

OPERATIONS DEPARTMENT CONTROL INSTRUCTION

GUIDELINE FOR PREPARATION OF
EMERGENCY OPERATING PROCEDURES

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DUANE ARNOLD ENERGY CENTER
UNIT NO. 1
IOWA ELECTRIC LIGHT AND POWER COMPANY

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1.0 PURPOSE AND SCOPE

This document is designed to provide specific administrative and technical guidelines for preparing Duane Arnold Energy Center (DAEC) Emergency Operating Procedures. This Writer's Guide will ensure that each procedure is readily understood by the operator, yet sufficiently comprehensive to be acceptable by the DAEC Operations Department.

2.0 GUIDELINES FOR PROCEDURE PREPARATION

The Emergency Operating Procedure (EOP) should be concise but, at the same time, adequately detailed to ensure a thorough understanding of each procedure.

2.1 PROCEDURE REVISIONS

- (1) Revisions to this Writer's Guide shall be made in accordance with DAEC Administrative Control Procedure 1402.2.
- (2) Revisions to Emergency Operating Procedures shall be made in accordance with this EOP Writer's Guide and ACP 1402.2

2.2 GENERAL WRITING GUIDELINES

- (1) Procedure steps should deal with only one idea.
- (2) Complex evolutions should be prescribed as simply as practical on a step-by-step basis.

- (3) Mandatory sequence of steps is assumed unless otherwise stated. When necessary, identify those procedures which need not be followed in sequence or when concurrent operations are to be performed.
- (4) As a rule, sentence length should not exceed 20 words. Long, complex sentences are generally less effective in communicating the intent of the instruction.
- (5) User instructions should be written in the form of a command.
- (6) Complex instructions should be itemized into lists.
- (7) Objectives or operator actions should be specifically stated.
- (8) The basis or reason for an action should not be included in the instruction.
- (9) Limits should be expressed quantitatively whenever possible. Tolerances should be expressed by indicating the entire range (e.g., use 10-20" rather than $15" \pm 5"$).
- (10) Human engineering and ALARA factors should be incorporated into the Emergency Operating Procedures.
- (11) Applicable notes should precede each step in order to advise the operator of those actions which he will be required to perform or observe following an initial action.
- (12) When actions are required based upon receipt of an annunciator alarm, list the setpoint of the alarm to facilitate verification.

- (13) When resetting an alarm or trip, list the expected results immediately following the resetting action if beneficial to the operator.
- (14) A note should be provided to warn the operator prior to the performance of any operation which will activate an annunciator.
- (15) When additional confirmation of system response is considered necessary, prescribe the backup readings to be made.
- (16) When considered beneficial to the user for proper understanding and performance, describe the system response time associated with performance of the instruction.
- (17) Expected results of routine tasks or evolutions need not be stated.

2.3 LEVEL OF DETAIL

Instructions shall consist of a series of steps and, if desired, substeps. These steps shall be written in the form of a command (i.e., tell the operator to do something). The substeps should consist of a more detailed procedure for accomplishing a major step. Instructions should be to the degree of detail necessary for the performance of required operations without direct supervision and permit the plant to be operated safely and expeditiously with a minimum of reliance on memory.

2.4 PUNCTUATION

Punctuation should be used only as necessary to aid reading and prevent misunderstanding. Word order should be selected to minimize punctuation. If extensive punctuation is necessary for clarity, the sentence should be

rewritten or made into several sentences. Punctuation should be in accordance with the following rules:

- (1) Use a colon to introduce a list of items.
- (2) Limit the number of commas to ensure that the instruction is not too complex or awkwardly constructed.
- (3) Use a period at the end of a sentence and to indicate decimal places in numbers.
- (4) Use brackets to indicate alternative items in an Emergency Operating Procedure; e.g., initiate MSIV-LCS Loop A [B, C, and D] by placing Keylock Initiate Switch HS-8401A [B, C, and D] on Panel 1C14 in the OPERATE position.
- (5) Use parentheses to set off referenced figures, tables, appendices, attachments, etc.

2.5 VOCABULARY

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

- (1) Use short, common words of few syllables.
- (2) Use common usage if it makes the procedure easier to understand.
- (3) Minimize the use of articles (a, an, and the) unless they are needed for clarity.

- (4) Avoid specialized or abstract words for which substitute words may be used.

