FORT CALHOUN STATION
UNIT NO. 1

PROCEDURES GENERATION
PACKAGE

PROCEDURES GENERATION PACKAGE

Table of Contents

PROCEDURES GENERATION PACKAGE

PART 1

INTRODUCTION

PROCEDURES GENERATION PACKAGE

INTRODUCTION

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Procedures Generation package (PGP) is to provide a description of the process used to upgrade the Emergency Operating Procedures (EOP's) at the Fort Calhoun Station Unit No. 1. This process incorporates Plant-Specific Technical Guidelines, Writers Guide, Verification Program, Validation Program, and Training Program.

1.2 Scope

The EOP upgrade process is documented in response to Item 7.2.b, Supplement 1 of NUREG-0737, "Requirements for Emergency Response Capability," as contained in the Commission's confirmatory letter from Mr. James R. Miller to W. C. Jones dated February 22, 1984. The guidance presented in NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures, " was used in developing the upgrade process. NUREG-0899 also provides guidance on the recommendations of NUREG-0737, Item I.C.1 "Emergency Operating Procedures." In addition INPO Guidelines 82-013, 82-016, 82-017, 83-004, 83-006, and 83-007 were utilized in the development of the Procedures Generation Package.

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INTRODUCTION

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The parts of this package dealing with the Plant-Specific Technical Guidelines, EOP Writers Guide, EOP Verification Program, EOP Validation Program, and EOP Training Program are written as autonomous sections. The various PGP parts may be revised prior to incorporation into the Nuclear Production Division procedure network. This revision process would not alter or diminish the integrity of the development process but would incorporate lessons learned in the execution of the upgrade program.

1.3 Background

Following the accident at Three Mile Island (TMI), NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations" was issued. The Combustion Engineering Owners Group (CEOG) developed CEN-128, "Response of Combustion Engineering Nuclear Supply System to Transients and Accidents" using best estimate analysis techniques.

The guidance of NUREG-0578 was integrated into and expanded by NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident." NUREG-0737, "Clarification of TMI Action Plan Requirements", was issued to improve the recommendations of NUREG-0660. Item I.C.1 of NUREG-0737 recommends that the events analyzed for EOP's include multiple failures, that guidelines be prepared to communicate designer information to the procedure writers, and that EOP's include function oriented procedures as well as event oriented procedures.

Omaha Public Power District personnel have been actively participating for several years in the CEOG program to develop generic Emergency Procedure Guidelines (EPG's). The generic EPG's were submitted to the NRC in a report entitled, "Combustion Engineering Emergency Procedure Guidelines," CEN-152, Revision 01, dated November 22, 1982. CEN-152, Revision 02 was submitted to the NRC on May 8, 1984 and will be used as the basis for the Fort Calhoun Station Unit No. 1 upgraded EOP's. This report contains the revised version of the EPG's, a description of the guideline characteristics and features, the methodology used to develop and validate the guidelines, and information on plant-specific implementation. The NRC has not officially accepted the revised CEOG EPG's for implementation in plant-specific EOP's at the time of this submittal. NRC acceptance of CEN-152, Revision 02 is expected in the near future along with a safety evaluation report identifying technical and administrative issues requiring future resolution.

In response to Item I.C.1 of NUREG-0737, as clarified in Supplement 1 and as required in Item 7.2.b, this Procedures Generation Package is submitted. Implementation of the first set of EOP's as described in this package is scheduled to be complete prior to the Cycle 10 startup.

2.0 UPGRADE PROCESS

This section provides a summary of the program for upgrading Emergency Operating Procedures at Fort Calhoun Station Unit No. 1 based on the Combustion Engineering Owners Group Emergency Procedure Guidelines.

2.1 Procedure Network

EOP's are only one of the many types of procedures within the plant's procedure network. This network is considered by the EOP project team during the upgrade process to ensure consistency between EOP's and other plant procedures. When necessary, changes to existing plant procedures are processed as part of this program.

To distinguish EOP's from other plant procedures, an emergency is defined as an incident severe enough to necessitate a reactor trip - either automatically or manually initiated. Events which are more serious than normal transients but not severe enough to require a reactor trip or for which the reactor is already shutdown, shall be included in a new set of procedures called Abnormal Operating Procedures (AOP's). This procedure set will contain many procedures which were previously designated as emergency procedures.

Emergency events can be divided into two types. For the first type, the operator can determine the general type of event by diagnosing its symptom set from control room indications, knowledge of the plant, and recent operating history. For events where a diagnosis is possible, guidance has been developed and sequenced to effectively mitigate that symptom set (e.g., LOCA, steam generator tube rupture). Since these types of events have been well analyzed and understood, it is possible to write emergency procedures to optimize the recovery (i.e., minimize release of radiation, reduce risk of core damage).

In the second type of emergency, the operator is unable to diagnose a specific symptom set. This may be due to errors in symptom assessment by the operator, multiple failures in the plant, the occurrence of an event not previously analyzed, instrumentation failures, or a combination of the aforementioned. For these events, guidance has been developed which is based upon the satisfying of safety functions (e.g., RCS inventory control, RCS pressure control) and not on recovery from a specific symptom set.

Emergency Operating Procedures (EOP's) provide guidance for both types of emergencies. Therefor, after a reactor trip, the operator can refer to a procedure which will provide correct, safe guidance regardless of whether a specific symptom set is identified. EOP's written to treat specific symptom sets are called Optimal Recovery Procedures. The EOP which provides guidance for undiagnosed events is called the Functional Recovery Procedure. The following list identifies the Fort Calhoun Station network of EOP's:

EOP-01: Reactor Trip
EOP-02: Electrical Emergency
EOP-03: Loss of Coolant Accident
EOP-04: Steam Generator Tube Rupture
EOP-05: Uncontrolled Heat Extraction
EOP-06: Loss of Feedwater
EOP-20: Functional Recovery

The Reactor Trip Immediate Actions, located in EOP-01, are performed following all reactor trips to evaluate the status of critical safety functions and provide contingency actions to improve the status of those safety functions in jeopardy. The Reactor Trip Immediate Actions provide a secondary function in that while evaluating the status of safety functions, elements of event

diagnosis are also in progress. Following the Reactor Trip Immediate Actions, further diagnostic actions occur, if necessary, in which the operator attempts to identify a specific symptom set corresponding to the event in progress. If the diagnosis of one event can be made then that optimal recovery EOP is implemented. If the diagnosis of the event is not possible then the functional recovery EOP is implemented. A check of the status of each safety function continues to be performed on a regular time interval when entering any other EOP from EOP-01.

2.2 Process Description

The upgrading of EOP's is a process consisting of several steps. The process steps are: (1) preparation of a plant-specific writers guide and development of plant-specific technical guidelines, (2) procedure writing and verification, (3) procedure validation, (4) training of the operators, and (5) implementation of the upgraded EOP's. The process elements taken collectively are a description of the methods used to convert the generic CEOG EPG's to Fort Calhoun Station Unit No. 1 EOP's. These elements are described more fully in this PGP.

The EOP writer must take a multitude of facets into account when generating EOP's. The CEOG EPG's and supporting information identify the plant objectives to be met, the systems required, the required level of performance, the required operator actions, and the strategy with which the actions are to be carried out. Additional strategies, functions, tasks, and analyses are needed to prepare the EOP's. Integration of the EOP process elements is based on operating experience, engineering, writing methods, shift staffing, plant design features, and operating characteristics. While integrating the process elements, subsystem and component details are added to the EOP.

Finally, after the EOP's are written and verified, the EOP's must be validated. Appropriate accident scenarios, including multiple failures, shall be developed to adequately test the EOP's and EOP - operator interaction during emergency conditions. Following successful validation, all operators will be trained on the upgraded EOP's prior to assignment in the control room with the EOP's implemented.

PROCEDURES GENERATION PACKAGE

PART 2

PLANT - SPECIFIC TECHNICAL GUIDELINES

Fort Calhoun Station

Unit No. 1

Plant Specific Technical Guidelines

Fort Calhoun Station
Plant Specific Technical Guidelines

Table of Contents

1.0 INTRODUCTION

1.1 Purpose

This document provides the guidelines and the process for the development of the Fort Calhoun Station Unit No. 1 upgraded Emergency Operating Procedures (EOP's) and their revision.

1.2 Scope

Because of the similarity between Fort Calhoun Station Unit No. 1 and the generic plant used for the Combustion Engineering Owner's Group (CEOG) Emergency Procedure Guidelines (EPG's), the generic guidelines incorporating plant specific source documents and engineering reviews will be used to upgrade the existing Fort Calhoun Station Emergency Procedures.

1.3 Applicability

These guidelines apply to initial EOP implementation and subsequent revisions of the Fort Calhoun Station EOP's.

2.0 PLANT SPECIFIC TECHNICAL GUIDELINES

This section describes the upgrade process that will be used to convert the CEOG EPG's (CEN-152, Rev. 02) and other source documents indicated below to the plant specific Technical Guidelines required by NUREG 0737, Supplement 1, item 7.2.b.(i).

The applicability of the EPG's to Fort Calhoun Station has been ensured through District participation in the CEOG workshops in which the philosophy, methodology, and technical content were developed. In addition, as part of the Detailed Control Room Design Review the EPG's were

verified and validated by the performance of a task analysis, an Information Control Characteristics Review, and Fort Calhoun Station control room walk-throughs.

2.1 Source Documents

EOP writers will use the following source documents to prepare upgraded EOP's:

- Fort Calhoun Station Unit No. 1 Writers Guide
- CEOG Emergency Procedure Guidelines (CEN-152, Rev. 02 for initial upgrade or most current revision for subsequent upgrades)
- Fort Calhoun Station Unit No. 1 USAR
- Fort Calhoun Station Unit No. 1 Emergency Procedures (existing)
- Fort Calhoun Station Unit No. 1 Operating Procedures
- Fort Calhoun Station Unit No. 1 Administrative Procedures
- Fort Calhoun Station Unit No. 1 Radiological Emergency Response Plan and Emergency Plan Implementing Procedures
- As-built plant drawings
- Licensing commitment letters related to EOP's

2.2 Draft EOP's

The EOP writer will review the source documents and then construct draft EOPs using the following additional guidance; the Verification Program provides the means for documenting these steps.

