APA-ZZ-00102
April 6, 1983
Revision 0

ATTACHMENT 2

CALLAWAY PLANT

ADMINISTRATIVE PROCEDURE

APA-ZZ-00102

EMERGENCY OPERATING PROCEDURES WRITER'S GUIDE

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DATE ISSUED 4/9/83

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Proced. No. APA-ZZ-00102
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EMERGENCY OPERATING PROCEDURES WRITER's GUIDE

1.0 PURPOSE AND SCOPE

This procedure provides administrative and technical guidance for the preparation of Emergency Operating Procedures (EOP's) and applies to all EOP's.

Emergency Operating Procedures (EOP) are procedures that govern the plant operation during emergency conditions and specify operator actions to be taken to return the plant to a stable condition.

2.0 EOP DESIGNATION AND NUMBERING

Each Emergency Operating Procedure shall be uniquely identified. This identification permits ease of operator use under emergency conditions.

2.1 Procedure Designation and Numbering

Emergency Operating Procedures shall be grouped into series and numbered within that series. The series designators shall correspond to the Westinghouse Emergency Response Procedure Guidelines from which they are written. The series designation shall be:

2.1.1 E-Series (Nominal Emergency/Upset Response)

E-0, E-1, E-2, etc.

2.1.2 ES-Series (Event Specific Subprocedures)

The first number to the right of the dash designates the E-Series procedure to which the ES-Series procedures relate. The number after the decimal point designates the sequential number of the series. Examples are:

ES-0.1, ES-0.2, etc. for those event specific subprocedures which are related to E-0.

ES-1.1, ES-1.2, etc. for those event specific subprocedures which are related to E-1.

2.1.3 ECA-Series (Emergency Contingency Actions)

The first number after the dash designates the ECA-Series procedure to which the subprocedure is related. The number after the decimal designates the sequential number of the series. Examples are:

ECA-1, ECA-2, etc.

ECA-2.1, ECA-2.2, etc. are ECAs which are a subprocedure of ECA-2.

2.1.4 FR-Series (Function Restoration Procedures)

The Function Restoration Procedures describe operator actions which could be effective in responding to challenges to the six plant critical safety functions. These procedures are numbered such that each critical safety function has a group of procedures which deal with that function.

The letter after the dash represents the critical safety function concerned. The number after the decimal is the procedure sequential number for a particular category by order of priority. Examples are:

Subcriticality	(S-Series)	FR-S.1, S.2, etc.
Core Cooling	(C-Series)	FR-C.1, C.2, etc.
RCS Integrity	(P-Series)	FR-P.1, P.2, etc.
Core Heat Sink	(H-Series)	FR-H.1, H.2, etc.
Containment	(Z-Series)	FR-Z.1, Z.2, etc.
RCS Inventory	(I-Series)	FR-I.1, I.2, etc.

2.2 Revision Designation and Numbering

The revision number and date shall appear below the procedure number in the upper right hand corner of the cover sheet. The revision number shall also appear in the upper right hand corner of the list of effective pages and in the Rev. block in the title block of each revised procedure page or revised attachment page.

As an alternate to the method described above, when substantial rewrite of the procedure is involved, a General Revision may be indicated by the letters GR preceding the revision number on the coversheet. For General Revisions, each page shall be annotated GR (Revision Number). Where practicable, revision bars should be used on attachments.

To identify revisions to the text of an EOP, a change bar located in the left margin alongside the text change shall be used to indicate a change in the Action/Expected Response column, and a bar in the right margin shall indicate the text change in the Response Not Obtained column.

2.3 Page Designation and Numbering

2.3.1 Procedure Pages

Each page of the procedure (Attachment 2, Example - Text Page Format) shall be identified by a standard title block giving:

2.3.1.1 Procedure number

2.3.1.2 Procedure title

2.3.1.3 Revision number.

2.3.1.4 Centered at the bottom of the page shall be the page number, specified as "Page __ of __".

2.3.2 Attachment Pages

Each attachment page (Attachment 4, Example - Attachment Page Format) of the procedure shall be identified by a standard title block giving:

2.3.2.1 Procedure number

2.3.2.2 Procedure title

2.3.2.3 Attachment number

2.3.2.4 Revision number.

2.3.2.5 Centered at the bottom of the page shall be the page number, specified as "Page __ of __".

3.0 PROCEDURE FORMAT

The following format shall be applied consistently for all EOP's:

3.1 Page Format

With the exception of the provisions of the following paragraph, a dual-column format shall be used. The left-hand column is designated for expected operator actions, and the right-hand column is designated for contingency (alternate) actions to be taken when the expected response is not obtained. The left-hand column shall be entitled ACTION/EXPECTED RESPONSE and the right-hand column shall be entitled RESPONSE NOT OBTAINED. A sample page format is presented in Attachment 2, Example - Text Page Format.

Page 1 of E-0, Reactor Trip or Safety Injection and Page 1 of ECA-1, Anticipated Transient Without Scram, are the only exceptions to the dual-column format. As these are the first procedures entered for the EOPs in all cases, these pages shall be typed across the full width of the page. A sample page format is presented in Attachment 3, Example - Page 1 of E-0 format.

3.2 Procedure Organization

3.2.1 Cover Sheet

A cover sheet shall be used for each EOP. Its primary purposes are to identify the procedure and to identify the authorized revision. A sample cover sheet is presented in Attachment 1, Example - Cover Sheet.