2.5.1 Action Verbs

Action verbs are placed in instructional steps to denote a particular action that the operator must perform. Common action verbs and their applications are provided in the Glossary (Appendix 1).

2.5.2 Standard Terminology

To standardize those applications in which specific terminology should be used, the following guidelines apply:

- (1) For power-driven equipment, use Start and Stop.
- (2) For valves, use Open, Close, Throttled Open, Throttled Closed, Throttled, Locked Open, Locked Closed, and Locked Throttled.
- (3) For power distribution breakers and electrical supply switches, use Close and Open or On and Off, being consistent with the labeling used on the subject circuit breaker/switch.
- (4) For indicating lights, use On and Off.
- (5) For annunciators, use Activated and Reset.
- (6) For control switches, use the verb "place" along with the engraved name of the desired position.
- (7) 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 (e.g., Close MO-4601, SUCTION VALVE on Panel 1C04).

2.5.3 Logic Terms

The logic terms AND, OR, NOT, IF, IF NOT, WHEN, BUT, ALL, and ANY are often necessary to describe precisely a set of conditions or sequence of actions. Emphasis shall be achieved by using capitalization and underlining. All logic terms shall be underlined so that all the conditions are clear to the operator. All letters of the logic terms AND, OR, BUT, and ANY shall be capitalized except where they appear between two acronyms, (i.e., HPCI and RCIC) or two limit values (e.g., 6 ft and 10 ft). The use of AND and OR within the same action shall be avoided. When AND and OR are used together, the logic can be very ambiguous.

Use other logic terms as follows:

- (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 are need to be joined, a list format shall be used.
- (2) The word OR shall be used when calling attention to alternative combinations of conditions.
- (3) When action steps are contingent upon certain conditions or combinations, the step shall begin with the words IF, WHEN, or BEFORE followed by a description of the condition or conditions (the

antecedent), a comma, followed by the action to be taken (the consequent) with the action verb underlined.

- (4) WHEN is used for an expected condition. It implies a "monitoring" or "wait" function.
- (5) IF is used for an unexpected but possible condition existing at the present time, or at the time this step is reached. IF is not meant to include "at any time in the future."
- (6) BEFORE is used when an action is to be taken before a parameter reaches a specified action level. For example, if the parameter is approaching the action level rapidly, the action may be taken sooner than if it were approaching the action level slowly.
- (7) 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.
- (8) 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.

2.6 NUMERICAL VALUES

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

- (1) Arabic numerals should be used.
- (2) For numbers between zero and one, the decimal point should be preceded by a zero (e.g., 0.1).

- (3) For numbers less than zero, a minus sign should precede the number (e.g., -1.2).
- (4) The number of significant digits should be equal to the number of significant digits available from the display. The operator should not be required to read an indicator to greater accuracy than is displayed by the indicator.
- (5) Engineering units should always be specified for numerical values of process variables. They should be the same as those used on the panel displays (e.g., psig instead of psi).

2.7 COMPONENT IDENTIFICATION

For identification of components, the following rules apply:

- (1) Equipment and controls shall be identified by the hand switch number, piping and instrument diagram component identification number, panel number upon which the control switch is located, and the placard description if provided on the panel (e.g., start CIRC LUBE OIL PUMP A1 CONTROL PUMP 1P-202A by placing HS-4663 on Panel 1C04 in the START position).
- (2) Annunciators shall be identified by quoting the annunciator window verbatim followed by the panel number and grid coordinates of the window enclosed in parentheses [e.g., REACTOR BLDG HI RADIATION (1C04B, A-6)].
- (3) When referencing specific engraved names and numbers on panel placards and alarm windows, the engraving should be quoted verbatim and emphasized by using all capitals [e.g., verify that IRM A UPSCALE TRIP OR INOPERATIVE (1C05A, A-4) annunciator is reset].

- (4) The names of plant systems are emphasized by capitalizing the first letter of each word in the title.

2.8 CALCULATIONS

If a value has to be determined in order to perform a procedural step (e.g., preparation of sodium pentaborate solution), use a chart or graph whenever possible. The necessary space should be provided within the procedure along with the conversion factors to obtain the answer in correct units.

2.9 ABBREVIATIONS AND ACRONYMS

Abbreviations, symbols, and acronyms should not be overused. They can be beneficial, however, by saving reading time, ensuring clarity when space is limited, and communicating mathematical ideas. Appendices 2 and 3, respectively, list those abbreviations and acronyms approved for use at DAEC.