- If it is determined that a generic step is compatible with Fort Calhoun Station, then the step will be copied into the EOP's using the appropriate format instruction.
- When a generic step requires a plant specific value, it will be determined and put into the EOP.
- When a generic step indicates the need for plant-specific details, then the information will be added to the EOP's.
- When the generic guidelines fail to address systems or actions that are unique to Fort Calhoun Station, then steps will be included to encompass the necessary actions.
- If a generic step specifies an action that cannot be performed at Fort Calhoun Station, then the step will be deleted or modified.
- Generic steps will be reworded to conform to Fort Calhoun Station standard terminology.
- Generic steps may be rearranged to streamline the procedure provided the technical intent remains unchanged.

2.3 Final EOP's

After the draft EOP's are prepared, verification and validation processes will be performed as described in the following sections. At the conclusion of the verification and validation, the EOP's will be approved and implemented. Revisions will be processed as required in accordance with administrative control procedures.

Any deviation or addition to the CEOG EPG's which constitute an unreviewed safety question will be reviewed by the Plant Review Committee and the Safety Audit Review Committee and submitted to the NRC prior to implementation.

PROCEDURES GENERATION PACKAGE

PART 3

EOP WRITERS GUIDE

Fort Calhoun Station
Unit No. 1

Emergency Operating Procedure
Writers Guide

EOPWG
Rev. 00

Fort Calhoun Station
Emergency Operating Procedure
Writers Guide

Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

List of Figures

List of Tables

1.0 INTRODUCTION

1.1 Purpose

This document provides guidance for the preparation of new Emergency Operating Procedures (EOP's) and the revision of existing EOP's for Fort Calhoun Station Unit No. 1. This guidance is provided to ensure that the information and guidance contained in the EOP's will be presented consistently in style and format. The administrative and technical guidance will ensure clarity of procedural steps and effective control room actions during emergency events.

1.2 Scope

This writers guide applies to the preparation, writing, and revision of all emergency operating procedures for Fort Calhoun Station Unit No. 1.

2.0 EOP DESIGNATION AND NUMBERING

EOP's are distinguished from other plant procedures by their unique identification letters, numbers, and titles. Controlled copies of the EOP's shall be maintained in both the Control Room and at the Emergency Shutdown Panel to insure immediate access during emergencies.

2.1 Procedure Cover Sheet

Each EOP will have a cover sheet that contains the following information (see Figure 1):

A. Identification

- EOP Title
- EOP Number
- Revision Number
- Total Number of Pages

B. Review

- Reviewer's Title
- Reviewer's Signature
- Date Signed
- Safety Question Evaluation

C. Approval

- PRC Meeting Date
- Plant Manager Signature
- Effective Date

2.2 Title Page

Each EOP will have a title page that contains the following information (see Figure 2):

- Procedure Title
- Procedure Number
- Effective revision number of each page
- Effective Revision Date
- Page 1 of __

2.3 Procedure Designation

The letters "EOP" will proceed the procedure number thus designating the appropriate emergency operating procedure. See section 2.4 for numbering of procedures.

2.4 Procedure Numbering

The following list identifies the Fort Calhoun Station network of emergency operating procedures:

Emergency Operating Procedures

EOP-01: Reactor Trip
EOP-02: Electrical Emergency
EOP-03: Loss of Coolant Accident
EOP-04: Steam Generator Tube Rupture
EOP-05: Uncontrolled Heat Extraction
EOP-06: Loss of Feedwater
EOP-20: Functional Recovery

2.5 Procedure Revision Numbering

The abbreviation "Rev." followed by the revision number will be on a separate line just below the procedure number.

When a revision is issued, the changes shall be identified by a solid vertical line in the right hand margin opposite the revised material.

2.6 Page Identification and Numbering

Each page of the procedure will be identified by; (1) the procedure designator and number, (2) the revision number, and (3) the page number specified as part of the total number of pages in the procedure (e.g., Page 12 of 26). This information will be located at the bottom of each page of the EOP, and centered within the body (border) of the procedure. Procedure text shall be a minimum of three spaces above the procedure designator and number.

3.0 FORMAT

The following information concerning procedure format is to be applied consistently to all EOP's.

3.1 Page Format

- Figure 1 provides a sample EOP cover sheet.
- Figure 2 provides a sample title page.
- Figure 3 provides a sample of an EOP entry page (Sections 1 and 2).
- Figure 4 provides a sample procedure page (Section 3 with NOTE and CAUTION).
- Figure 5 provides a sample of page layout.

3.2 Procedure Organization - Each EOP will have a Procedure Title followed by the below listed sections:

Section 1: PURPOSE - the purpose section provides a brief statement of the condition(s) for which the subject EOP is intended to be used and defines what the procedure will accomplish.

Section 2: ENTRY CONDITIONS - the entry conditions section provides the conditions for which that EOP should be implemented. This gives the operator a means of confirming that he has chosen the appropriate procedure for particular emergency conditions.

Section 3: OPERATOR ACTIONS - the operator actions are designed to mitigate the consequences of the event taking place and allow the operator to place the plant in a safe, stable condition. The only actions which are immediate and must be committed to memory are the Reactor Trip Immediate Actions. The rest of the EOP's contain specific guidance dependent upon existing plant conditions after completion of the Reactor Trip Immediate Actions. Instructions contained in this section shall be written in short, concise, and easily understood statements. Instructions written in fragments, as opposed to complete sentences, provide the best use of space and allow for the clearest possible understanding.

Section 4: PRINTED OPERATOR AIDS - this section of each EOP contains all of the figures and tables associated with that specific EOP.

Section 5: SAFETY FUNCTION STATUS CHECK - the safety function status check is designed to continually verify that critical safety functions are being maintained. Evaluation of the plant parameters versus the acceptance criteria can help diagnose the event or can show what corrective actions should be taken to mitigate the consequences of the event.

3.3 Section Numbering

Section numbering is required to provide ease of identification of instructional steps in the procedure. Figures 3 and 4 have been provided to show the desired section numbering system.

3.4 Instruction Step Numbering

The following guidelines are established for instruction step numbering (for examples see Figures 4 and 5):

- Instructional steps shall be numbered sequentially with the section number utilized as a prefix (e.g., 3.1, 3.2, . . .).

- Contingency action steps shall be distinguished by an additional number following the prefixed section and instructional step numbers (e.g., 3.1.1, 3.2.1, . . .).

- Limit the level of detail to 3 levels of steps below the general operator action or contingency action step.

- Subordinate levels of detail alternate letter, number and lowercase Roman numerals.

- Minimize indentation to give best use of space. Use for clarity only.

4.0 WRITING PROCEDURES

4.1 Control Room Staffing and Division of Responsibilities

This section considers staffing in the control room and the division of responsibility and leadership among the control room staff as it applies to the use of the EOP's. The following guidelines are important to the efficient and accurate development, and execution of the EOP's.

4.1.1 Consistency Between Staffing and Procedures

The EOP's should be structured so that the number of people required to carry out specific actions, concurrent actions, and other responsibilities, does not exceed the minimum shift staffing required by Technical Specification 5.2.2.a.

4.1.2 Division of Responsibility

The EOP's should be written such that the operator's roles are consistent with the preestablished leadership roles and division of responsibility currently utilized at Fort Calhoun Station.

4.1.3 Operator Interactions

The following goals shall be considered when writing the EOP's:

- Sequence action steps to minimize both physical conflicts between personnel and the amount of movement needed to carry out the steps.

- Unintentional duplication of actions by control room personnel should be avoided.

4.2 General Instructions

EOP's must be written with the level of detail sufficient to support the user's needs. This requires the assumption of a minimum knowledge and experience level. This level is defined to be an operator that has recently received a reactor operator's license on Fort Calhoun Station Unit No. 1. It is important to keep this in mind when determining the level of detail of procedural steps, cautions, notes, and figures.
Avoiding too much detail is important in order to minimize errors and allow for timely response during emergency conditions. The following general rules are to be followed:

- Instruction steps should deal with only one idea.

- Instruction steps in the form of sentence fragments are preferable to long, compound, or complex sentences.

- Instruction steps shall be completed on a single page and not carried over to the next page unless unavoidable.

- Notes and cautions should be in simple but complete sentences.

- Complex evolutions should be described in a series of steps with each step made as simple as possible.

- Objects of operator actions should be specifically stated. This shall include identification of exactly what is to be done, to what, and what the acceptance criteria are.

- Verification should be used where appropriate in the EOP's to ensure that equipment responses and operator actions have occurred and are correct.

- The objects of instruction steps that involve an action verb relating to three or more objects will be listed with space provided for operator checkoff.

- Limits should be expressed as number values whenever possible (refer to Subsection 5.5).

- Mandatory sequence of steps is assumed unless otherwise stated.

- "Step(s) performed continuously" are steps to be implemented anytime conditions warrant and shall be designated by an asterisk to the left of the checkoff provision. "* Step performed continuously" shall be located at the lower left-hand corner of the applicable pages.

- Parts and components should be identified by common usage terminology.

- Expected results of routine tasks need not be stated.

- When system response dictates a time frame within which the instruction must be accomplished, prescribe such time frame by use of a Note. If possible, avoid using time to initiate operator action. Operator actions should be related to plant parameters.

- Use a Caution to describe conditions that may cause harm to personnel, damage to equipment, or that will introduce instrument error.

- Instrumentation values shall be compatible with the ability to read the instrument.

- Do not require mathematical calculations to convert units.

- Use tolerance bands.

4.3 Writing Instruction Steps

The EOP's shall be written in a single-column narrative format. Figure 4 provides an example of the single column format.

4.3.1 Instructions and Contingency Actions

Instructions shall be presented in the following manner (in addition to the general rules stated in section 4.1):

- A check-off provision shall be provided to the left of each instructional step. This checkoff is also intended for use as a placekeeping aid.

- Begin each step with an action verb when logic terms are not required.

- Include the location of the parameter or component being used in parenthesis if items are located in infrequently accessed, out-of-the-way places, or among arrays of items of similar appearance.

Contingency Actions (Equally Acceptable Steps) provide guidance to the operator for situations where the operator cannot perform the instructional step (e.g. a designated piece of equipment is unavailable) or the results obtained do not fall within the range of expected values. These actions will most likely require the manual initiation of a system that is expected to operate automatically. Other actions may include

- Reference to an OI/OP/AOP.