3.2.2 Title

The EOP titles should be those given to the Westinghouse Emergency Response Procedure Guidelines when consistent with Callaway Plant nomenclature. These titles are worded for operator association with the procedure application.

3.2.3 Deficiency List

If required, this page shall list by section or step all missing material in the procedure. This shall include all missing information (identified by LATER) in the text and attachments and areas that are not addressed (but shall be) in the procedure. The list shall include a description of missing information and the specific constraints caused by the deficiency. Specific steps referenced on the Deficiency List shall be identified in the text by an asterisk (*) to the right of the section or step number. The Deficiency List shall be that illustrated in APA-ZZ-00101, Preparation, Review, Approval and Control of Plant Procedures.

3.2.4 List of Effective Pages

A List of Effective Pages shall be included in each procedure immediately following the Deficiency List, if it was included. The latest revision of each page shall be specified. Issuance of new and revised pages of EOP's shall be the responsibility of the Superintendent, Administration in accordance with APA-ZZ-00200, Document Control. A List of Effective Pages (Callaway Form CA-#129) reflecting the latest revision shall be issued with each procedure revision. Revisions may be issued on a page-by-page basis or as a complete revision. Instructions for incorporating the revision shall accompany the transmittal, and shall include instructions for disposition of outdated pages of procedures. The List of Effective Pages shall be that illustrated in APA-ZZ-00101, Preparation, Review, Approval and Control of Plant Procedures.

3.3 Procedure Instruction Pages

These pages shall follow the List of Effective Pages. A sample page format is presented in Attachment 2, Example - Text Page Format and Attachment 3, Example - Page 1 of E-0 Format.

3.4 Attachments

These pages shall follow the procedure instruction pages. Sample attachment formats are presented in Attachment 4, Example - Attachment Page Format.

3.5 Foldout

The Foldout page shall be the last page of the procedure. This page should be folded out during use of the procedure as a ready reference. See Section 6.8, Use of Foldout Pages, for additional details of the foldout page.

3.6 Instruction Step Numbering

Instruction steps shall be numbered and indented as follows:

1. Verify....
   a. Check....
      (1) Position....

A check-off box shall be provided at the (1.) level step for placekeeping assistance. Every effort should be made to avoid further indentation than the (1) level. Consideration should be given to rewording or restructuring to fit this format.

The same step number scheme shall be used in both the right and left columns of the procedure. The right column shall be placed directly across from the step or substep to which it applies. An example of this dual-column step format is provided in Attachment 2, Example - Text Page Format.

4.0 WRITING INSTRUCTIONAL STEPS

4.1 Length and Content

Instruction steps should be concise and precise. Conciseness denotes brevity; preciseness means exactly defined. Thus, instructions should be short and exact. This is easily stated, but not so easily achieved. General rules to be used in meeting these objectives are as follows:

4.1.1 Instruction steps should deal with only one idea.

4.1.2 Short, simple sentences should be used in preference to long, compound, or complex sentences.

4.1.3 Complex evolutions should be prescribed in a series of steps, with each step made as simple as practicable.

4.1.4 Objects of operator actions should be specifically stated. This includes identification of exactly what is to be done and to what.

4.1.5 For instructional steps that involve an action verb relating to three or more objects, the objects should be listed. Space may be provided for operator checkoff, if applicable.

4.1.6 Limits should be expressed quantitatively whenever possible. Refer to section 5.5, Numerical Values.

4.1.7 Mandatory sequence of steps is assumed unless otherwise stated. Refer to APA-ZZ-00100, Procedure Requirements if additional guidance is desired.

4.1.8 Identification of components and parts should be complete. Refer to section 4.9, Component Identification.

4.1.9 Instruction content should be written to communicate to the user. Refer to section 4.11, Level of Detail.

4.1.10 Expected results of routine tasks which are frequently repeated need not be stated.

4.1.11 When actions are required based upon receipt of an annunciated alarm, consideration should be given to listing the setpoint of the alarm for ease of verification.

4.1.12 When requiring resetting or restoration of an alarm or trip, list the expected results immediately following the resetting or restoration if it would be beneficial to the operator.

4.1.13 When considered beneficial to the user for proper understanding and performance, describe the system response time associated with performance of the instruction.

4.1.14 When system response dictates a time frame within which the instruction must be accomplished, prescribe such time frame. If possible, however, avoid using time to initiate operator actions. Operator actions should be related to plant parameters.

4.1.15 When anticipated system response may adversely affect instrument indications, describe the conditions that will likely introduce instrument error and means of determining if instrument error has occurred by using a NOTE.

4.1.16 When additional confirmation of system response is considered necessary, prescribe the backup readings to be made.

4.2 Action/Expected Response Column

The left-hand (Action/Expected Response) column of the dual-column format shall contain the operator instructional steps. The following rules are established for this column, in addition to the general rules above.

4.2.1 Expected indications should be presented in this column.

4.2.2 Operator actions in this column should be appropriate for the expected indications.

4.3 Response Not Obtained Column

4.3.1 Contingency actions shall be presented in the right-hand (RESPONSE NOT OBTAINED) column of the dual-column format. Contingency (alternate) actions are operator actions that should be taken in the event a stated condition, event, or task does not represent or achieve the expected result. The need for contingency action occurs in conjunction with tasks involving verification, observation, confirmation, and monitoring.

