

ATTACHMENT 1

CONSUMERS POWER COMPANY
BIG ROCK POINT PLANT
DOCKET 50-155

UPDATE TO NRC INSPECTION REPORT 92-013
ITEM 04, EMERGENCY OPERATING PROCEDURES

Procedure 1.1.1
EOP Verification and Validation

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15 Pages

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INFORMATION COPY

BIG ROCK POINT NUCLEAR POWER PLANT PROCEDURE APPROVAL AND AUTHORIZATION

Procedure No. VOLUME 1, PROCEDURE 1.1.3 Rev No. 0

Procedure Title: EOP VERIFICATION AND VALIDATION

CURRENT REVISION STATUS

Author JDHoron Date 06/14/93 Quality Review Form No. 594-93

APPLICABILITY ISSUE HISTORY

Revision No. _____ Date _____ Quality Review Form No. _____

Approved for use

Procedure Sponsor/Designate /s/JHoron Date 06/16/93

Authorized Period of Use June 16, 1993 through June 16, 1995

When applicable:

PROCEDURE IMPLEMENTATION HISTORY

Reviewed for System or Component Operability

Performed by		Completed/Reviewed by		Method of Verification
Title		Title		
Date	Time	Date	Time	<input type="checkbox"/> Functional Test
				<input type="checkbox"/> Physical Inspection
				<input type="checkbox"/> Administrative Review

MAINTENANCE ORDER NO. (if applicable) _____

TABLE OF CONTENTS/EFFECTIVE PAGES

		<u>REVISION</u>	<u>PAGES</u>
		0	1 - 13
1.	<u>PURPOSE</u>		
2.0	<u>GENERAL INFORMATION</u>		
3.0	<u>REFERENCES AND ATTACHMENTS</u>		
3.1	REFERENCES		
3.2	ATTACHMENTS		
4.0	<u>VERIFICATION</u>		
4.1	ASSIGNED INDIVIDUALS		
4.2	VERIFICATION OF WRITTEN CORRECTNESS		
4.3	VERIFICATION OF TECHNICAL ACCURACY		
5.0	<u>VALIDATION</u>		
5.1	ASSIGNED INDIVIDUALS		
5.2	TYPES OF VALIDATION		
5.3	VALIDATION PERFORMANCE		

1.0 PURPOSE

To specify the Verification and Validation (V & V) requirements for revisions to or newly created Emergency Procedures:

- a. Emergency Operating Procedures (EOP)
- b. Emergency Implementing Procedures (EIP)
- c. Procedures referenced directly from the EOPs/EIPs

2.0 GENERAL INFORMATION

2.1 Verification is performed to ensure that the Emergency Procedures are technically accurate and correctly written.

2.2 Validation is performed to ensure that the Emergency Procedures are logically structured to provide sufficient information for qualified operators to perform their duties in an emergency.

2.3 V & V will not be required for revisions to the Emergency Procedures that can be classified as:

- a. Typographical errors
- b. Changes which do not alter the intent of the Emergency Procedures or Operator actions
- c. Clarification of Operator actions, notes or cautions
- d. Changes incorporating formal V & V comments

As a minimum, the above revisions are routed on a Record of Review Form (BRP069) as required by Volume 1, Administrative Procedure 2.1.2, Operations Documents.

2.4 All revisions to the Emergency Procedures will require processing in accordance with Volume 1, Administrative Procedure 1.1, Procedures Program.

2.5 The EOP procedure sponsor will ensure the reason for changes to the EOPs/EIPs is adequately stated on the Procedure Change Form (BRP016) and determine if V & V shall be performed.

2.6 The Operations Manager should approve the need for V & V when reviewing the revisions to the Emergency Procedures. Prior to signing for department head approval, the required technical review and/or V & V must be completed.

3.0 REFERENCES AND ATTACHMENTS

3.1 REFERENCES

- a. NUREG-0899, Guidelines for the Preparation of Emergency Operating Procedures
- b. NUREG-1358, Lessons Learned from the Special Inspection Program for Emergency Operating Procedures
- c. NUREG-5228, Techniques for Preparing Flowchart-Format Emergency Operating Procedures
- d. Volume 1, Administrative Procedure 1.1.1, Procedure Writer's Requirements and Guidelines
- e. Volume 1, Administrative Procedure 1.1.2, EOP/EIP Writer's Guide
- f. Volume 27, EOP Technical Guidelines and Basis Document

3.2 ATTACHMENTS

- a. Attachment 1, EOP Verification Checklist
- b. Attachment 2, Emergency Procedures Verification Checklist
- c. Attachment 3, Validation Form
- d. Attachment 4, Validation Criteria

4.0 VERIFICATION

4.1 ASSIGNED INDIVIDUALS

- a. A minimum of two individuals will be assigned to perform independent verification for Emergency Procedure revisions.
- b. The EOP procedure sponsor shall not perform the verification for EOPs and EIPs.
- c. The individuals must be knowledgeable of references 3.1.d, 3.1.e and 3.1.f (Operations, Training or Engineering Department personnel).
- d. At least one individual must be from the Operations Department.