- Reference to another EOP.

- Reference to outside assistance from the TSC or EOF.

- Continuing with the procedure.

4.4 Use of Logic Terms

The logic terms AND, OR, NOT, IF, IF NOT, WHEN, and THEN are often necessary to precisely describe a set of conditions or a sequence of actions. When logic statements are used, logic terms will be highlighted so that all conditions are clear to the operator. Highlighting shall be achieved by capitalizing all letters of the logic terms and underlining these terms.

The use of AND and OR within the same action shall be avoided if possible. When AND and OR are used together, the logic can be very ambiguous.

Use the logic terms as follows:

- When attention should be called to combinations of conditions, the word AND shall be placed between the description of each condition. The word AND shall not be used to join more than three conditions. If four or more conditions need to be joined, a list format shall be used and the operator directed to perform them all.

- The word OR shall be used when calling attention to alternative combinations of conditions. The use of the word OR shall always be in the inclusive sense. To specify the exclusive "OR", the following may be used: "either A OR B but not both".

- When action steps are contingent upon certain conditions or combinations of conditions, the step shall begin with the words IF or WHEN followed by a description of the condition or conditions (the antecedent), a comma, the word THEN, followed by the action to be taken (the consequent). WHEN is used for an expected condition. IF is used for a possible condition.

- Use of IF NOT should be limited to those cases in which the operator must respond to the second of two possible conditions. IF should be used to specify the first condition.

- THEN shall not be used at the end of an action step to instruct the operator to perform the next step because it runs actions together.

4.5 Cautions and Notes

Cautionary information can be considered in two fundamental categories: those that apply to the entire procedure and those that apply to a portion or specific step of the procedure. Those that apply to the entire procedure are called "Precautions" and are covered in operator training. Those that apply to a specific portion of the procedure are called "Cautions" and are placed immediately before the procedural steps to which they apply.

Cautions are to extend across the entire page and shall be bordered top and bottom by a horizontal row of asterisks (see Figure 4). This placement of cautions ensures that the procedure user observes the caution prior to performing the procedural step. A caution shall not be used instead of an instructional step and it cannot direct an action. Cautions should be used to denote a potential hazard to personnel or equipment associated with, or consequent to, the subsequent instructional step.

If additional information other than cautions is necessary to support an action instruction, a "Note" should be used. A "Note" should present information only, not instructions, and should be of compressed width in order to further differentiate it from text and cautionary statements (see Figure 4).

Specific rules for cautions and notes:

- Never continue a caution or note from one page to the next.

- Cautions are emphasized by their full page width, a horizontal row of asterisks top and bottom, and additional spacing top and bottom.

- Notes are emphasized by their compressed width and additional spacing top and bottom.

- If two or more cautions are written for the same procedural step or section, the horizontal row of asterisks is placed only below the last caution. The word CAUTION is written only before the first caution. The separate cautions will be identified by number.

- The headings CAUTION and NOTE are always centered on the page, capitalized, and underlined.

4.6 Calculations

Mathematical calculations should be avoided in EOP's. If possible, a chart or graph should be used when a value has to be determined.

4.7 Use of Underlining

Underlining will be used for emphasis, logic terms, cautions, notes, section headings, and column headings. Use only where appropriate for required emphasis.

4.8 Referencing and Branching to Other Procedures or Steps

Referencing implies that an additional procedure or additional steps will be used as a supplement to the procedure presently being used. Use the key words "refer to". The operator will know to use another source for additional information concurrent with the procedure in use. Referencing other steps within the procedure being used, either future steps or completed steps, should be minimized because it causes confusion. When only a few steps are involved in the referencing, the steps should be stated in the procedure whenever they are needed.

To minimize the potential for operator confusion, branching will be used when the operator is to leave one procedure or step and use another procedure or step. Use the key words "go to". The operator will know to leave the present step and not return until directed.

4.9 Component Identification

With respect to the identification of components, the following rules are established:

- Equipment, controls, and displays will be identified in common usage terms. These terms may not always match engraved names on panels but will be complete and sufficient.

- When the engraved names and numbers of components are specifically used, the engraving should be quoted verbatim and enclosed in quotation marks.

- If the component is seldom used or it is felt the component would be difficult to find, location information should be given in parenthesis.

4.10 Level of Detail

Too much detail in EOP's should be avoided in the interest of readability and comprehension. Avoiding too much detail is important in order to minimize errors and to allow for timely response during emergency conditions. The level of detail required is for that of an operator who has recently received a Reactor Operator's license on Fort Calhoun Station Unit No. 1.

To assist in determining the appropriate level of detail in the EOP's, the following general rules apply:

- For control circuitry that executes an entire function upon actuation of the control switch, the action verb appropriate to the component suffices without further amplification of how to manipulate the control device. Example: Trip generator field breaker.

Recommended action verbs are listed as follows (a more detailed listing can be found in Table 3):

a. For power-driven rotating equipment, use Start, Stop.

b. For valves, use Open, Close, Throttle Open, Throttle Close, Throttle.

c. For power distribution breakers, use Synchronize and Close, Trip.

- For multiposition control switches that have more than one position for a similar function, placement to the desired position should be specified. Example: Place the steam dump and bypass steam "AUTO-INHIBIT" switch to "INHIBIT".

- Instructions for dealing with abnormal results need not be prescribed within procedural steps when it is a matter of standard practice. For example, observation of noise, vibration, erratic flow, or discharge pressure need not be specified by steps that start pumps.

4.11 Printed Operator Aids

When information is presented using graphs, charts, tables, and figures, these aids must be self-explanatory, legible, and readable under the expected conditions of use.

4.11.1 Units of Measure

Units of measure on graphs, charts, tables, and figures should be given for numerical values consistent with control room indications which represent observed, measurement data, or calculated results. A virgule (slant line) shall be used instead of "per". Examples: ft/sec, lbs/hr. See Table 1 for acceptable abbreviations.

4.11.2 Titles and Headings

Capitalization should be used for references to tables and figures, titles of tables and figures within text material, and column headings within a table.

4.11.3 Figure, Table, and Attachment Numbering

Sequential arabic numbers should be assigned to figures, tables, and attachments in separate series. The sequence should correspond with the order of their reference in the text. The symbol "#" and abbreviation "No." are unnecessary and should not be used. The number alone suffices.

Examples: Figure 1, Figure 2, etc.
Table 1, Table 2, etc.
Attachment 1, Attachment 2, etc.

Page identification for figures, tables and attachments should consist of (1) procedure number, (2) procedure revision, (3) attachment number, and (4) page number. Page numbering shall comply with the requirements of subsection 2.6.

5.0 MECHANICS OF STYLE

5.1 Spelling

Spelling should be consistent with modern usage. When a choice of spelling is offered by the dictionary, the first spelling should be used.

5.2 Hyphenation

Hyphens are used between elements of a compound word when usage calls for it. The following rules concerning hyphenation shall be followed:

- When doubt exists, restructure the compound word to avoid hyphenation.

- Hyphens should be used in the following circumstances:

  a. In compound numerals from twenty-one to ninety-nine.
     Example: one hundred thirty-four

  b. In fractions.
     Examples: one-half, two-thirds

  c. In compounds with "self".
     Examples: self-contained, self-lubricated

  d. When the last letter of the first word is the same vowel as the first letter of the second (two words may be used as an alternative).
     Example: fire-escape or fire escape

  e. When misleading or awkward consonants would result by joining the words.
     Example: bell-like

  f. When a letter is linked with a noun.
     Examples: x-ray, o-ring, I-beam

g. To separate chemical elements and their atomic weight.
Examples: Uranium-235 or U-235

5.3 Punctuation

Punctuation should be used only as necessary to aid reading and prevent misunderstanding. Word order should be selected to require a minimum of punctuation. When extensive punctuation is necessary for clarity, the sentence shall be rewritten and possibly made into several sentences. Punctuation shall be used in accordance with the following rules:

5.3.1 Brackets

Do not use brackets.

5.3.2 Colons

Use a colon to indicate that a list of items is to follow.
Example: Restore cooling flow as follows:

5.3.3 Commas

Minimize the use of commas. Use of many commas is a sign the instruction is too complex and needs to be rewritten. Use a comma after conditional phrases for clarity and ease of reading. Example: WHEN level drops to 60 inches, THEN start pumps . . .

5.3.4 Parentheses

Parentheses shall be used to indicate panel numbers, locations, or other information judged to be suitable for parenthetical inclusion.

5.3.5 Periods

Use a period at the end of complete sentences and for indicating the decimal place in numbers.

5.4 Vocabulary

Words used in EOP's should convey precise understanding to the operator. The following rules apply:

- Use simple words. Simple words are usually short, common words of few syllables.
- Use the words common to normal control room communications. Refer to Table 1 for common usage words.
- Use words that are concrete rather than vague, specific rather than general, familiar rather than formal, precise rather than blanket, and use their meaning consistently.
- Only words with specific meaning should be used. Acceptable verbs are listed in Table 3.
- Avoid the use of pronouns.

5.5 Numerical Values

The use of numerical values should be consistent with the following rules:

- Arabic numerals shall be used.

- For numbers less than unity, the decimal point will be preceded by a zero. Example: 0.1

- The number of significant digits shall be equal to the number of significant digits available from the display and the reading precision of the operator.

- Acceptance values should be specified in such a way that addition and subtraction by the user is avoided. This can generally be done by stating acceptance values as limits. Example: 580 to 600°F

- Do not write out numerical values.

- Engineering units should always be specified for numerical values of process variables. They should be the same as those used in the control room displays.
  Example: psig (or psia) instead of psi

5.6 Abbreviations, Letter Symbols, and Acronyms

The use of abbreviations should be minimized because they may be confusing to those who are not thoroughly familiar with them. Abbreviations may be used where necessary to conserve time and space, and when their meaning in unquestionably clear to the operator. Acceptable abbreviations and acronyms are listed in Table 1. An acronym is a type of symbol formed by the initial letter or letters of each of the successive parts or major parts of a compound term. Only those abbreviations listed in Table 1 shall be used.