4.3.2 Contingency actions shall be specified for each circumstance in which the expected results or actions might not be achieved. The contingency actions shall identify, as appropriate, directions to override automatic controls and to initiate manually what is normally automatically initiated.

4.4 Use of Logic Terms

4.4.1 General Use Of Logic Terms

The logic terms AND, OR, NOT, IF NOT, WHEN, and THEN are often necessary to describe precisely a set of conditions or sequence of actions. When logic statements are used, logic terms shall be highlighted so that all the conditions are clear to the operator. Emphasis shall be achieved by using capitalization and underlining. All letters of the logic terms shall be capitalized and the words shall be underlined.

The use of AND and OR within the same action should be avoided. If the words AND and OR are used together, the logic can be very ambiguous.

The dual-column format used equates to the logic, IF NOT the action in the left-hand column, THEN follow the action specified in the right-hand column; for example: IF RCS press. below 1536 psig, THEN verify SI pump flowmeters.

4.4.2 Specific Use of logic terms shall be as follows:

4.4.2.1 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.

4.4.2.2 The word OR shall be used when calling attention to alternative combinations of conditions. The use of the word OR, when used without a qualifying statement, shall always be interpreted to be in the inclusive sense. This means that any one or all of the conditions may be present: "A and/or B". To specify the exclusive "OR", the following may be used: "either A OR B but not both." The words "but not both" exclude the use of more than one of the choices.

4.4.2.3 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 an unexpected but possible condition.

4.4.2.4 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.

4.4.2.5 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 Use of Cautions and Notes

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

4.5.2 If the CAUTION applies to both columns of the procedure, the CAUTION shall extend across the entire page and shall be highlighted as shown in the Example CAUTION as illustrated in Attachment 6, Example - Caution and Note Format. If the CAUTION applies to the actions of only one column of the procedure, the caution shall be placed in the applicable column only. This placement of cautions helps ensure that the procedure user observes the caution before performing the step. A caution cannot be used instead of an instructional step. It should be used to denote a potential hazard to equipment or personnel assocated with or consequent to the subsequent instructional step.

4.5.3 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 located to properly present the desired information to the user, e.g., if the NOTE is intended to aid in the performance of a step, it should precede the step. If it pertains to the results of the performance of a step, it should be placed after the step.

4.5.4 If the NOTE applies to both columns of the procedure, the note shall extend across the entire page and shall be highlighted as shown in the Example NOTE on Attachment 6, Example - Caution and Note Format. If the NOTE applies to the actions of only one column of the procedure, the note shall be placed in the applicable column only. This placement of notes helps ensure that the procedure user observes the note at the proper place in the procedure.

4.6 Calculations

Mathematical calculations should be avoided in EOP's. If a value has to be determined in order to perform a procedural step, a chart or graph should be used whenever possible.

4.7 Use of Underlining

Underlining shall be used for emphasis of logic terms, NOTE and CAUTION. It shall also be used for emphasis of major steps (1. level, as described in section 3.6 of this procedure, Instruction Step Numbering). Underlining may also be used for emphasis of locations, e.g. to separate panel numbers from instrument or switch numbers. Other use of underlining is permissible as long as consistency is maintained and underlining is not overused, such that its use for emphasis is not degraded.

4.8 Referencing and Branching to Other Procedures or Steps

4.8.1 Referencing implies that an additional procedure or additional steps shall be used as a supplement to the procedure presently being used. Referencing other steps within the procedure being used, either future steps or completed steps, should be minimized. When only a few steps are involved, the steps should be stated in the procedure wherever they are needed rather than referencing.

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

4.8.3 Use quotation marks to emphasize the title of the referenced or branched procedure; examples: Go to Step 20. Go to E-1, "Loss of Reactor Coolant".

4.9 Component Identification

With respect to identification of components, the following rules shall be followed:

4.9.1 Equipment, controls, and displays should be identified in operator language (common usage) terms except as specified in Subsection 4.9.2. These terms may not always match engraved names on panels but shall be complete.

4.9.2 When the engraved names and numbers on panel placards and alarm windows are specifically used in the procedure, the engraving should be quoted verbatim and emphasized by using all capitals.

4.9.3 If the component is seldom used or it is felt that the component would be difficult to find, location information should be given along with the identification.

4.9.4 Components should be listed in order of physical layout or ease of location, such as lists of switches on panels. This reduces the time necessary to perform the step.

4.10 System Indentification

The names of plant system titles shall be emphasized by initial capitalization. When the word "system" is deleted from the title because of brevity and is understood because of the context, the title shall also be emphasized by initial capitalization.

4.11 Level of Detail

Too much detail in EOP's should be avoided in the interest of being able to effectively execute the instructions in a timely manner. The level of detail required should be the detail that a newly trained and licensed operator would desire during an emergency condition.

To assist in determining the level of EOP detail, the following general rules apply.

4.11.1 For each control with a number engraved on the control panel placard, the number should be included in parentheses within the instructional step; for example, "Start RCP-A (BB-HIS-37)".