2.10 SPELLING

Spelling should be consistent with modern usage as specified in a dictionary.

2.11 CAPITALIZATION

Capitalize the first letter of specific systems or system components.

2.12 HYPHENATION

Hyphens are used between elements of a compound word whenever appropriate. When in doubt, restructure the compound word to avoid hyphenation. Hyphens should be used in the following circumstances:

- (1) In compound words with "self" (e.g., self-contained and self-lubricated).
- (2) When misleading or awkward consonants would result by joining the words (e.g., bell-like).
- (3) When a letter is linked with a noun (e.g., X-ray, O-ring, U-bolt, and I-beam).
- (4) To separate chemical elements and their atomic weight (e.g., Uranium-235 and U-235).
- (5) With units of measure used as compound adjectives (e.g., 25-ton load).

2.13 USE OF UNDERLINING

Underlining will be used for emphasis of logic terms. The following examples illustrate what shall be underlined:

- (1) Underline limit words:

<u>until</u>	<u>drops to</u>	<u>reaches</u>	<u>restored to</u>	<u>less than</u>
<u>to within</u>	<u>above</u>	<u>below</u>	<u>greater than</u>	<u>either</u>
<u>exceeds</u>	<u>beyond</u>	<u>between</u>	<u>at least</u>	<u>after</u>
<u>all</u>	<u>any</u>			

(2) Underline the action verbs: confirm, restore, maintain, etc.

(3) Underline logic terms: IF When Before
AND OR Do not
BUT not

(4) Underline caution words: Slowly Large Individually
Concurrently Irrespective All except

(5) Do not underline action which is all capitalized:
EMERGENCY RPV DEPRESSURIZATION IS REQUIRED

2.14 CONDITIONAL STATEMENTS

The following guidelines should be followed:

- (1) Write conditional statements so that the description of the condition appears first, followed by the action instruction.
- (2) If three or more conditions must be described before an action is directed, list the condition separately from the action instruction.
- (3) Emphasize the logic words by underlining, for example, If . . . ,
Before . . .
- (4) Emphasize the action verb by underlining, for example, scram the reactor, operate available pool cooling.

2.15 REFERENCING AND BRANCHING TO OTHER PROCEDURES OR STEPS

Referencing implies that an additional procedure or additional steps should 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 a few steps are involved in the referencing, the steps should be stated in the procedure wherever they are needed.

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. The word "enter" will key the operator will know to leave the present step and not return until directed.

Following the procedure number, the procedure title shall be enclosed in parentheses to emphasize the title of the referenced or branched procedure; example: Enter EP-1 (RPV Control) at Step RC21.

When the actions to be taken are located in a specific section of the branched procedure, the section where the operator should enter shall be stated rather than just the procedure number and title: example: Enter OI-51 (Core Spray) at Section 4.0.

When sections of a procedure are executed concurrently, tabbing referenced sections shall be used to assist the operator in locating the material. Tabbing shall also be used when the operator is instructed to continue on or return to a step in the procedure which is several pages away from the instruction. The words "continue in this procedure at Step . . .(TAB 6)" and "return to Step . . .(TAB 2)" shall be used for these instructions.

2.16 CONTINGENCY ACTIONS

Contingency 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.

Contingency actions shall be specified for each circumstance in which the expected results or actions might not be achieved. The contingency actions should identify, as appropriate, directions to override automatic controls and to initiate manually what is normally automatically initiated. Contingency actions which apply to more than one procedural step shall be placed on the facing page of the applicable steps.

3.0 TYPING FORMAT

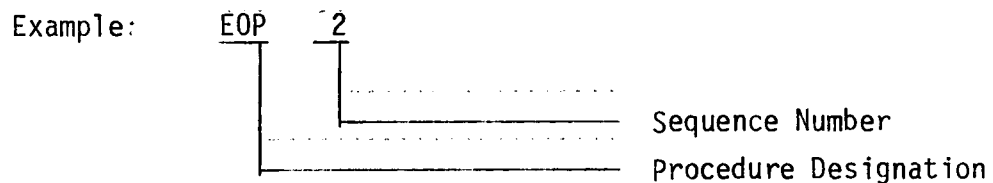
3.1 GENERAL REQUIREMENTS

The following general requirements shall apply:

- (1) Paper size should be 8 1/2 x 11 inches (no foldouts or oversized pages).
- (2) White bond paper.