Capitalization of abbreviations should be uniform. If the abbreviation is comprised of lower case letters, it should appear in lower case in a title or heading. The period should be omitted in abbreviations except in cases where the omission would result in confusion.

5.7 Capitalization

Capitalization should conform to standard American English usage, but may also be used as a technique for emphasizing certain words or phrases.

6.0 TYPING FORMAT

6.1 General Typing Instructions

The following general instructions are to be followed for all emergency operating procedures:

- Paper size should be 8½ x 11 inches.

- Plain white, bond paper with printed borders shall be used as specified in Figure 5.

- Procedures are to be typed on IBM Displaywriter, Burroughs Word Processor or equivalent.

- Letter gothic, pitch 12 or larger, printwheel shall be used.

6.2 Page Arrangement

The following page arrangement instructions should be followed:

- Page margins are specified by the printed borders. Two type spaces are to be maintained between the text and borders.

- Page identification information will be centered and one line space above the bottom page printed border.

- See Figure 5 for an example of page layout.

6.3 Heading and Text Arrangement

Block style, as illustrated in Figure 4, is to be used. First-level section headings shall be in full capitals, with an underscore; second-level section headings shall be placed in initial capitals with an underscore; and third-level section headings shall be placed in initial capitals without an underscore.

- Section numbers shall begin two spaces from the left-hand printed border.

- Three line spaces shall be allowed between headings and respective text.

- Three line spaces shall be allowed between paragraphs.

- Text will be typed using one-and-a-half line spacing.

6.4 Breaking of Words

Breaking of words shall be avoided to facilitate operator reading.

6.5 Rotation of Pages

Rotation of pages should be avoided if possible. If pages need to be rotated, these rules shall be followed:

- The top of the page with rotated print is the normal left-hand edge.

- The page margins do not rotate.

- Page identification and numbering will not be rotated.

6.6 Printed Operator Aids

Figures include graphs, drawings, diagrams, and illustrations. The following rules are established governing all figures:

- The figure number and title shall be of gothic letter type, pitch 12 or larger.
- The figure field shall be of sufficient size to offer good readability.
- The essential message should be clear; simple presentations are preferred.
- Labeling of graph axes shall be consistent with standard engineering practices.
- Grid lines of graphs should be at least 1/8-inch apart; numbered grid lines should be bolder than unnumbered grid lines.
- Labeling of items within the figure should be accompanied by arrows pointing to the item.
- The items within the figure should be oriented naturally insofar as possible. For example, height on a graph should be along the vertical axis.
- In general, items within the figure should be labeled. Typed labels shall be of gothic letter typed, pitch 12.
- All lines in figures should be reproducible.

Tables shall be typed using the following rules:

- Type style and size should be the same as that for the rest of the procedure.

- A heading should be entered for each column and centered within the column. The first letter of words in the column headings should be capitalized.

6.7 Cautions and Notes

All notes and cautions should be distinguishable from the rest of the text by using the following format:

- The applicable heading "NOTE" or "CAUTION" should be capitalized, centered, underlined and placed three line spaces below the preceding text.

- The text of the note or caution shall be in block format, line-and-a-half spaced. The caution text will be indented five spaces from the left-hand printed margin and begun one-and-a-half line spaces below the heading. The text for notes will begin twenty spaces from the left-hand printed margin and one-and-a-half line spaces below the heading.

- The right-hand margin of the text of the caution should be five spaces to the left of the right-hand printed margin. The right-hand margin of the text of the note should be twenty spaces from the left of the right-hand printed margin.

- CAUTIONS shall be further highlighted by a line of asterisks one-and-a-half spaces above the heading and one-and-a-half spaces below the last line of the text.

- See the examples presented in Figure 4.

6.8 Use of Foldout Pages

The use of foldout pages should be avoided. If foldouts are used, a foldout page is treated as a single page. It should follow the format of a standard page except the width is different. The page should be folded so that a small margin exists between the fold and the right-hand edge of standard pages. This will reduce wear of the fold.

6.9 Use of Oversized Pages

Oversize pages shall not be used. They shall be reorganized or reduced to a standard page.

6.10 Use of Reduced Pages

Reduced pages should be avoided. Final size of reduced pages should be standard page size.

7.0 REPRODUCTION

Reproduction will be done on a standard copier, single-sided copy only. The reproduced copies of the EOP's will be inspected to ensure both legibility and placement on the page.

Figure 1

PROCEDURE COVER SHEET

A. IDENTIFICATION:

EOP Title: Reactor Trip

EOP Number: EOP-01

Revision Number: 00

Total Number of Pages: 26

B. REVIEW: I have reviewed the above procedure and have found it to be satisfactory.

Title	Signature	Date
Manager-Reactor and Computer Technical Services		
Supervisor - Operations		
Supervisor - Station Training		
Reactor Engineer		

Unreviewed Safety Question Evaluation (10CFR50.59)

Does procedure change constitute an unreviewed safety question as per Standing Order G-46 (Form FC-154)?

YES ____ NO ____

C. APPROVAL:

PRC Meeting Date: _____

The attached procedure is hereby approved and effective on the below date:

_____ _____

Manager - Fort Calhoun Station Effective Date

Figure 2

REACTOR TRIP: EOP-01

Page	Effective Revision	Effective Date
1-30	00	October 11, 1985

TITLE: REACTOR TRIP

1.0 PURPOSE

This procedure provides the immediate actions which must be accomplished after an automatically or manually initiated reactor trip. This is the entry point for the entire Emergency Operating Procedure system. This procedure also provides the operator actions for recovery from a relatively uncomplicated reactor trip. These actions are necessary to ensure the plant is placed in a stable, safe condition or that the plant is configured to respond to a continuing emergency.

2.0 ENTRY CONDITIONS

Any symptom(s) of a reactor trip.

a. Reactor trip alarm.
b. CEA's inserted indication (Bottom lights/Metrascope).
c. Rapid decrease in reactor power.
d. RPS trip setpoint exceeded.

Figure 4

REACTOR TRIP

REACTOR TRIP IMMEDIATE ACTIONS

3.0 OPERATOR ACTIONS

___ 3.1 Depress manual reactor trip pushbutton and verify:

a. Reactor power decreasing (CB-4)

AND

b. Negative startup rate (CB-4)

AND

c. No more than 1 regulating or shutdown CEA NOT inserted (CB-4)

3.1.1 IF more than 1 regulating or shutdown CEA NOT inserted, THEN do the following:

a. Open CEDM clutch power supply breakers (AI-3)

AND

b. Emergency borate:

(1) Close FCV-269X (DW Makeup Control Valve) and FCV-269...

i) further indentation . . .

ii) when necessary . . .

* *

CAUTION

When feeding S/G's via the Emergency Feedwater Nozzles, maintain S/G level $\geq$ 80% to minimize Emergency Feedwater Nozzle thermal . . .

* *

NOTE

Reset the DIESEL GENERATOR AUTO START LOCKOUT RELAYS as soon as possible . . .

Figure 5

PAGE FORMAT

1" margin

1/2" margin

REACTOR TRIP

7 REACTOR TRIP IMMEDIATE ACTIONS

8.5

10 4.0 OPERATOR ACTIONS

11.5

13 ___ 3.1 Depress manual reactor trip pushbutton and . . .

14.5 a. Reactor power decreasing (CB-4)

16 AND

17.5 b. Negative startup rate (CB-4)

19 AND

20.5 c. No more than 1 regulating or shutdown

22 CEA NOT inserted (CB-4)

23.5 3.1.1 IF more than 1 regulating or shutdown CEA NOT

25 inserted, THEN do the following:

26.5 a. Open CEDM clutch power supply . . .

28 (AI-3)

29.5 AND

31 b. Emergency borate:

32.5 (1) Close FCV-269X (DW Makeup

34 Control Valve) and FCV-269.

35.5 i) further indent . . .

37 ii) when necessary . . .

38.5

40 *

41.5 CAUTION

43 When feeding S/G's via the Emergency Feedwater Nozzles,

44.5 maintain S/G level ≥ 80% to minimize Emergency Feedwater

46 Nozzle thermal stresses.

47.5 *

49

50.5 NOTE

52 Reset the DIESEL GENERATOR AUTO START

53.5 LOCKOUT RELAYS as soon as possible . . .

55

56.5

58 EOP-01

59.5 Rev. 00

61 1/2" margin

62.5 Page __ of __

1/2" margin

Table 1

Acronyms and Abbreviations

Abbreviation/Acronym	Definition
ADV	Atmospheric Dump Valve
AFW	Auxiliary Feedwater
AOP	Abnormal Operating Procedure
CCW	Component Cooling Water
CEA	Control Element Assembly
CEDM	Control Element Drive Mechanism
CET	Core Exit Thermocouple
CIAS	Containment Isolation Actuation Signal
CPHS	Containment Pressure High Signal
CSAS	Containment Spray Actuation Signal
CVCS	Chemical and Volume Control System
CW	Circulating Water
DW	Demineralized Water
EOP	Emergency Operating Procedure
ERF	Emergency Response Facility
ESFS	Engineered Safety Features System
FCS	Fort Calhoun Station
FWRV	Feedwater Regulating Valve
HJTC	Heated Junction Thermocouple
HPSI	High Pressure Safety Injection
LOCA	Loss of Coolant Accident
LPSI	Low Pressure Safety Injection
MCC	Motor Control Center
MSIV	Main Steam Isolation Valve
MSS	Main Steam Safety (Valve)
OI	Operating Instruction

Table 1 (Cont'd)

Acronyms and Abbreviations

Abbreviation/Acronym	Definition
OP.	Operating Procedure
PORV.	Power Operated Relief Valve
PPLS.	Pressurizer Pressure Low Signal
PW.	Potable Water
PZR	Pressurizer
RAS	Recirculation Actuation Signal
RCDT.	Reactor Coolant Drain Tank
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RPS	Reactor Protective System
RVLMS	Reactor Vessel Level Monitoring System
RW.	Raw Water
SDCS.	Shutdown Cooling System
S/G	Steam Generator
SGLS.	Steam Generator Low (Pressure) Signal
SGIS.	Steam Generator Isolation Signal
SGTR.	Steam Generator Tube Rupture
SIS	Safety Injection System
SIAS.	Safety Injection Actuation Signal
SIRWT.	Safety Injection Refueling Water Tank
SI	Safety Injection
SMM.	Subcooled Margin Monitor
SLB.	Steam Line Break
STA.	Shift Technical Advisor
T.	Temperature
Tavg	Average Temperature
T_C	Cold Leg Temperature
T_H	Hot Leg Temperature