4.11.2 For control circuitry that executes an entire function upon acutation of the control switch, the action verb appropriate to the component suffices without further amplification of how to manipulate the control device; for example, "Close FEED PUMP A SUCTION VALVE (F028A)." Recommended action verbs are as follows:

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

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

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

4.11.3 For control switches with a positional placement that establishes a standby readiness condition, the verb "Set" should be used, along with the engraved name of the desired position. Positional placements are typically associated with establishing readiness of automatic functions and are typically named AUTO or NORMAL; for example, "Set Steam Header Pressure Control (AB-PK-507) in AUTO".

4.11.4 For multiposition control switches that have more than one position for a similar function, placement to the desired position should be specified; for example, "Place DIESEL FIRE pump SELECTOR Switch to TEST NO. 2."

4.11.5 Standard practices for observing for abnormal results need not be prescribed within procedural steps. For example, observation of noise, vibration, erratic flow, or discharge pressure need not be specified by steps that start pumps.

4.12 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.

4.12.1 Units of Measure

Units of measure on figures, tables, and attachments should be given for numerical values that represent observed, measurement data, or calculated results. A virgule (slant line) should be used instead of "per"; examples: ft/sec, lbs/hr.

4.12.2 Title 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.

Examples: Refer to Figure 2 for....
... as shown in Table 2, Equipment Power Supplies, the ....

4.12.3 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 designation and numbering of attachments shall meet the requirements of subsection 2.3, Page Designation and Numbering.

Step numbering for attachments should be in accordance with subsection 3.6, Instruction Step Numbering, except that the page format on the attachment may vary to accomplish the best means of presentation. The dual-column format is not generally used for attachments, but is allowed.

5.0 MECHANICS OF STYLE

5.1 Spelling

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

5.2 Hyphenation

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

5.2.1 When doubt exists, the compound word should be restructured to avoid hyphenation.

5.2.2 Hyphens should be used in the following circumstances:

5.2.2.1 in compound numerals from twenty-one to ninety-nine; example: one hundred thirty-four

5.2.2.2 in fractions; examples: one-half, two-thirds

5.2.2.3 in compounds with "self": examples: self-contained, self-lubricated

5.2.2.4 when the last letter of the first word is the same vowel as the first letter of the second word--as an alternative, two words may be used; example: fire-escape or fire escape

5.2.2.5 when misleading or awkward consonants would results by joining the words; example: bell-like

5.2.2.6 to avoid confusion with another word; examples: re-cover to prevent confusion with recover, pre-position to avoid confusion with preposition

5.2.2.7 when a letter is linked with a noun; examples: X-ray, O-ring, U-bolt, I-beam

5.2.2.8 to separate chemical elements and their atomic weight; examples: Uranium-235, 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 should be rewritten and possibly made into several sentences. Punctuation should be in accordance with the following rules.

5.3.1 Brackets

Do not use brackets.

5.3.2 Colon

Use a colon to indicate that a list of items is to follow, for example: Restore cooling flow as follows:

5.3.3 Comma

Use of many commas is a sign the instruction is too complex and needs to be rewritten. Therefore, evaluate the number of commas to ensure the instruction is not too complex.

Use a comma after conditional phrases for clarity and ease of reading. Example: WHEN level decreases to 60 inches, THEN start pump....

5.3.4 Parentheses

Parentheses should be used to indicate alternative items in a procedure, instruction, equipment numbers, or equipment names. Switch and instrument numbers or names when both are listed may be placed in parantheses. Setpoints and Instrument Titles may also be set apart in this manner. Other use of this method may be used on a limited basis if this is deemed the most appropriate method.

5.3.5 Period

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

5.4 Vocabulary

Words used in procedures should convey precise understanding to the trained person. The following rules apply.

5.4.1 Use simple words. Simple words are usually short words of few syllables. Simple words are generally common words.

5.4.2 Use words of common usage if it makes the procedure easier to understand.

5.4.3 Use words that are concrete rather than vague, specific rather than general, familiar rather than formal, precise rather than blanket.

5.4.4 Define key words that may be understood in more than one sense in the context used.

5.4.5 Verbs with specific meaning should be used. Examples are listed in Attachment 7, Action Verbs.

5.4.6 Equipment status should be denoted as follows:

5.4.6.1 Operable/operability--These words mean that a system, subsystem, train, component, or device is capable of performing its specified function(s) in the intended manner. Implicit in this definition is the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing related support function(s).

5.4.6.2 Operating--This word means that a system, subsystem, train, component, or device is in operation and is performing its specified function(s), and that WPA or other conditions do not prevent it from maintaining that service.

5.4.6.3 Available--This word means that a system, subsystem, train, component, or device is operable and can be used as desired; however, it need not be operating.

5.5 Numerical Values

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

5.5.1 Arabic numerals should be used.

5.5.2 For numbers less than unity, the decimal point should be preceded by a zero; for example: 0.1.

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

5.5.4 Acceptance values should be specified in such a way that addition and subtraction by the user is avoided if possible. This can generally be done by stating acceptance values as limits. Examples: 510 deg F maximum, 300 psig minimum, 580 deg to 600 deg F. For calibration points, statement of the midpoint and its lower and upper limits for each data cell would accomplish the same purpose; for example, 10 milliamperes (9.5 to 10.5). Avoid using $\pm$.

5.5.5 Engineering units should always be specified for numerical values of process variables. They should be the same as those used on the control room displays, for example: psig 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 save time and space, and when their meaning is unquestionably clear to the intended reader.

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

Letter symbols may be used to represent operations, quantities, elements, relations, and qualities.