3.2 EOP DESIGNATION AND NUMBERING

Emergency Operating Procedures shall be assigned a number following the prefix EOP. A complete listing of the Emergency Operating Procedures is provided in Appendix 4.

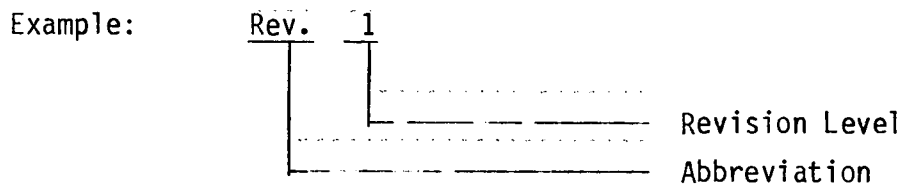


3.3 APPROVAL SHEET AND REVISION SHEET

Every DAEC Emergency Operating Procedure shall have an Approval Sheet (Appendix 5) and Revision Sheet (Appendix 6). The purpose of the Approval Sheet is to identify the procedure and the authorized revision. The purpose of the Revision Sheet is to identify the effective revision of each page of the Emergency Operating Procedure.

3.4 REVISION NUMBERING AND DESIGNATION

A sequential number following the abbreviation "Rev." shall be used to designate the revision level of the procedure.



3.5 PAGE IDENTIFICATION AND NUMBERING

Each page of the procedure shall be identified by:

- (1) Emergency Operating Procedure designator and number (EOP)
- (2) Revision number
- (3) Page number
- (4) Date of the latest revision to that page

Each page of the Emergency Operating Procedure shall indicate the total number of pages in the procedure, specified as "Page 1 of _". This information shall be located at the bottom of the page as shown in Appendix 7.

Subnumbering of pages will not be used (e.g., Page 7A of 53). Repagination of procedures will be done when required.

3.6 PAGE ARRANGEMENT/PARAGRAPH IDENTIFICATION

- (1) Page margins are specified in Appendix 7.
- (2) Page identification information is described in Section 3.5 and centered as shown in Appendix 7.
- (3) Start a new page to allow a Caution to appear on the same page as the step to which it applies.
- (4) The first line of each new paragraph shall be indented 3 spaces from the left-hand printed margin.

3.7 HEADING ARRANGEMENT

- (1) First-level section headings (e.g., 1.0, 2.0) shall be centered on the page in all-capitals with an underscore.
- (2) Second-level section headings (e.g., 1.1, 2.1) shall be flush to the left margin in all-capitals.
- (3) Third-level headings (e.g., 1.1.1) shall have the first letter of each word capitalized and underscored.

- (4) Fourth-level headings (e.g., 1.2.1.1) shall begin at the left margin with no underscore.
- (5) Refer to Section 4.2 for numbering guidelines.
- (6) Emergency Operating Procedures developed from the Emergency Procedure Guidelines (EPGs) shall additionally have a letter prefix to the First-Level Section Number as follows:

- (a) The first two letters indicate the area of control. The letters used and the area of control shall be:

RC = RPV Control
SP = Suppression Pool
DW = Drywell
PC = Primary Containment
SC = Secondary Containment

- (b) The third letter indicates the parameter which is controlled in the specified area. A virgule (slant line) should be used between the first two letters and the third letter; examples: SP/L-1, RC/Q-2. The letters used to denote the controlled parameters shall be:

L = Level
P = Pressure
Q = Power
T = Temperature
R = Radiation

3.8 SPACING

- (1) Three line spaces shall be allowed between paragraphs.
- (2) Text will be typed using one-and-a-half line spacing.
- (3) Three line spaces shall be allowed between headings and the respective text.
- (4) Triple spacing shall be allowed between a paragraph and itemized lists.
- (5) Triple spacing shall be allowed between items in a list.

3.9 FIGURES AND TABLES

The following guidelines should be adhered to when typing figures which consist of graphs, drawings, diagrams, and illustrations:

- (1) The figure title and number should be placed three line spaces above the figure field.
- (2) The essential message should be clear; simple presentations are preferred.
- (3) Grid lines of graphs should be at least 1/8 inch apart; numbered grid lines should be bolder than unnumbered grid lines.
- (4) The figure field should be of sufficient size to offer good readability but should not violate specified page margins (6 1/2 x 9").