Table 1 (Cont'd)

Acronyms and Abbreviations

Abbreviation/Acronym	Definition
TSC	Technical Support Center
VIAS	Ventilation Isolation Actuation Signal
VCT	Volume Control Tank
cpm	counts per minute
cps	counts per second
dpm	decades per minute
ft	feet
gal	gallon
gpm	gallons per minute
hr	hour
Hz	hertz, cycles per second
i.e.	id est (that is)
in	inch(es)
kw	kilowatt
min	minute, minimum
mr	millirem
Mw	megawatt
ppb	parts per billion
ppm	parts per million
psia	pounds per square inch absolute
psig	pounds per square inch gage
rad	radiation absorbed dose
rem	roentgen equivalent man
rpm	revolutions per minute

Table 1 (Cont'd)

Acronyms and Abbreviations

Abbreviation/Acronym	Definition
scfm	standard cubic feet per minute
sec	second
/s	versus
yr	year
*	asterisk
°F	degrees farenheit
Δ	delta, as in ΔT
( )	parenthesis
/	per
%	percent
" "	quotation marks

Table 2

Preferred Verb List

Verb	Application
Adjust	To make a change in.
Align	To arrange a system for operation, or to adjust an electronic system to a set of standards.
Allow	To permit a stated condition to be achieved prior to proceeding. For example: "Allow discharge pressure to stabilize."
Attempt To	To make an effort to do.
Call-up.	Request from the plant computer.
Check	To perform a physical action that compares expected values or parameters to actual plant parameters. For example: "Check MSIV bypass valves closed."
Close	For valves, to position fully shut; for electrical devices, to make a connection to a power supply.
Complete	To accomplish specified procedural requirements. For example, "Complete steps 11 through 20 of EOP-02."
Decrease	Do Not use because of oral communication problems.
Depress	To press down.
Direct	To give instruction to.
Ensure	To verify a certain condition exits, and if it does not, to manually take the necessary steps to establish the condition.
Establish.	To make arrangements for a stated condition. For example: "Establish maximum charging flow."
Evaluate	To assess conditions based upon observations, outside input, and experience.

Table 2 (Cont'd)

Preferred Verb List

Verb	Application
Go To	To leave this instructional step and follow referenced instruction until directed back to this or another instruction.
Implement.	To place an instruction into effect in parallel with this instruction.
Increase	Do Not use because of oral communication problems.
Inspect.	To measure, observe, or evaluate a feature or characteristic for comparison with specified characteristics. The method of inspection should be included. For example: "Visually inspect for leaks."
Isolate.	To set apart or separate from a system in use.
Locally.	To take an action outside the control room.
Lower	To reduce in magnitude. For example: "Lower steam generator pressure."
Maintain	To keep in a certain condition or position.
Monitor.	To observe for conditions or trends.
Open	To change the physical position of a mechanical device, such as a valve or door, to the unobstructed position that permits access or flow. For example: "Open valve FCV-269."
Perform.	To carry out an action.
Raise	To increase in magnitude. For example: "Raise steam generator water level.
Record	To document specified condition or characteristic. For example: "Record discharge pressure."
Refer To	Use another source for additional information concurrent with the procedure in use.

Table 2 (Cont'd)

Preferred Verb List

Verb	Application
Reset	To reposition a breaker or control circuit for future operations.
Set	To physically adjust to a specified position. For example: "Set pressurizer level control to 'Auto'."
Shut	Do Not use. The verb close should be used instead.
Start	To initiate motion of an electric or mechanical device directly or by remote control. For example: "Start one charging pump."
Stop	To cease the action of an electric or mechanical device directly or by remote control. For example: "Stop one charging pump."
Throttle	To operate a valve in an intermediate position to obtain a certain flow rate. For example: "Throttle HPSI flow."
Transfer	To shift electrical or fluid supply from one source to another.
Trip	To bring to an abrupt and complete cessation; to manually activate a semi-automatic feature; or to open an electrical breaker. For example: "Trip turbine . . . "
Vent	To permit a gas or some substance under pressure to be released from its vessel. For example: "Vent the pressurizer."
Verify	To confirm that an expected condition, or characteristic, exists. For example: "Verify RCS inventory control . ."

PROCEDURES GENERATION PACKAGE

PART 4

EOP VERIFICATION PROGRAM

FORT CALHOUN STATION

UNIT NO. 1

EMERGENCY OPERATING PROCEDURE VERIFICATION PROGRAM

Fort Calhoun Station
Emergency Operating Procedure
Verification Program

Table of Contents

Attachments Page

1.0 INTRODUCTION

1.1 Purpose

This program provides guidance to be followed for the administrative process used in the verification of the Fort Calhoun Station Unit No. 1 Emergency Operating Procedures (EOP's). Additionally, this document assigns responsibilities for carrying out the activities of the process.

1.2 Scope

This program identifies and directs the phases of the EOP verification process.

1.3 Applicability

This program applies to initial EOP implementation and subsequent revisions of Fort Calhoun Station Unit No. 1 EOP's.

2.0 REFERENCES

2.1 General

- Emergency Operating Procedures Verification Guideline (INPO 83-004)

- Fort Calhoun Station Emergency Operating Procedure Writers Guide (EOPWG)

2.2 Implementation

The EOP source documents to be used during the assessment phase are presented on Form 1 of the EOP Verification Forms (Attachment 2). For each EOP to be verified, additions, deletions, or revisions of the source documents to be used in the comparative evaluation should be noted in the spaces provided.

3.0 DEFINITIONS

- Emergency Operating Procedures (EOP's) - plant-specific procedures which direct operator actions from a post-reactor trip state to a safe, stable condition. These actions are designed to effectively mitigate the consequences of the transients and accidents which have caused or necessitated a reactor trip.

- Emergency Procedure Guidelines (EPG's) - document which contains the translation of engineering data derived from transient and accident analyses into operational guidance.

- EOP Source Documents - documents or records which provide the basis for the EOP's. Examples include the Fort Calhoun Station Unit No. 1 Technical Specifications, USAR, and operating manuals, the C-E EPG's, the EOP Writers Guide, etc.

- EOP Verification - a comparative evaluation that is used to confirm the written correctness of EOP's and to ensure that generic and plant-specific technical aspects have been properly incorporated.

- EOP Written Correctness - a characteristic that indicates the degree to which the information presented in the EOP's is consistent with the Fort Calhoun Station Unit No. 1 EOP Writers Guide and other appropriate administrative guidelines.

- EOP Technical Accuracy - a characteristic that indicates the degree to which the EOP's properly incorporate the plant-specific hardware and the technical information from EOP source documents.

- Symptoms - plant characteristics that directly or indirectly indicate plant status.

- EOP Writers Guide - a document that provides instructions for writing EOP's which utilizes good writing principles.

4.0 RESPONSIBILITIES

4.1 Manager - Fort Calhoun Station

The plant manager shall approve all EOP's and their revisions.

4.2 Plant Review Committee (PRC)

The PRC shall approve all EOP's and their revisions prior to final approval by the plant manager.

4.3 PRC EOP Subcommittee

The PRC EOP Subcommittee, consisting of the Manager - Reactor and Computer Technical Services, the Supervisor - Operations, the Supervisor - Station Training and the Reactor Engineer, shall have overall responsibility for the EOP verification process. It shall determine when EOP verification is needed and its scope, approve the verification resolutions, and manage the technical accuracy and written correctness evaluation portions of the process, and resolve unreviewed safety question determination.

5.0 EOP VERIFICATION PROCESS

The process of EOP verification consists of four phases: preparation, assessment, resolution, and documentation.

5.1 Preparation Phase

The preparation phase consists of the following activities:

- Designate personnel to conduct the comparative evaluation
- Obtain and review the EOP source documents

5.1.1 Designated Personnel

Supervisors shall appoint the necessary personnel as evaluators to conduct the comparative evaluation. Personnel should be appointed based on operating experience and understanding of plant hardware, the EPG's, and the EOP writers guide.

5.1.2 EOP Source Documents

The listing of EOP source documents is provided on Form 1 of the EOP Verification Forms (Attachment 1) and shall be reviewed by the personnel conducting the assessment. These documents shall be reviewed to ensure they are complete, current, and applicable. If any additional source documents are found to be applicable, they shall be added to the listing on Form 1.

5.2 Assessment Phase

During the assessment phase the evaluator shall perform the following activities:

- Review the EOP's using the procedure-specific portion of the evaluation criteria (Attachment 3) and source documents.

- Indicate on Form 1 of the EOP Verification Forms (Attachment 2) that the evaluation was performed, either by checking the acceptable column or by designating the appropriate discrepancy sheet for any discrepancies identified.

- Make a step-by-step review of the EOP using the step, caution, note-specific portion of the evaluation criteria (Attachment 3) and source documents.

- Indicate for each step on Form 2 of the EOP Verification Forms (Attachment 1) that the comparative evaluation was performed, either by checking the acceptable column or by designating the appropriate discrepancy sheet for any discrepancies identified.

- Complete Form 3 of the EOP Verification Forms (Attachment 2) and forward the verification forms and discrepancy sheets to the PRC EOP Subcommittee.

5.3 Resolution Phase

During the resolution phase, the PRC EOP Subcommittee shall perform the following activities:

- Review the evaluator's comments and resolve any conflicts between the writer and evaluator.

- Review and approve proposed solutions.

- Update applicable source documents and procedures with approved resolutions.

- EOP update/revisions shall be in accordance with the Writer's Guide and subject to the Verification-Validation process outlined in the Procedures Generation Package.

5.4 Task Analysis and Information Control Characteristics Review (ICCR)

A task analysis and ICCR shall be performed as part of the verification process for the upgraded EOP's and subsequent revisions.

5.5 Documentation Phase

The documentation developed throughout the verification process will be maintained in accordance with current administrative policies.

6.0 DOCUMENTATION

The documented items are needed to provide a history of the verification program. Attachments 1, 2, 3, and 4 will serve to provide the necessary documentation for the EOP implementation process. These items will be maintained as a verification package for QA retention.

