 2 SQN Requal Trng
5. 100% RTP, 85% BU	MSIV Fails Open Feed Reg. Bypass Open Level Transmitter Fails Low MSLB (Outside Cntmt)	E-0, E-1, E-2, ES-0.2	1984 Week 2 SQN Requal Trng
6. 100% RTP, 85% BU	LOCA (Large Break)	E-0, E-1, ES-1.2, ES-1.3	1984 Week 2 SQN Requal Trng
7. 100% RTP, 85% BU	LOCA (Small Break)	E-0, E-1, ES-0.2, ES-1.1	1984 Week 2 SQN Requal Trng
8. 50% RTP, 15% BU	Impulse Pressure Failure Przr Level Fails Low MSIV Failure S/G Tube Rupture	E-0, E-3	1984 Week 2 SQN Requal Trng

TABLE 1

<u>INITIAL CONDITIONS</u>	<u>MALFUNCTIONS</u>	<u>EOPs UTILIZED</u>	<u>PERFORMED</u>
9. 100% RTP, EOL	LOCA (Large Break)	E-0, E-1, ES-1.2, ES-1.3	1985 Week 1 SQN Requal Trng
10. 100% RTP, EOL	LOCA (Small Break)	E-0, ES-0.2, E-1, ES-1.1	1985 Week 1 SQN Requal Trng
11. 100% RTP, 85% BU	MSLB (Small Break inside cntmt)	E-0, E-1, E-2, ES-0.2, ES-0.3	1985 Week 1 SQN Requal Trng
12. 100% RTP, 85% BU	Feed Reg Bypass Open S/G Level Transmitter Failure MSLB (Outside cntmt)	E-0, E-1, E-2, ES-0.2	1985 Week 1 SQN Requal Trng
13. 100% RTP, MOL	Inadvertent SI	E-0, ES-0.2	1985 Week 1 SQN Requal Trng
14. 100% RTP, MOL	Loss of Offsite Power	E-0, ES-0.3	1985 Week 1 SQN Requal Trng
15. 100% RTP, EOL	Loss of Condenser Vacuum S/G Tube Rupture Loss of Component Cooling Water to RCPs	E-0, E-3	1985 Week 1 SQN Requal Trng
16. 100% RTP, EOL	Loss of Offsite Power D/G Fails to Start 6.9-kV SD Board Fails RCPs #1, 2, 3, & 4 Seal Failure LOCA (Small Break)	E-0, E-1, ES-1.2, ECA-0.0	1985 Week 2 SQN Requal Trng
17. 100% RTP, MOL	Failure of Rx Protection System S/G Level Control Failure Feedwater Pump Trip	E-0, FR-S.1, ES-0.1	1985 Week 2 SQN Requal Trng

TABLE 1

<u>INITIAL CONDITIONS</u>	<u>MALFUNCTIONS</u>	<u>EOPs UTILIZED</u>	<u>PERFORMED</u>
18. 100% RTP, Near end-of-life	Failure of Steam-Driven AFW Pump Loss of 6.9-kV Shutdown Board Loss of Condenser Vacuum Failure of Motor-Driven AFW Pump	E-0, FR-H.1	1985 Weeks 3 & 4 SQN Req Trng
19. 100% RTP, Near end-of-life	Failure of MSIVs 1, 2, 3, & 4 Steam Line Break Outside Containment	E-0, E-1, FR-P.1	1985 Weeks 3 & 4 SQN Req Trng
20. 100% RTP, Near end-of-life	Steam Line Break Inside Containment	E-0, E-1, FR-Z.1	1985 Weeks 3 & 4 SQN Req Trng

SER FINDING

2. It is not clear in Section H (page 17) whether the program is to be evaluated or whether operators are to be evaluated. The PGP should state that the operator's knowledge and performance of EOPs will be evaluated after training and that appropriate follow-up training will be conducted for individuals whose knowledge or performance is not acceptable.

SON RESPONSE

Section V.H has been revised to include this SER concern.

SER FINDING

3. The training program should include a commitment to train each operator on revised EOPs prior to standing watch in the control room when revisions are implemented.

SON RESPONSE

Section V.F has been revised to include SON policy for the review of revisions to EOPs.

12/27/85
PRW:LMN:JMA:AC

ENCLOSURE 2

ATTACHMENT 2
REVISED PROCEDURES GENERATION PACKAGE