- (5) Labeling of items within the figure should be accomplished by arrows pointing to the item.
- (6) The items within the figure should be oriented naturally insofar as possible. For example, height on a graph should be along the vertical axis.
- (7) In general, items within the figure should be labeled. Labels should be printed, using capitals, with letters and numbers at least 1/8 inch high.

The following guidelines should be adhered to when typing tables:

- (1) Type style and size should be the same as that for the rest of the procedure.
- (2) The table number and title should be typed in all-capitals and located above the table field and three line spaces below the preceding text.
- (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.
- (4) Horizontal lines should be placed above and below the column headings; vertical lines, while desirable, are not necessary or required.
- (5) Tabular headings should be aligned as follows:
 - (a) Horizontally by related entries.
 - (b) Vertically by decimal point for numerical entries.

- (c) Vertically by first letter for word entries; however, runover lines should be indented three spaces.
- (6) 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.
- (7) There should not be a vacant cell in the table. If no entry is necessary, N/A should be entered to indicate "not applicable".

3.10 CAUTIONS AND NOTES

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

- (1) The applicable headings "NOTE" and "CAUTION" should be capitalized, centered, and placed three line spaces below the preceding text.
- (2) The text of the Note or Caution should be block format and line-and-a-half spaced. The Caution text shall begin three spaces from the left-hand margin, so that the vertical line of the box lines up with the left-hand printed margin and begins one-and-a-half line spaces below the headings. The text for Notes shall begin five spaces from the left-hand printed margin.
- (3) Notes shall be highlighted by asterisks (*) centered one-and-a-half line spaces above and below the Note.
- (4) The right-hand margin of the text of the Note should be five spaces to the left of the right-hand printed margin. The right-hand margin of the text of the Caution should be three spaces to the left of the

right-hand printed margin so the vertical line of the box appears at the right-hand printed margin.

- (5) Cautions shall be further highlighted by enclosing them in a box one-and-a-half line spaces above the heading and one-and-a-half line spaces below the last line of the text.
- (6) Refer to Section 4.5 for examples.

3.11 CONDITIONAL STATEMENTS

Conditional statements shall follow the following format guidelines to emphasize these statements:

- (1) The second and subsequent lines of the conditional statement shall be indented four spaces.
- (2) The action shall start at the same left-hand margin as the first line of the conditional statement.
- (3) The second and subsequent lines of the action shall be indented four spaces.

An example of the forgoing format is provided below:

- (2) When RPV pressure is below the Minimum Alternate RPV Flooding Pressure,
commence AND slowly increase injection into the RPV with the following systems to restore AND maintain RPV water level above 0 in.

4.0 EMERGENCY PROCEDURE ORGANIZATION

4.1 PROCEDURE CONTENT

Emergency Procedures shall adhere to the following format:

TABLE OF CONTENTS

- 1.0 PURPOSE
- 2.0 ENTRY CONDITIONS
- 3.0 OPERATOR ACTIONS

4.2 SECTION NUMBERING

Arabic numerals shall be used for numbering sections and subsections. The procedure sections and subsections shall be numbered sequentially.

4.3 DESCRIPTION OF SECTION CONTENT

4.3.1 Purpose

The Purpose is a brief statement describing the objective(s) of the procedure.

4.3.2 Entry Conditions

The entry conditions shall include only those alarms, indications, operating conditions, automatic system actions, or other unique symptoms that the operator is to use in deciding to use the procedure.

4.3.3 Operator Actions

The operator action shall be short, concise, identifiable instructions that give appropriate directions to the operator in order to mitigate further degradation of plant performance and restore plant operation to normal.

4.4 USE OF FIGURES AND TABLES

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 and within the reading precision of the operator. Figures and tables applicable to a page of text should be presented on the backside of the preceding page (facing page) where it is available while reading the text.

4.4.1 General Guidelines

- (1) Units of measure should be given numerical values that represent observed or measured data and calculated results. A virgule (/) should be used instead of "per" (e.g., ft/sec and lbs/hr).
- (2) Capitalization should be used when referencing figures and tables with text material; e.g., maintain pump discharge flow in accordance with NPSH Requirements for Core Spray Pump (Figure 1).
- (3) Sequential arabic numbers should be assigned to figures and tables in separate series. The sequence should correspond with the order of their reference in the text. The abbreviation "No." is unnecessary and should not be used. The number alone suffices (e.g., Figure 1 and Table 1).