6.1 Documentation Process

Attachment 1 contains two EOP Development Forms which provide a means of documenting the use of the generic EPG during EOP development. These completed forms shall be utilized by personnel performing the EOP verification and will serve as a means of recording differences from the EPG and justifying any significant deviations.

Attachment 2 contains the forms which will be utilized to document the EOP Verification. EOP Verification Forms 1, 2, and 3 document the general and specific EOP verification for written correctness and technical accuracy. EOP Verification Form 4 documents both the discrepancies found during the verification process and their resolutions.

Attachment 3 contains the EOP verification evaluation criteria in a checklist form which the evaluators will utilize when performing the EOP verification. Specific evaluation criteria and applicable references are listed here to enable the reviewer to effectively perform the EOP verification.

ATTACHMENT 1

EOP DEVELOPMENT
SUPPORT DOCUMENTS

TITLE, PURPOSE, AND ENTRY CONDITIONS DOCUMENTATION

EOP Title, Purpose and Entry Conditions:

EPG Title, Purpose and Entry Conditions:

Justification of Differences:

EOP Writer: _____ Date: _____

STEP DOCUMENTATION

EOP Step:

EPG Step:

Justification of Differences:

EOP Writer: _____ Date: _____

ATTACHMENT 2

EOP VERIFICATION FORMS

EOP VERIFICATION
FORM 1

EOP Title: _____

EOP Number: _____ Revision: _____

Scope of Verification: _____

_____

Required EOP Source Documents

1. CEN-152 Rev. 02 (C-E EPG's)
2. Fort Calhoun Station Unit No. 1 USAR
3. Fort Calhoun Station Unit No. 1 Technical Specifications
4. EOPWG Rev. 00
5. EOPVAP Rev. 00
6.
7.
8.

Evaluators: _____ / _____ / _____

EOP-GENERAL VERIFICATION (Written Correctness/Technical Accuracy)

A. Written Correctness

Area	Acceptable	Discrepancy Sheet No(s).
1. Legibility	1. _____	_____
2. Format Consistency	2. _____	_____
3. Identification Information	3. _____	_____

B. Technical Accuracy

Area	Acceptable	Discrepancy Sheet No(s).
1. All	1. _____	_____

EOP - SPECIFIC VERIFICATION (Step/Caution/Note)

	Written Correctness		Technical Accuracy	
Step Number Caution, or Note	Acceptable	Discrepancy Sheet No.	Acceptable	Discrepancy Sheet No.

Verification Completion Date: _____

Performed by: _____

_____

_____

Reviewed by: _____

All actions and requirements for verification of this EOP have been completed satisfactorily and approved.

_____ _____

PRC EOP Subcommittee Representative Signature

Date

EOP VERIFICATION EOP-__ Rev. __

FORM 4 Page __ of ___

DISCREPANCY SHEET NUMBER ____

EOP Title: _____

EOP Number: _____ Revision: _____

Step Number: _____

Discrepancy: _____

_____

_____

_____

_____

_____

_____

Evaluator: _____ Date: _____

Resolution: _____

_____

_____

_____

_____

_____

_____

Approval: YES NO (Circle One)

PRC EOP Subcommittee

Representative: _____ Date: _____

Resolution Incorporated By: _____ Date: _____

ATTACHMENT 3

EOP VERIFICATION
EVALUATION CRITERIA CHECKLIST

I. EOP - GENERAL VERIFICATION	REFERENCE
A. Written Correctness	
1. Legibility	
____ a. Are the printed borders visible on all procedure pages?	EOPWG 6.2
____ b. Are the text, tables, graphs, figures, and charts legible?	EOPWG 4.10
2. Format Consistency	
a. Do the following exist in each EOP?	
____ Cover Sheet	EOPWG 2.1
____ Title Page	EOPWG 2.2
____ Section 1: Purpose	EOPWG 3.0
____ Section 2: Entry Conditions	
____ Section 3: Operator Actions	
____ b. Is the operator actions section presented in a single column format?	EOPWG 4.2

____ c. Is the page layout consistent with the sample page format? EOPWG 3.1

3. Identification Information

____ a. Is the procedure title descriptive of the purpose of the procedure? EOPWG 2.2

b. Does the procedure cover sheet correctly provide the following: EOPWG 2.1

____ Procedure Title
____ Procedure Number
____ Revision Number
____ Completed Review
____ Completed Approval

c. Does each page correctly provide the following: EOPWG 2.6

____ Procedure Designator and Number
____ Revision Number
____ Page __ of __ Numbers

____ d. Does the procedure have all its pages in the correct order?

II. EOP - SPECIFIC VERIFICATION (Step, Caution, Note)

A. Written Correctness

1. Information Presentation

____ a. Are instruction steps numbered correctly? — EOPWG 3.4

____ b. Are contingency action steps written correctly and identifiable? — EOPWG 4.2.1

c. Are instruction steps constructed to comply with the following:

____ Steps deal with only one idea	EOPWG 4.1
____ Sentences are short and simple	EOPWG 4.1
____ Operator actions are specifically stated	EOPWG 4.1
____ Objects of operator actions are specifically stated	EOPWG 4.1
____ If there are three or more objects, they are listed and space provided for operator check-off	EOPWG 4.1
____ Punctuation and Spelling are proper and correct	EOPWG 5.3, 5.1
____ Abbreviations and acronyms are correct and understandable to the operator	EOPWG 5.6

____	d.	Do instruction steps make proper use of logic?	EOPWG 4.3
____	e.	Are cautions and notes used appropriately?	EOPWG 4.4
____	f.	Are cautions and notes placed properly?	EOPWG 4.4
____	g.	Are cautions and notes constructed to comply with the following:	
		____ they do not contain operator actions.	EOPWG 4.4
		____ they do not use extensive punctuation for clarity	EOPWG 5.3
		____ they make proper use of emphasis	EOPWG 4.6
____	h.	Are numerical values properly written?	EOPWG 5.5
____	i.	Are values specified in such a way that mathematical calculations are not required?	EOPWG 4.5
____	j.	Are charts or graphs provided in the procedure for necessary operator actions?	EOPWG 4.5
____	k.	Are units of measurement in the EOP the same as those used on equipment?	EOPWG 5.5

2. Procedure Referencing and Branching

____	a.	Do the referenced and branched procedures identified in the EOP's exist?	EOPWG 4.7
____	b.	Is the use of referencing minimized?	EOPWG 4.7
	c.	Are referencing and branching instructions correctly worded?	EOPWG 4.7
		____ "go to" (branching)	
		____ "refer to" (referencing)	
____	d.	Do the instructions avoid routing users past important information such as cautions preceding steps?	VEG* 3.3.5
____	e.	Are the exit conditions compatible with the entry conditions of the referenced or branched procedure?	VEG* 3.3.5

B. Technical Accuracy

1. Entry Conditions Information

____	a.	Are the entry conditions of the EPG listed correctly?	VEG* 3.5.1

*VEG corresponds to INPO Guideline 83-004, "Emergency Operating Procedure Verification Guideline."

b. If additional entry conditions have been added, do they comply with the following: VEG* 3.5.1

____ appropriate entry conditions for which the EOP should be used

____ not excessive

2. Instructional Step, Caution, and Note Information

a. Are EOP/EPG differences: VEG* 3.5.2

____ documented

____ explained

b. Is the EPG technical foundation (strategy) changed by the following changes in EOP steps, cautions, or notes: VEG* 3.5.2

____ elimination

____ addition

____ sequence

____ alteration

*VEG corresponds to INPO Guideline 83-004, "Emergency Operating Procedure Verification Guideline."

c. Are correct, plant-specific adaptations incorporated per EPG: VEG* 3.5.2

____ systems

____ instrumentation

____ limits

____ controls

____ indications

____ d. Have licensing commitments applicable to EOP's been addressed? VEG* 3.5.2

____ e. Are differences between licensing commitments and the EOP's or EPG's documented? VEG* 3.5.2

3. Quantitative Information

____ a. Do the quantitative values, including tolerance bands used in the EOP, comply with applicable EOP source documents? VEG* 3.5.3

____ b. Where EPG values are not used in the EOP, are the EOP values computed accurately? VEG* 3.5.3

*VEG corresponds to INPO Guideline 83-004, "Emergency Operating Procedure Verification Guideline."

____	c.	When calculations are required by the EOP, are equations presented with sufficient information for operator use?	VEG* 3.5.3

4. Plant Hardware

	a.	Is the following plant hardware specified in the EOP available for operator use:	VEG* 3.5.4

____ equipment

____ controls

____ indicators

____ instrumentation

*VEG corresponds to INPO Guideline 83-004, "Emergency Operating Procedure Verification Guideline."

PROCEDURES GENERATION PACKAGE

PART 5

EOP VALIDATION PROGRAM

FORT CALHOUN STATION

UNIT NO. 1

EMERGENCY OPERATING PROCEDURE VALIDATION PROGRAM

EOPVAP
Rev. 00

Fort Calhoun Station
Emergency Operating Procedure
Validation Program

Table of Contents

Attachments

1.0 INTRODUCTION

1.1 Purpose

This program provides guidance to be followed for the administrative process used in the validation of the Fort Calhoun Station Unit No. 1 emergency operating procedures (EOP's). Additionally, this document assigns responsibilities for carrying out the activities of this process.

1.2 Scope

This program identifies the aspects of the EOP validation process and provides guidance that encompasses all of the four validation methods: table-top, walk-through, simulator, and reference. Specific guidance for each method is presented in its appropriate checklist (see Attachment 2) while general EOP validation criteria is presented in Attachment 3.

1.3 Applicability

This program applies to EOP validation prior to, and subsequent to, implementation for Fort Calhoun Station Unit No. 1.

2.0 REFERENCES

2.1 General

- Emergency Operating Procedures Validation Guidelines (INPO 83-006).

2.2 EOP Source Documents

The following Fort Calhoun Station Unit No. 1 source documents shall be utilized during the validation process:

- Fort Calhoun Station Unit No. 1 Radiological Emergency Response Plan and Emergency Plan Implementing Procedures.
- Fort Calhoun Station Unit No. 1 USAR
- Fort Calhoun Station Unit No. 1 Technical Specifications.
- Fort Calhoun Station Unit No. 1 Operating Procedures.
- Results of EOP Verification.