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. Acronyms may be used if they are defined or commonly used.

Abbreviations, symbols, and acronyms should not be overused. Their use should be for the benefit of the reader. They can be benefical by saving reading time, ensuring clarity when space is limited, and communicating mathematic ideas.

NOTE APA-ZZ-00300, Identification of Plant Equipment, Attachment 1, Standardized Nomenclature/Abbreviation List, provides guidance for abbreviations and acronyms.

6.0 TYPING FORMAT

6.1 General Typing Instructions

For emergency operating procedures, the following general requirements shall be followed.

6.1.1 Paper size should be 8-1/2 x 11 inches.

6.1.2 Yellow, bond paper with printed border should be used.

6.1.3 Procedures shall be typed on ATMS.

6.1.4 Courier, pitch 10, typewriter element or equivalent shall be used.

6.2 Page Arrangement

6.2.1 Page margins shall be specified by the printed borders. Two type spaces shall be maintained between the text and borders.

6.2.2 Page identification information (refer to subsection 2.3, Page Designation and Numbering) shall be centered and placed one line space above the bottom page edge.

6.2.3 The 8-1/2 inch edges shall constitute top and bottom of pages and text. Tables and figures shall be readable with the page so arranged. Rotation of printed matter should be avoided for Emergency Operating Procedures. Refer to subsection 6.5, Rotation of Pages, if rotation is absolutely necessary.

6.3 Heading and Text Arrangement

Block style, as illustrated in Attachment 2, Example - Text Page Format, shall be used. First-level steps shall be in initial capitals, with an underscore.

6.3.1 Step numbers shall begin two spaces from the left-hand printed border (center-line for the right-hand margin). Checkoff boxes shall be located below first-level step numbers of the left-hand column only. Checkoff boxes may be used in other parts of the EOP as desired.

6.3.2 Three line spaces shall be allowed between steps.

6.4 Breaking of Words

Breaking of words should be avoided to facilitate operator reading. Exceptions will be allowed if the dual-column format results in reduced readability, i.e., several long words in a row not allowed to be broken resulting in 'stacking' of words (one or two per line).

6.5 Rotation of Pages

If pages need to be rotated, these rules shall be followed.

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

6.5.2 The page margins do not rotate.

6.5.3 Page identification and numbering shall not be rotated.

6.6 Printed Operator Aids

6.6.1 Figures include graphs, drawings, diagrams, and illustrations. The following rules are established.

6.6.1.1 The figure number and its title shall be placed three line spaces below the figure field.

6.6.1.2 The figure number and title should be of courier type, pitch 10.

6.6.1.3 The figure field must not violate specified page margins.

6.6.1.4 The figure field should be of sufficient size to offer good readability.

6.6.1.5 The essential message should be clear; simple presentations are preferred.

6.6.1.6 Grid lines of graphs should be at least 1/8-inch apart; numbered grid lines should be bolder than unnumbered grid lines.

6.6.1.7 Labeling of items within the figure should be accompanied by arrows pointing to the item, if needed for clarity.

6.6.1.8 The items within the figure should be oriented naturally insofar as possible. For example, height on a graph should be along the vertical axis.

6.6.1.9 In general, items within the figure should be labeled. Typed labels should use courier type, pitch 10. Handwritten labels should be printed, using all capitals, with letters and numbers at least 1/8-inch high.

6.6.1.10 All lines in figures should be reproducible.

6.6.2 Tables should be typed using the following rules.

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

6.6.2.2 The table number and title should be located above the table field and two line spaces below preceding text.

6.6.2.3 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. All capital letters in the column headings is also allowed.

6.6.2.4 Horizontal lines should be placed below the column headings; vertical lines, while desirable, are not necessary or required.

6.6.2.5 Tabular headings should be aligned as follows:

6.6.2.5.1 horizontally by related entries

6.6.2.5.2 vertically by decimal point for numerical entries

6.6.2.5.3 vertically by first letter for word entries; however, run-over lines should be indented three spaces

6.6.3 Double spacing between horizontal entries suffices to segregate such entries, although horizontal lines may also be used if desired. If used, double horizontal lines should be used above and below the column headings.

6.6.4 There should not be a vacant cell in the table. If no entry is necessary, "N.A. or dashes" should be entered to indicate not applicable.

6.7 Cautions and Notes

All notes and cautions should be distinguishable from the rest of the text by using the following fomat.

6.7.1 The applicable heading "NOTE" and "CAUTION" shall be capitalized, placed to the left of the text of the note or caution, and placed three line spaces below the preceding text.

6.7.2 The text of the note or caution should be block format, single line spaced. The note and caution text shall be indented two spaces from the word NOTE or CAUTION and begin on the same line.

NOTES shall be further highlighted by a dashed line box around the entire text and heading of the note. Refer to section 4.5 of this procedure, Use of Cautions and Notes, for further details.

CAUTIONS shall be further highlighted by a solid line box around the entire text and heading of the CAUTION. Refer to section 4.5 of this procedure, for further details.

6.8 Use of Foldout Pages

When used, a foldout page is treated as a single page. Only one foldout page should normally be used per procedure and shall be the last page(s). It should follow the same format as an attachment 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. An example of the foldout page text is presented in Attachment 5, Example - Foldout.