(4) Figure and table identification shall include:

(a) Figure or table number

(b) Figure or table title

4.4.2 Figures

A figure is used to present data necessary to support operation of a specific system or systems. The data may be presented in the form of graphs, drawings, and illustrations.

4.4.3 Tables

Tables consist of data or other information presented that is most easily presented in tabular form.

4.5 USE OF CAUTIONARY INFORMATION AND NOTES

Cautionary information and system operating limitations are included to alert operating personnel of possible danger to plant equipment and/or personnel.

The Caution text shall extend across the entire page and shall be highlighted by being enclosed in a box. This format helps ensure that the procedure user observes and reads the Caution before performing the affected step. A Caution statement shall not be used in lieu of an instructional step. Rather, it is intended to highlight a potential hazard to equipment or personnel associated with a particular step.

A Note is used to present or remind the operator of additional information that is "nice to know" or may aid in helping the operator understand the purpose of a specific instructional step.

A Note should present information only (not instructions) and should be located prior to the step to which it applies. It is permissible to separate the Note from the applicable step to begin a new page as long as the note appears in sequence before the step.

Notes shall be highlighted by centering 3 asterisks one-and-a-half line spaces above and below the Note.

Notes shall be further highlighted by indentation five spaces from each margin. The following examples illustrate these guidelines:

CAUTION

Cool down rates greater than 100°F/hr may be required to accomplish this step.

* * *

NOTE

Premature tripping of Recirculation Pumps may result in a pressure/level transient of sufficient magnitude such that a Main Turbine and Reactor Feed Pump trip could occur.

* * *

5.0 REFERENCES

- (1) Updated Final Safety Analysis Report, Duane Arnold Energy Center, Chapter 1
- (2) ANSI N18.7, American National Standard Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
- (3) Administrative Control Procedures, Duane Arnold Energy Center, Nos. 1404.2, 1404.3, 1404.4 and 1404.7
- (4) Emergency Operating Procedures Writing Guidelines, INPO, July 1982
- (5) NUREG-0899, Guidelines for the Preparation of Emergency Operating Procedures, Rev. 5, June 4, 1982

APPENDIX 1

GLOSSARY

Word	Application
Activate	Formally institute special activity/function. To place into operation.
Align	Place systems or components (e.g., valves and breakers) in proper positions for accomplishing specified function.
Allow	To permit a stated condition to be achieved prior to proceeding (e.g., "allow discharge pressure to stabilize").
Check	To determine the present status of a plant parameter or component.
Close	<p>Mechanically: To change the physical position of a mechanical device so that it prevents physical access or fluid flow (e.g., "V-17-16").</p> <p>Electrically: To change the physical position of an electrical circuit breaker to permit passage of electrical current (e.g., "close circuit breaker B-43-31").</p>
Complete	To accomplish specified procedural requirements (e.g., "complete valve checklist A", "complete data report QA-", "complete Steps 7 through 9 of OI 51").
Comparison	A comparing or being compared.

APPENDIX 1
GLOSSARY
 (Continued)

Word	Application
Confirm	To observe an expected condition or characteristic without being specific as to the method (e.g., "confirm . . . pump operation").
Decrease	<u>Do not use</u> because of oral communication problems. Use "lower" in lieu of "decrease."
Deenergize	Remove power supply. Should not be used; use Open.
Depress	Refers to pushbutton operation.
Discrepancy	Disagreement or inconsistency.
Energize	Supply power. Should not be used; use Close.
Ensure	Take necessary/appropriate actions to guarantee component, reading, etc., as specified.
Establish	To make arrangements for a stated condition (e.g., "established communication with control room").
Execute	To do or perform the instructed action or steps.
Implement	Commence a required program or series of procedures.

APPENDIX 1
GLOSSARY
(Continued)

Word	Application
Increase	<u>Do not</u> use because of oral communication problems. Use "raise" in lieu of "increase".
Initiate	Take actions to begin a process.
Inspect	To measure, observe, or evaluate a feature or characteristic for comparison with specified limits; method of inspection should be included (e.g., "visually inspect for leaks").
Isolate	Remove from service by closing-off the flow path.
Local	Take action outside the control room at equipment or local operating station.
Limitation	Specific parameter not to be exceeded (violated).
Maintain	Take appropriate actions to prevent fluctuation/changing.
Manual Initiation	Operator action which activates a function which is normally initiated automatically due to plant conditions.
Manual Trip	Operator action to activate a Reactor Trip or stop an operating piece of equipment such as a pump.
May	Possibility, permission, or contingency.