- e. The assigned individual's name and job title will be written on separate Verification Checklists.
- f. The EOP Procedure Sponsor shall document on the Verification Checklists the revised procedure(s) and/or step(s) to be verified.

4.2 VERIFICATION OF WRITTEN CORRECTNESS

- a. The EOP/EIP Writer's Guide (reference 3.1.e) and Attachment 1, Section 1, will be used for verification of revisions to the EOP flowcharts.
- b. The Procedure Writer's Requirement and Guidelines (reference 3.1.d) and Attachment 2, Section 1, will be used for verification for other Emergency Procedures.
- c. All UNSAT items are to be documented on the Quality Review Form (BPR021) or Document Review Sheet (NOD Form 3110).
- d. The Procedure Sponsor is responsible for resolving all UNSAT items on the Quality Review Form or Document Review Sheet.

4.3 VERIFICATION OF TECHNICAL ACCURACY

- a. Volume 27, EOP Technical Guidelines and Basis Document and Attachment 1, Section 2, will be used for revisions to the EOP flowcharts.
- b. The BRP Technical Specifications (Volume 2), the Updated FHSR and Attachment 2, Section 2, will be used for revisions to the other Emergency Procedures.
- c. The applicable section of a referenced P&ID(s) will be verified when the associated Emergency Procedure's equipment lineup or sequence of operations is revised.
- d. All comments or concerns with the technical accuracy are to be documented on a Quality Review Form (BRP021) or Document Review Sheet (NOD 3110).
- e. The Procedure Sponsor is responsible for resolving all comments or concerns documented on the Quality Review Form or Document Review Sheet.
- f. The completed Verification Checklists (Attachment 1 or 2) are to be included with the Quality Review Form for PRC review.

5.0 VALIDATION

5.1 ASSIGNED INDIVIDUALS

- a. The minimum Control Room Staff required by the BRP Technical Specifications shall be used for validation of Control Room EOP tasks.
- b. The crew size and composition for validation of EOP tasks performed outside of the Control Room should be based on:
 1. Expected Plant conditions during the task. For example, if in a High Radiation Area, a Radiation Technician would be part of the crew.
 2. Personnel requirements as stated in the procedure
- c. Personnel are to be representative of an operating shift crew.
- d. Individual(s) familiar with human factors, flowchart design and EOP technical basis shall be assigned as observer(s) during the validation process.

5.2 TYPES OF VALIDATION

- a. TABLE-TOP: Personnel explain and/or discuss procedure action steps in response to a scenario.
- b. WALK-THROUGH: Personnel conduct a step-by-step enactment of their actions during a scenario without carrying out the actual control functions.
- c. SIMULATOR EXERCISE: Personnel manipulate controls and observe instrumentation in response to an Emergency Procedure scenario.

5.3 VALIDATION PERFORMANCE

- a. Attachment 3, Validation Form, shall be completed to document the Validation of Emergency Procedure revisions.
- b. The EOP sponsor is responsible for initiating validation of the Emergency Procedures.
- c. Although simulator exercise should be the primary method of validation, a walk-through validation in the Plant Control Room will be required when the simulator response or layout is different.

- d. The method of validation will be determined by the BRP Nuclear Training Department and the EOP sponsor.
- e. Validation may be carried out concurrent with Emergency Procedures training.
- f. The revised step(s) or section(s) shall be reviewed with the validation crew before performing validation. This may be completed by the BRP Nuclear Training Department or the EOP sponsor.
- g. The purpose of performing the validation should be discussed with the validation crew. Key points to emphasize are:
 - 1. Determine if the Emergency Procedures will successfully mitigate plant transients.
 - 2. Ensure actions can be performed (i.e., considers access, lighting and other environmental factors, availability of necessary equipment and communications).
 - 3. Enough detail provided for qualified individuals to perform assigned responsibilities.
 - 4. Appropriately reflect the crew's roles and responsibility.
 - 5. Provide a formal means for Emergency Procedure users to give feedback.
- h. The required scenarios for the type(s) of validation to be performed will be developed by the BRP Nuclear Training Department. The total number and complexity of the scenarios should be consistent with the complexity of the revision.
- i. The tasks of the Emergency Procedures which cannot be performed on the simulator shall be validated by walk-through.
- j. A copy of the scenarios used for validation is to be included with the Quality Review Form package for PRC review.
- k. Attachment 4, Validation Criteria, provides general criteria to assist the observer/reviewer(s) during the validation process.
- l. Discrepancies noted by the observer/reviewer(s) are to be noted on Attachment 3 and reviewed with the validation crew.