6.9 Use of Oversized Pages

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

6.10 Use of Reduced Pages

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

7.0 REPRODUCTION

Reproduction will be done single-sided copy only. All copies should be clearly legible. When it is necessary to replace the entire procedure or parts of the procedure because of revisions, use, ware, etc., the quality of the replacement copy should be equal to that of the original. Personnel who reproduce pages should ensure that when copies are made, the entire page is reproduced (i.e., that no instructions or parts of instructions are omitted).

8.0 REFERENCES

8.1 ANSI/ANS-3.2 - Administrative Controls and Quality Assurance For The Operational Phase of Nuclear Power Plants

8.2 APA-ZZ-00100 - Procedure Requirements

8.3 APA-ZZ-00101 - Preparation, Review, Approval and Control of Plant Procedures

8.4 APA-ZZ-00200 - Document Control

8.5 APA-ZZ-00300 - Identification of Plant Equipment

8.6 NUREG-0737, Item I.C.1 - Clarification of TMI Action Plan Requirements (Guidance For The Evaluation And Development Of Procedures For Transients And Accidents)

8.7 NUREG-0899 - Guidelines For The Preparation Of Emergency Operating Procedures

8.8 INPO 82-017 - Emergency Operating Procedures Writing Guideline

8.9 WCAP-10204 - Emergency Response Guidelines Validation Program

8.10 Westinghouse Emergency Response Guidelines

EXAMPLE - COVER SHEET

Procedure Number
Date of Last Typing
Revision 0

CALLAWAY PLANT

EMERGENCY OPERATING PROCEDURE

(PROCEDURE NUMBER)

(PROCEDURE TITLE IN ALL CAPS)

RESP. DEPT. _____ PREPARED BY _____

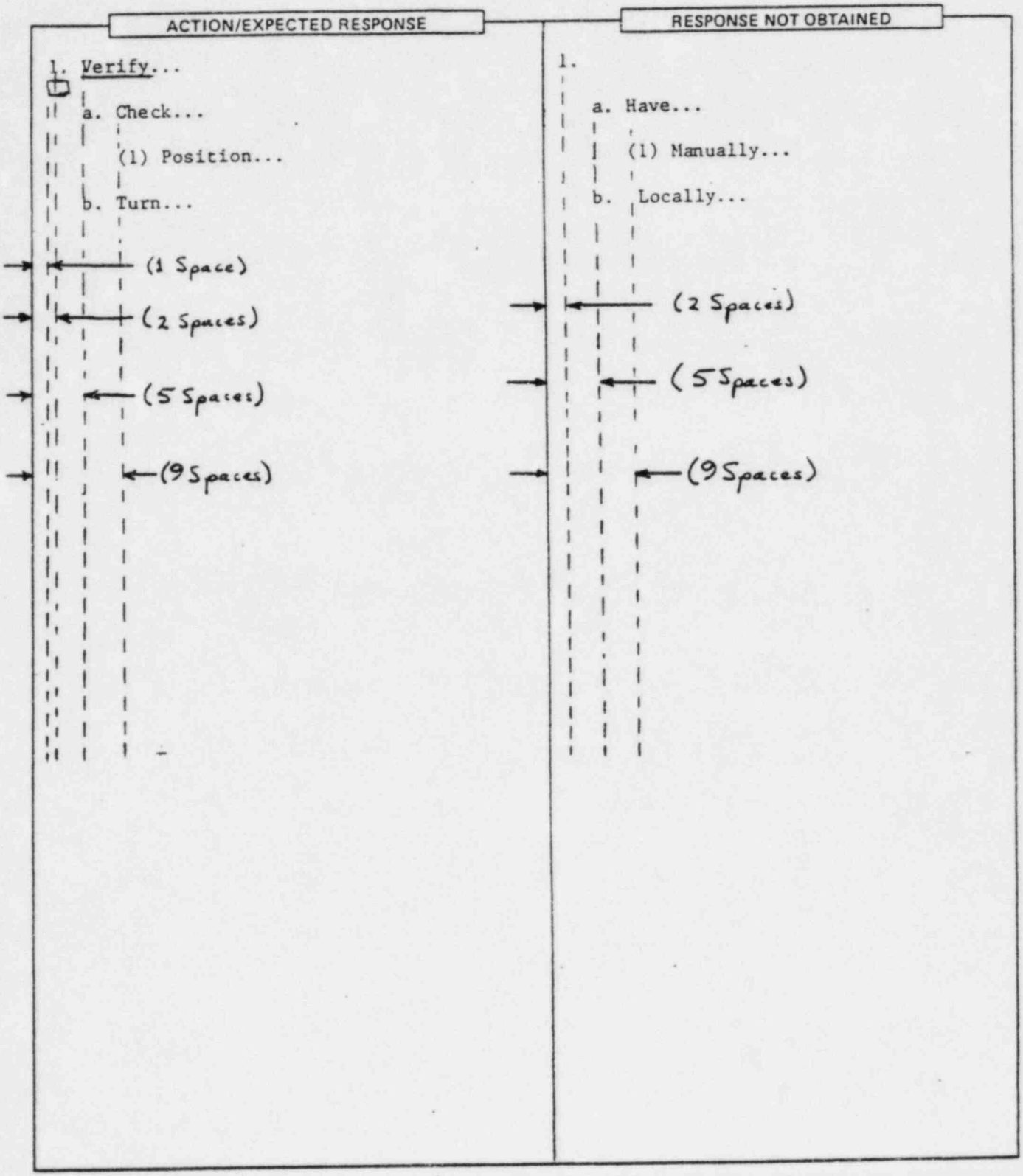
APPROVED BY _____ DATE _____

DATE ISSUED _____

EXAMPLE - TEXT PAGE FORMAT

Proced. No. APA-ZZ-00102
Rev. 0

Proced. No.	TITLE OF PROCEDURE (ALL CAPS)	Rev.