3.0 DEFINITIONS

- Emergency Operating Procedures (EOP's) - plant-specific procedures which direct operator actions from a post-reactor trip state to a safe, stable condition. These actions are designed to effectively mitigate the consequences of the transients and accidents which have caused or necessitated a reactor trip.
- Emergency Procedure Guidelines (EPG's) - document which contains the translation of engineering data derived from transient and accident analyses into operational guidance which is utilized in EOP development.
- EOP Source Documents - documents or records which provide the basis for the EOP's.

- EOP Validation - a performance evaluation of the EOP's to determine whether trained operators can effectively manage emergency conditions in the plant using actions specified in the EOP. The EOP's are evaluated for usability and operational correctness.

- EOP Usability - a characteristic of EOP's that indicates the degree to which EOP's provide sufficient and understandable operator information to manage emergency conditions.

- EOP Operational Correctness - a characteristic of EOP's that indicates the degree to which the EOP's are compatible with plant responses, hardware, and shift manpower to manage emergency conditions.

- Table-Top Validation - method of validation whereby personnel explain and/or discuss procedure action steps for an observer/review team in response to a scenario or as part of an actual industry operating experience review.

- Walk-Through Validation - method of validation whereby control room operators conduct a step-by-step enactment of their actions during an emergency scenario for an observer/review team without carrying out actual control functions.

- Simulator Validation - method of validation whereby control room operators perform actual control functions on simulated equipment during an emergency scenario for an observer/review team.

- Reference Validation - method of validation whereby data developed in a common EOP validation program is referenced by similar plants.

- Control Room Simulator - a device that dynamically models the plant functions as presented by control room instrumentation.

- Mock-Up - static device (e.g., models, photos, drawings) that portrays the control room hardware and configuration.

- Scenario - a structural plan of parameter and plant symptom changes that provide operating cues for the conduct of assessment.

4.0 RESPONSIBILITIES

4.1 Manager - Fort Calhoun Station

The plant manager shall approve all EOP's and their revisions.

4.2 Plant Review Committee (PRC)

The PRC shall approve all EOP's and their revisions prior to final approval by the plant manager.

4.3 PRC EOP Subcommittee

The PRC EOP Subcommittee, consisting of the Manager - Reactor and Computer Technical Services, the Supervisor - Operations, the Supervisor - Station Training and the Reactor Engineer shall be responsible for the following:

- managing the validation program and ensuring its smooth coordination with the training program.

- determining the scope of validation.

- selecting the validation method or methods.

- appointing and training an observer/review team.

  - 3 persons for the simulator validation method (3-to-crew)

  - 1 person per operator for the walk-through validation method (one-to-one)

  - 1 person for the table-top validation method (one-to-group)

- completing applicable portions of EOP Validation Form 1 (Figure 1).

- reviewing discrepancies and resolutions forwarded by observer/review team personnel

- forwarding procedure changes including recommended resolutions to the PRC and plant manager for approval.

4.4 Supervisor - Station Training

The Supervisor - Station Training (or Supervisor - Training) shall be responsible for the following:

- arranging for rotating operating crews through the training/validation sessions.

- scheduling simulator training time for validation purposes as appropriate.

5.0 EOP VALIDATION PROCESS

Regardless of the validation method, the EOP validation process can be described by three phases: preparation, assessment, and resolution.

The initial EOP validation process shall consist of a combination of simulator and control room walk-throughs. The Combustion Engineering simulator shall be utilized to validate the dynamic response, since Omaha Public Power District has no plant-specific simulator. Control room walk-throughs will be used to encompass the plant-specific portion of the validation process. Subsequent EOP updates and revisions shall be validated as specified by the PRC EOP Subcommittee and will vary depending on the scope and extent of the change.

5.1 Preparation

Each validation method will use the applicable evaluation criteria presented in Attachment 3, and the scenario to be used will be recorded on the appropriate scenario form of Attachment 1.

- Table-Top/Walk-Through Scenario Form, EOP Validation Form 2.
- Simulator Scenario Form, EOP Validation Form 3.

Further, specific guidance to prepare for each validation method is presented in the validation method checklist of Attachment 2.

5.2 Assessment

Specific guidance for assessment using each validation method is presented in the validation method checklist of Attachment 2.

5.3 Resolution

Resolution will be accomplished by reviewing discrepancies and comments presented on the Validation Discrepancy Sheet, EOP Validation Form 4. The observer/reviewer will propose solutions, if needed, and forward to the PRC EOP Subcommittee for approval with the other designated documentation.

5.4 Validation of Task Analysis and Information Control Characteristics Review (ICCR)

The Validation Program shall also include the determination of whether the information needed by the operator, as determined by the task analysis and ICCR, is available in the control room.

6.0 DOCUMENTATION

The documented items needed to provide a history of the validation program are specified in each validation method checklist of Attachment 2. These items will be maintained as a validation package for QA retention.

ATTACHMENT 1

EOP VALIDATION FORMS

VALIDATION COVER SHEET

EOP Title: _____

EOP Number: _____ Revision: _____

Scope of Validation: _____

_____

Validation Method or Methods to be Used: _____

_____

Designated Observer/Reviewer(s):

_____ _____

_____ _____

_____ _____

Preparation Completed By: _____ Date: _____

Assessment Completed By: _____ Date: _____

Operator(s) Involved:	Qualification: (SRO, RO, Other)
_____	_____
_____	_____
_____	_____
_____	_____

Approval: YES NO (circle one)

PRC EOP Subcommittee
Representative: _____ Date: _____

Resolution Completed By: _____ Date: _____

TABLE-TOP/WALK-THROUGH SCENARIO

EOP Title: _____

EOP Number: _____ Revision: _____

Date: _____

Purpose: _____

_____

Scenario Description: _____

_____

_____

_____

_____

Initial Plant Conditions: _____

_____

_____

_____

_____

Procedure Step Description	Plant Parameter/ Symptom To Cause Transition	Transition To (Procedure, Step)

SIMULATOR SCENARIO

EOP Title: _____

EOP Number: _____ Revision: _____

Date: _____

Purpose: _____

_____

Scenario Description: _____

_____

_____

_____

_____

Initial Plant Conditions: _____

_____

_____

_____

_____

Simulator Sequence (to be completed by simulator supervisor):

Event No.	Time Hr:Min:Sec	I/O Override	Malfunction Description	Intent

VALIDATION DISCREPANCY

EOP Title: _____

EOP Number: _____ Revision: _____

Step Number: _____

Discrepancy: _____

_____

_____

_____

_____

_____

Evaluator: _____ Date: _____

Resolution: _____

_____

_____

_____

_____

_____

Approval: YES NO (circle one)

PRC EOP Subcommittee
Representative: _____ Date: _____

Resolution Incorporated By: _____ Date: _____

ATTACHMENT 2

EOP VALIDATION
METHOD CHECKLISTS

EOP VALIDATION
CHECKLIST FOR TABLE-TOP/
WALK-THROUGH METHODS OF VALIDATION

1.0 PURPOSE

The purpose of this checklist is to provide guidance for the table-top and walk-through methods of validating EOP's.

2.0 VALIDATION PROCESS

EOP validation will be conducted in three parts: preparation, assessment, and resolution.

2.1 Preparation

The designated observer/reviewer will perform the following:

____ complete EOP Validation Form 1.

____ review the scope of the validation designated by the PRC EOP Subcommittee.

____ develop or modify scenarios to support the scope of validation and fill out the Table-Top/Walk-Through Scenario Form (EOP Validation Form 2).

____ modify/select the developed evaluation criteria to support the scope of validation

____ select operators that are representative of the training and experience level expected of all operators

____ schedule the required resources for table-top validation

- observer/reviewer
- the number of control room operators involved shall be consistent with the minimum number as specified in Technical Specification 5.2.2.a.
- conference room
- sets of EOP's and supporting procedures

____ schedule the required resources for walk-through validation

- observer/reviewer
- the number of control room operators involved shall be consistent with the minimum number as specified in Technical Specification 5.2.2.a.
- control room or control room mock-up
- set of EOP's and supporting procedures

2.2 Assessment

The designated observer/reviewer will perform the following:

____ brief the operator on the scope of validation and how the assessment will be conducted

____ follow the developed or modified scenario by first giving the plant initial conditions and then give the changing plant parameters as talking or walking through the procedures

____ stop the talk-through or walk-through assessment for discussion of any identified discrepancies

____ conduct a debriefing with the operators as soon as possible after each walk-through assessment, using the following sequence:

- brief the participants on the purpose and objectives of debriefing
- have operators present problems and discrepancies which they had identified during the assessment
- have operators provide possible reasons for problems
- present other problems and discrepancies identified during assessment
- have operators discuss possible reasons for the other problems
- summarize the findings of the debriefing for the operators

____ record discrepancies and comments on EOP Validation Form 4

2.3 Resolution

The designated observer/reviewer will perform the following:

____ review comments and discrepancies

____ propose resolutions on EOP Validation Form 4 to the PRC EOP Subcommittee

____ submit the validation package to the PRC EOP Subcommittee.

The PRC EOP Subcommittee will perform the following:

____ review proposed resolutions with appropriate staff

____ select resolutions for incorporation in the EOP's

____ present the revised EOP's to the PRC for approval

3.0 DOCUMENTATION

The following completed documentation will be submitted as a validation package:

____ EOP Validation Form 1

____ EOP Validation Form 2's

____ EOP Validation Form 4's

____ EOP Validation Evaluation Criteria Checklist

____ EOP's used for the validation

EOP VALIDATION
CHECKLIST FOR SIMULATOR
METHOD OF VALIDATION

1.0 PURPOSE

The purpose of this checklist is to provide guidance for the simulator method of validating EOP's.

2.0 VALIDATION PROCESS

EOP validation will be conducted in three parts: preparation, assessment, and resolution.