- m. As soon as possible after the validation scenario is performed, request feedback from the validation crew. Record the problems and discrepancies on Attachment 3.
- n. The Operations Manager and the EOP sponsor are to resolve the problems and discrepancies identified on Attachment 3.
- o. Attachment 3 is to be included with the Quality Review Form package for PRC review.

ATTACHMENT 1
EOP VERIFICATION CHECKLIST
 Page 1 of 3

EOP(s) OR STEP(s) TO BE VERIFIED: _____	

EOP Sponsor: _____	Date: _____

Assigned to: _____ Title: _____

SECTION 1: WRITTEN CORRECTNESS

NOTE: Provide a description of all "UNSAT" items on the Quality Review Form (BRP021) or Document Review Sheet (NOD 3110).

NOTE: Step numbers in parentheses are from Reference 3.1.e.

		SAT	UNSAT	N/A
Procedure Identification	(4.1)	___	___	___
Title Description and Location	(4.2)	___	___	___
Entry Conditions	(4.3)	___	___	___
Parameter Control Paths	(4.4)	___	___	___

ALL STEPS

		SAT	UNSAT	N/A
Spelling	(5.1)	___	___	___
Punctuation	(5.2)	___	___	___
Capitalization	(5.3)	___	___	___
Numerical Values	(5.4)	___	___	___
Abbreviations, Acronyms & Symbols	(5.5)	___	___	___
Component Identification	(5.6)	___	___	___
Level of Detail	(5.7)	___	___	___

ATTACHMENT 1
EOP VERIFICATION CHECKLIST
 Page 2 of 3

ACTION STEPS

	SAT	UNSAT	N/A
Word Usage (5.8)	—	—	—
Logic Terms (5.9)	—	—	—
Text Structure (4.5)	—	—	—
Components or Conditions Itemized (4.5)	—	—	—
Conditional & Action Statements Separated (4.5)	—	—	—
Referencing (4.9)	—	—	—
Types (5.10)	—	—	—
Step Identification (4.12)	—	—	—

DECISION STEPS

	SAT	UNSAT	N/A
Phrased Properly (4.6)	—	—	—
Text Centered (4.6)	—	—	—
Placement of "Yes" & "No" (4.6)	—	—	—

CAUTIONS

	SAT	UNSAT	N/A
One Caution Per Symbol (4.7)	—	—	—
Proper Location (4.7)	—	—	—
Descriptive Title Appropriate (4.7)	—	—	—
Caution Key Correct (4.7)	—	—	—

NOTES

	SAT	UNSAT	N/A
One Topic Per Note (4.8)	—	—	—
Proper Location (4.8)	—	—	—
Note Key Correct (4.8)	—	—	—

ATTACHMENT 1
EOP VERIFICATION CHECKLIST
 Page 3 of 3

BRANCHING

	SAT	UNSAT	N/A
"GO TO" in Exit Symbol (4.10)	—	—	—
"FROM" in Entry Symbol (4.10)	—	—	—
Common Exit/Entry Same Capital Letter (4.10)	—	—	—
Step Number Listed, If Applicable (4.10)	—	—	—
Branch Point Location (4.10)	—	—	—
Proper Procedure Identifier (4.10)	—	—	—

FLOWLINES

	SAT	UNSAT	N/A
Proper Point Width (4.11)	—	—	—
Arrowhead Placement (4.11)	—	—	—
Rounded Corners For Indirect Paths (4.11)	—	—	—
Minimum Spacing (4.11)	—	—	—
Flowpath Upward Movement (4.11)	—	—	—
Secondary and Primary Path Locations (4.11)	—	—	—
Flowchart Symbol Connections (4.11)	—	—	—

SECTION 2: TECHNICAL ACCURACY

NOTE: Provide a description of all "UNSAT" items on the Quality Review Form (BRP021) or Document Review Sheet (NOD 3110).

1. Perform a table top review to compare the EOP changes to Volume 27 EOP Technical Guidelines and Basis Document.
2. Perform an in-plant (including Control Room) walkdown to verify that EOP revisions are in agreement with:
 - a. Instrumentation range and scale
 - b. Equipment identification
 - c. Equipment availability

Completed By: _____ Date: _____

ATTACHMENT 2
EMERGENCY PROCEDURES VERIFICATION CHECKLIST
 Page 1 of 2

EMERGENCY PROCEDURE TO BE VERIFIED: _____	

PROCEDURE SPONSOR _____	DATE _____

Assigned to: _____ Date _____

SECTION 1: WRITTEN CORRECTNESS

NOTE: Provide a description of all "UNSAT" items on the Quality Review Form (BRP021) or Document Review Sheet (NOD 3110).