Proced. No. E-0	REACTOR TRIP OR SAFETY INJECTION	Rev. 0

ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED

EMERGENCY INSTRUCTION E-0

REACTOR TRIP OR SAFETY INJECTION

A. PURPOSE

The purpose of this procedure is to ensure proper response of the automatic protection systems following actuation of a REACTOR TRIP or SAFETY INJECTION; and to assess plant conditions and identify the appropriate recovery procedure.

B. SYMPTOMS

I. Following are symptoms of a reactor trip:

a. Any reactor trip annunciator lit.
b. Rapid decrease in reactor power level as indicated by nuclear instrumentation.
c. All shutdown and control rods are fully inserted. Rod bottom lights are lit.
c. Rapid decrease in unit load to zero power.

II. Following are symptoms of reactor trip and safety injection:

a. Any SI annunciator lit.
b. SI pumps in service.

EXAMPLE - ATTACHMENT PAGE FORMAT

Proced. No.	(PROCEDURE NAME - ALL CAPS)	ATTACHMENT	Rev.

(TITLE IN ALL CAPS)

EXAMPLE - ATTACHMENT PAGE FORMAT

Proced. No.	(PROCED. NAME - ALL CAPS)	ATTACHMENT	Rev.

TYPE TITLE HERE (ALL CAPS)

COMPONENT	DESCRIPTION	STATUS	CHECK

Page __ of __

Proced. No. E-0	REACTOR TRIP OR SAFETY INJECTION	Rev. 0

FOLDOUT FOR E-0

1. RCP TRIP CRITERIA

. Trip any RCP if component cooling water to that pump is lost to the RCP motor for greater than 2 minutes or if upper or lower bearing temperatures reach 195 deg. F.

. Trip all RCPs if BOTH conditions listed below are met:
   a. SI is actuated.
   b. RCS pressure - EQUAL TO OR LESS THAN 1330 PSIG.

2. SI TERMINATION CRITERIA FOR SPURIOUS SI

a. Terminate SI when ALL parameters listed below are met:
   (1) Containment Pressure, Temperature, Radiation, Recirculation Sump Level - NORMAL.
   (2) RCS Pressure - GREATER THAN 2000 PSIG.
   (3) RCS Subcooling - GREATER THAN 50 DEG. F.
   (4) Pressurizer Level - GREATER THAN 25%.
   (5) Heat Sink:
      (a) SG Level - GREATER THAN 61%.
      - OR -
      (b) AFW Flow - GREATER THAN 235,000 LB/HR.

3. SI REINITIATION CRITERIA FOLLOWING SPURIOUS SI

a. Reinitiate SI if ANY ONE of the parameters listed below occurs:
   (1) RCS Pressure - LESS THAN 1849 PSIG.
   (2) RCS Subcooling - LESS THAN (Later) DEG. F.
   (3) Pressurizer Level - LESS THAN 10%.

4. SYMPTOMS FOR FR-C.1 (RESPONSE TO INADEQUATE CORE COOLING)

Go to FR-C.1, (RESPONSE TO INADEQUATE CORE COOLING) when ALL symptoms in ANY ONE of the following symptom sets occur:

PARAMETER:	SYMPTOM SET I	SYMPTOM SET II	SYMPTOM SET III
1. Thermocouples	>1200 deg. F	---	>700 deg. F
2. Containment Press, Temp, Rad, Recirc Sump Level	---	ABNORMAL	ABNORMAL
3. RCP Status	---	ANY ON	ALL OFF
4. Reactor Vessel Level Indication	---	<100 % NR	> Later % NR

5. SYMPTOMS FOR FR-H.1 (RESPONSE TO LOSS OF SECONDARY HEAT SINK)

Go to FR-H.1 (RESPONSE TO LOSS OF SECONDARY HEAT SINK) if AFW Flow is not available.

EXAMPLE - CAUTION AND NOTE FORMAT

Proced. No. APA-ZZ-00102
Rev. 0

Proced. No.	TITLE OF PROCEDURE (ALL CAPS)	Rev.

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
CAUTION A CAUTION that applies to the actions of both columns will span both columns.	
	CAUTION A CAUTION that applies to the actions of only one column will appear in that column only.
NOTE A NOTE that applies to the actions of both columns will span both columns.	
	NOTE A NOTE that applies to the actions of only one column will appear in that column only.