2.1 Preparation

The designated observer/reviewer will perform the following:

____ complete EOP Validation Form 1.

____ review the scope of the validation as directed by the PRC EOP Subcommittee

____ develop or modify scenario runs to support the scope of validation

____ complete the upper portion of the Simulator Scenario Form (EOP Validation Form 3). Forward to the simulator supervisor

____ develop data collection techniques

____ evaluate plant-to-simulator characteristics

____ make the required adjustments to the EOP set to use on the simulator

____ select and schedule the number of control room operators to be consistent with the minimum specified in Technical Specification 5.2.2.a

____ modify/select the evaluation criteria to support the scope of validation

____ select operators that are trained to the level expected of all operators

____ ensure the EOP's and supporting procedures are available

2.2 Assessment

The designated observer/reviewer will perform the following duties:

____ brief the operating crew on the scope of the validation and how the assessment will be conducted

____ ensure the observer/reviewer does not interface or interact with the operating crew

____ brief the operating crew on the initial plant conditions for each scenario run

____ conduct a debriefing with the operators as soon as possible after each scenario run using the following sequence:

- brief the participants on the purpose and objectives for debriefing
- have operators present problems and discrepancies which they have identified during the assessment
- have operators comment on whether physical interaction/conflict was encountered
- have operators provide possible reasons for problems
- present other problems and discrepancies identified during assessment
- have operators describe possible reasons for the other problems
- summarize the findings of the debriefing for the operators

____ record discrepancies and comments on EOP Validation Form 4

2.3 Resolution

The designated observer/reviewer will perform the following duties:

____ review comments and discrepancies

____ propose resolutions on EOP Validation Form 4

____ submit the validation package to the PRC EOP Subcommittee

The PRC EOP Subcommittee will perform the following duties:

____ review proposed resolutions with appropriate staff

____ select resolutions for incorporation in the EOP's

____ present the revised EOP's to the PRC for approval

3.0 DOCUMENTATION

The following completed documentation will be submitted with the validation package:

____ EOP Validation Form 1

____ EOP Validation Form 3's

____ EOP Validation Form 4's

____ EOP Validation Evaluation Criteria Checklist

____ EOP's used for the validation

____ data on plant-to-simulator characteristics and differences

EOP VALIDATION
CHECKLIST FOR REFERENCE
METHOD OF VALIDATION

1.0 PURPOSE

The purpose of this checklist is to provide guidance in the use of data selected from a reference validation of EOP's.

2.0 VALIDATION PROCESS

EOP validation will be conducted in three parts: preparation, assessment, and resolution.

2.1 Preparation

The designated reviewer will perform the following:

____ complete EOP Validation Form 1

____ identify all differences in hardware and shift manpower between Fort Calhoun Station Unit No. 1 and the referenced plant

____ identify the differences in the format and the level of detail between the EOP to be validated and the referenced EOP

____ select the applicable data from the referenced validation

2.2 Assessment

The designated reviewer will perform the following:

____ evaluate the differences in hardware and shift manpower

____ evaluate the differences in the format and the level of detail

____ record discrepancies and comments on EOP Validation Form 4 with applicable data selected from the referenced validation

2.3 Resolution

The designated reviewer will perform the following:

____ review comments and discrepancies

____ evaluate the potential impact of any differences between the EOP to be validated and the referenced validation

____ propose resolutions on EOP Validation Form 4 for the PRC EOP Subcommittee

____ recommend EOP validation by table-top/walk-through or simulator method to confirm reference validation results

The PRC EOP Subcommittee will perform the following:

____ review the validation package

____ determine the scope of validation needed to confirm the resolutions and initiate an EOP Validation Form 1, if necessary

____ present the revised EOP's to the plant manager for approval if subsequent validation is not required

3.0 DOCUMENTATION

The following completed documentation will be submitted with the validation package:

____ EOP Validation Form 1

____ EOP Form 4's

____ EOP's used for the validation

____ referenced validation package

____ selected reference data

ATTACHMENT 3

EOP VALIDATION
EVALUATION CRITERIA CHECKLIST

EOP VALIDATION

EVALUATION CRITERIA CHECKLIST

I. USABILITY	APPLICABILITY		
	T-T	W-T	S
A. Level of Detail			
___ 1. Is there sufficient information to perform the specified actions at each step?	X	X	X
___ 2. Are the alternatives adequately described at each decision point?	X	X	X
___ 3. Are the labeling, abbreviations, and location information as provided in the EOP sufficient to enable the operator to find the needed equipment?	X	X	X
___ 4. Is the EOP missing information needed to manage emergency conditions?	X	X	X
___ 5. Are the contingency actions sufficient to address the symptoms?	X	X	X

Legend:

T-T: table-top validation method

W-T: walk-through validation method

S: simulator validation method

X: applicable to the validation method

O: not applicable to the validation method

		APPLICABILITY		
		T-T	W-T	S
___ 6.	Are the titles and numbers sufficiently descriptive to enable the operator to find referenced and branched procedures?	X	X	X
B.	Understandability			
___ 1.	Is the EOP easy to read?	X	X	X
___ 2.	Are the figures and tables easy to read with accuracy?	X	X	X
___ 3.	Can the values on figures and charts be easily determined?	X	X	X
___ 4.	Are caution and note statements readily understandable?	X	X	X
___ 5.	Are the EOP steps readily understandable?	X	X	X
II.	OPERATIONAL CORRECTNESS			
A.	Plant Compatibility			
___ 1.	Can the actions specified in the procedure be performed in the designated sequence?	O	X	X
___ 2.	Are there alternate success paths that are not included in the EOP's?	X	X	X

			APPLICABILITY		
			T-T	W-T	S
___	3.	Can the information from the plant instrumentation be obtained, as specified by the EOP?	O	X	X
___	4.	Are the EOP entry conditions appropriate for the plant symptoms displayed to the operator?	O	O	X
___	5.	Is information or equipment not specified in the EOP required to accomplish the task?	O	X	X
___	6.	Do the plant responses agree with the EOP basis?	O	O	X
___	7.	Are the instrument readings and tolerances stated in the EOP consistent with the instrument values displayed on the instruments?	O	X	X
___	8.	Is the EOP physically compatible with the work situation (too bulky to hold, binding would not allow them to lie flat in work space, no place to lay EOP's to use)?	O	X	X
___	9.	Are the instrument readings and tolerances specified by the EOP accurate for remotely located instruments?	O	X	O

		APPLICABILITY		
		T-T	W-T	S
___ 10.	Does the Safety Parameter Display System adequately present the EOP safety functions?	O	X	X
B.	Operator Compatibility			
___ 1.	If time intervals are specified, can the procedure action steps be performed on the plant within or at the designated time intervals?	O	X	X
___ 2.	Can the procedure action steps be performed by the operating shift?	O	X	X
___ 3.	If the specific actions are assigned to individual shift personnel, does the EOP adequately aid in the coordination of actions among shift personnel where necessary?	O	X	X
___ 4.	Can the operating shift follow the designated action step sequences?	O	X	X
___ 5.	Can the particular steps or sets of steps be readily located when required?	O	X	X
___ 6.	Can procedure exit points be returned to without omitting steps when required?	O	X	X

			APPLICABILITY		
			T-T	W-T	S
___	7.	Can procedure branches be entered at the correct point?	X	X	X
___	8.	Are EOP exit points specified adequately?	X	X	X

PROCEDURES GENERATION PACKAGE

PART 6

EOP TRAINING PROGRAM

Fort Calhoun Station

Unit No. 1

Emergency Operating Procedure Training Program

EOPTP
Rev. 00

Fort Calhoun Station
Emergency Operating Procedure
Training Program

Table of Contents

1.0 INTRODUCTION

1.1 Purpose

The following describes the purposes of the Fort Calhoun Station Unit No. 1 Emergency Operating Procedure (EOP) Training Program:

- Enable the operators to understand the structure and format of the EOP's.
- Enable the operators to understand the technical bases of the EOP's.
- Provide the operator with a working knowledge of the EOP technical content.
- Enable the operators to effectively use the EOP's under emergency conditions.

1.2 Scope

This program identifies and directs the phases of the EOP training program.

1.3 Applicability

This program applies to initial EOP implementation and subsequent revisions of Fort Calhoun Station Unit No. 1 EOP's.

2.0 PROGRAM DESCRIPTION

2.1 Initial Training

The initial training process can be divided into the following areas: awareness and involvement in the upgrade process, individual study and review, classroom presentation and discussion, simulator instruction and control room walk-throughs, and examination.

2.2 Awareness and Involvement in the Upgrade Process

The EOP upgrade program progress will be discussed, and draft procedures reviewed and critiqued, during operator requalification training in 1984-85.

2.3 Individual Study and Review

Each EOP will be reviewed by the licensed operators prior to classroom presentation.

2.4 Classroom Presentation and Discussion

A series of lectures and discussion shall be presented which consist of the following:

- Use of new EOP format
- Reactor Trip Immediate Actions
- All event-specific EOP's
- Use of the functional EOP
- EOP technical bases and human factors information

2.5 Simulator Instruction and Control Room Walk-Throughs

Simulator instruction shall be utilized, if possible, to provide each operator the "hands on" experience of using the EOP's under control room operating conditions. In addition, because Omaha Public Power District does not own a simulator, Fort Calhoun Station specific control room walk-throughs shall be utilized for each operator with the following simulator guidance continuing to be applicable:

- Training conducted on the simulator should consist of a combination of simulated events and walk-throughs to exercise the EOP's.

- A wide variety of scenarios, including multiple and sequential failures, should be used to exercise the EOP's.

- Training should be conducted with a full shift complement, exercising each EOP to stress operator roles, interaction, and team training. Crew members should train by performing their normal and alternate control room functions.

2.6 Examination

The operator's EOP knowledge and understanding shall be evaluated in accordance with the following:

- A written examination shall be conducted at the completion of classroom training (see Section 2.4).

- An operating evaluation at the conclusion of the simulator (walk-through) instruction.

If an operator is found to be deficient in any area, retraining and reexamination will be conducted in this area.

Every operator will be trained and have passed the examination prior to being placed on shift in the control room with the upgraded EOP's in place.

2.7 Revisions/Retraining

Following the initial training program (as described above), operator retraining will be conducted due to revisions to the EOP's and as part of the operator requalification program. Future revisions to the EOP's may result from EPG revisions, revisions to plant-specific information, or improvements to existing safety analyses. Operator retraining will be performed prior to implementation of such revisions in accordance with the general methods described above.

3.0 DOCUMENTATION

Documentation of operator training shall be maintained in accordance with existing Station Training Department procedures.