NOTE: Step numbers in parentheses are from Reference 3.1.d.

	SAT	UNSAT	N/A
Procedure Identification (5.2)	---	---	---
Coversheet (5.5.1)	---	---	---
Format (5.5.2)	---	---	---
Purpose. (5.5.3.b)	---	---	---
References (5.5.3.d)	---	---	---
Attachments (5.5.3.1)	---	---	---
Precautions And Limitations (5.5.3.e)	---	---	---
Prerequisites (5.5.3.f)	---	---	---

ATTACHMENT 2
EMERGENCY PROCEDURES VERIFICATION CHECKLIST
 Page 2 of 2

	SAT	UNSAT	N/A
Grammar And Punctuation (5.6.1)	___	___	___
Spelling (5.6.2)	___	___	___
Hyphenation (5.6.3)	___	___	___
Use Of Printing Emphasis (5.6.4)	___	___	___
Vocabulary (5.6.5)	___	___	___
Abbreviations, Letter Symbols And Acronyms (5.6.6)	___	___	___
Numerical Values (5.6.7)	___	___	___
Use Of Logic Terms (5.6.8)	___	___	___
Use Of Shall, Should And May (5.6.9)	___	___	___
Use Of Warnings (5.6.10.a)	___	___	___
Use Of Precautions (5.6.10.b)	___	___	___
Use Of Caution (5.6.10.c)	___	___	___
Use Of Notes (5.6.10.d)	___	___	___
Use Of Prerequisites (5.6.10.e)	___	___	___
Level Of Instructional Detail (5.6.11)	___	___	___
Instructional Steps (5.6.12)	___	___	___
Specifying Limits, Rates, Readings And Measurements (5.6.13)	___	___	___
Examples (5.6.14)	___	___	___
Calculations (5.6.15)	___	___	___
Component And Equipment Identification (5.6.16)	___	___	___
Verification Requirements (5.6.17)	___	___	___
Data Documentation Methods (5.6.18)	___	___	___
Printed Procedure Aids (5.6.19)	___	___	___
Referencing Or Branching To Other Documents, Procedures Or Steps (5.6.20)	___	___	___

SECTION 2: TECHNICAL ACCURACY

NOTE: Provide a description of all "UNSAT" items on the Quality Review Form (BRP021) or Document Review Sheet (NOD 3110).

1. Perform a table top review to compare the Emergency Procedure changes to BRP Volume 2, Technical Specifications, and the Updated FHSR.
2. Perform an in-plant (including Control Room) walkdown to verify that Emergency Procedure revisions are in agreement with:
 - a. Instrumentation range and scale
 - b. Equipment identification
 - c. Equipment availability
3. If applicable, verify the referenced P&IDs are correct for the operations required by the revised Emergency Procedure.

Completed By: _____ Date: _____

ATTACHMENT 3
VALIDATION FORM

EMERGENCY PROCEDURE TITLE: _____ REVISION NUMBER _____

Step(s) or Section(s) to be Validated: _____

EOP Sponsor: _____ Date _____
Revised Step(s) or Section(s) reviewed with Validation Crew:

<u>NAME</u>	<u>TITLE</u>
_____	_____
_____	_____
_____	_____

Completed by: _____ Date: _____

Validation method(s) to be used: _____

Simulator ICs to be used: _____ N/A _____

Designated Observer/Reviewer(s): _____

Problems and Discrepancies: _____

Resolution: _____

Completed By: _____ Date: _____

ATTACHMENT 4
VALIDATION CRITERIA

ALL EMERGENCY PROCEDURES

The sequence of action steps allows for the following:

1. Minimal physical interference and movement of personnel
2. Execution by the minimum Control Room staff
3. Consistent with the Operators' roles and responsibilities
4. Avoid the duplication of tasks by personnel
5. The Shift Supervisor to follow the action and monitor plant status

Action steps provide sufficient information for the timely completion of the intended task.

Potential hazards to equipment or personnel (CAUTIONS) identified.

Additional information (NOTES) sufficient to support an action.

Priorities established between concurrent procedures based on plant parameters.

Labeling, abbreviations and location information sufficient to enable the operator to find the needed equipment.

EOP FLOWCHARTS

Entry conditions, for the plant symptoms displayed, sufficient to permit the correct EOP(s) to be entered.

Immediate actions appropriate for the emergency conditions.

Decision step questions easily understood by the Operators.

Titles and numbers descriptive enough to find referenced procedures.

Branch points can be located without difficulty.

Flowcharts can be physically managed (bulky, sufficient desk space).

Flowcharts are readable (clarity, print size).

Placekeeping adequate for noting progress and status.

Graphics design conducive to correct procedure performance.