ACTION VERBS

Verb		Application
1.	Allow	To permit a stated condition to be achieved prior to proceeding, for example, "allow discharge pressure to stabilize".
2.	Check	To perform a comparison with a procedural requirement "Check if SI can be terminated".
3.	Close	To change the physical position of a mechanical device so that it prevents physical access or flow or permits passage of electrical current, for example, "close valve V045".
4.	Complete	To accomplish specified procedural requirements, for example, "complete checklist 1" "complete data report QA-1", "complete steps 7 through 9"
5.	Decrease	Do not use because of oral communication problems. "Lower" is a better term.
6.	Ensure	To verify that a condition exists and if it does not, this word denotes permission and direction to take the steps necessary to make the condition exist. For example, "ensure V045 is open", check the valve position and open the valve if not already open.
7.	Establish	To make arrangements for a stated condition, for example, "establish communication with control room".
8.	Increase	Do not use because of oral communication problems. "Raise" is a better term.
9.	Inspect	To measure, observe, or evaluate a feature or characteristic for comparison with specified limits; method of inspection should be included, for example, "visually inspect for leaks".
10.	Open	To change the physical position of a mechanical device, such as valve or door to the unobstructed position that permits access or flow, for example, "open valve V045".
11.	Record	To document specified condition or characteristic, for example, "record discharge pressure".

12	Set	To physically adjust to a specified value an adjustable feature, for example, "set diesel speed to ... 'rpm'".
13	Start	To originate motion of an electric or mechanical device directly or by remote control, for example, "start...pump".
14.	Stop	To terminate operation, for example, "stop... pump".
15.	Throttle	To operate a valve in an intermediate position to obtain a certain flow rate, for example, "throttle valve V045 to...".
16.	Trip	To manually activate a semi-automatic feature, for example, "trip breaker...".
17.	Vent	To permit a gas or liquid confined under pressure to escape at a vent, for example, "vent...pump".
18.	Verify	To observe an expected condition or characteristic, for example, "verify discharge pressure is stable".

ATTACHMENT 3

Item 7.2.b. (iii)

The validation of the Westinghouse Owners Group Emergency Response Guidelines was conducted on the Callaway Plant specific simulator and documented in WCAP-10204, Summary Report - Emergency Response Guidelines Validation Program. The generic ERG's were converted to Callaway Plant specific for this effort. This program will serve as the validation for Callaway Emergency Operating Procedures. Any future revisions will be validated in a like manner.

ATTACHMENT 4

Item 7.2.b. (iv)

EMERGENCY OPERATING PROCEDURES TRAINING

Familiarization training will be conducted on crew training weeks. This will include program philosophy, program structure, and procedure format. Each operating crew will be introduced to specific Emergency Operating Procedures in the classroom and simulator. Some background information will be discussed.

The Pre-License Review Series (scheduled to commence 8-1-83) will provide detailed training on all Emergency Operating Procedures and their background documents. This detailed training will include classroom discussions as well as extensive practical use during simulator sessions.

UNION ELECTRIC COMPANY
1901 GRATIOT STREET
ST. LOUIS, MISSOURI

DONALD F. SCHNELL
VICE PRESIDENT

MAILING ADDRESS:
P. O. BOX 149
ST. LOUIS, MISSOURI 63166

May 11, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Denton:

ULNRC-627

DOCKET NUMBER 50-483
CALLAWAY PLANT, UNIT 1
PROCEDURES GENERATION PACKAGE

References: 1) SLNRC 83-0019 dated April 15, 1983
2) ULNRC-619 dated April 15, 1983

Attachment: Callaway Emergency Procedures Generation Package

Supplement 1 to NUREG-0737, Requirements for Emergency Response Capability, Item 7.2.b, requires the submittal of a procedures generation package for emergency operating procedures, three months prior to plans to begin formal operator training on upgraded procedures. The referenced letters provide our response to Supplement 1 and indicate our package would be submitted in May, 1983. Transmitted herewith are five copies of the Callaway Emergency Procedures Generation Package (Attachments 1 through 4). The item numbers on the attachment correspond to the numbers used in Generic Letter 82-33.

Some emergency operating procedures (EOP) familiarization training will occur between now and August 15, 1983. The Pre-Licensed Review Series which commences on August 1 will provide detailed training on all EOP's. The first two weeks of this course concerns training in mitigating core damage and therefore formal EOP training will not commence until August 15, 1983.

If you have any questions in this matter, please contact us.

Very truly yours,

for Donald F. Schnell

X005

DS/msc

Attachment (5 copies)

~~8305200245 830511~~
~~CF ADOCK 05000483~~
~~F~~

STATE OF MISSOURI)
) S S
CITY OF ST. LOUIS)

Robert J. Schukai, of lawful age, being first duly sworn upon oath says that he is General Manager-Engineering (Nuclear) for Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By _____
Robert J. Schukai
General Manager-Engineering
Nuclear

SUBSCRIBED and sworn to before me this 11th day of May, 1983

Barbara J. Pfaff

BARBARA J. PFAFF
NOTARY PUBLIC, STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 22, 1985
ST. LOUIS COUNTY

cc: Glenn L. Koester
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U.S. Nuclear Regulatory Commission
RR#1
Steedman, Missouri 65077

ATTACHMENT 1

Item 7.2.b. (i)

Westinghouse Owners Group Generic technical guidelines, Emergency Response Guidelines (ERG's) will be utilized for the generation of Emergency Operating Procedures. The sequence of steps shall be the same as that given in the ERG's for those steps that are required. Other steps will be arranged in the sequence which is appropriate to comply with the intent of the ERG's. The writer/reviewers shall make the determination, based on the ERG's and background documents of which plant specific equipment meets the intent of the ERG steps. Plant specific values and nomenclature shall be used in the Emergency Operating Procedures as required. This plant specific information will be obtained from current documents.