APPENDIX 1
GLOSSARY
(Continued)

Word	Application
Monitor	To observe a stated parameter or function for significant changes. This does not mean an operator continuously watches the parameter, but be aware of changes to keep the operation under control.
Notify	Inform specified personnel.
Open	<p>Mechanically: To change the physical position of an mechanical device, such as a valve, or door to unobstructed position that permits a fluid flow or access.</p> <p>Electrically: To change the physical position of an electrical circuit breaker to prevent the passage of electrical current.</p>
Per	As specified in or by named procedure. Infers referencing the document is optional.
Place	Physically position a switch to the specified location.
Proceed	Go to specified area. In case of procedures, discontinue use of present procedure.
Qualified	Competent or fit. An operator is qualified when his qualification card is complete.

APPENDIX 1
GLOSSARY
(Continued)

Word	Application
Rack In	Place an electrical circuit breaker in place by physically connecting it to its associated power source.
Rack Out	Disconnect an electrical breaker by physically removing it from its associated electrical cubicle.
Record	To document specified condition or characteristic (e.g., "record discharge pressure").
Refer	Use as a supplement. Perform applicable actions of cited procedure and return to the controlling procedure.
Regulate	Control or restrict.
Restore and Maintain	To bring a specified parameter back under control or within specified limits and keep it within those limits.
Rotate	Turn a rotary multi-position switch to the required position. In reference to pumps, hand rotate before energizing.
Secure	Remove from service. Take appropriate action to prevent return to service.
Set	To physically adjust to a specified value an adjustable feature (e.g., "set diesel speed to . . . rpm").

APPENDIX 1
GLOSSARY
(Continued)

Word	Application
Shall	Infers mandatory requirement.
Shift	Specifies changing mode of operation.
Should	Infers nonmandatory, preferred, or desired method.
Shut	To move so as to close. Do not use.
Stabilize	To bring a specified parameter under control with any fluctuations controlled.
Start	To originate motion of an electric or mechanical device directly or by remote control (e.g., "start . . . pump").
Stop	To terminate operation (e.g., "stop . . . pump").
Terminate Injection	To stop flow to a specified location. This allows redirecting flow to another location without tripping the pump.
Throttle	To operate a valve in an intermediate position to obtain a certain flow rate (e.g., "throttle valve V-17-61 to . . .").
Trip	Do not use except when the circuit breaker opens automatically. Use "open" in lieu of "trip" when possible.

APPENDIX 1
GLOSSARY
(Continued)

Word	Application
Vent	To permit a gas or liquid confined under pressure to escape at a vent (e.g., "vent . . . pump").
Verify	To determine if in proper condition/status and place in proper condition/status if not found in proper condition/status.

APPENDIX 2
APPROVED ABBREVIATIONS

Abbreviation	Abbreviated Word or Phase
Btu	British Thermal Unit
C	centigrade
cc	cubic centimeter
dp	differential pressure
F	fahrenheit
ft	foot
gal	gallon
gpm	gallons per minute
Hg	mercury
hp	horse power
hr	hour
in.	inch
kW	kilowatt
lb	pound
min	minute
mR	millirem
MW	megawatt
psia	pounds per square inch (absolute)
psig	pounds per square inch (gauge)
Rem	rem
rpm	revolutions per minute
sec	second
W	watt

APPENDIX 3
APPROVED ACRONYMS

Acronym	Definition
AB	Administration Building
ADS	Automatic Depressurization System
AP	Abnormal Procedure
APRM	Average Power Range Monitor
CB	Control Building
CRD	Control Rod Drive
CS	Core Spray
CSCS	Core Standby Cooling System
CT	Cooling Towers
ECCS	Emergency Core Cooling System
EHC	Electrohydraulic Control
EOP	Emergency Operating Procedure
EPC	Emergency Operating Procedures -- General Operator Precautions
EPG	Emergency Procedure Guidelines
ESW	Emergency Service Water
FP	Fuel Pool
GSW	General Service Water
GY	General Yard
HCU	Hydraulic Control Unit
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilating, and Air Conditioning
HX	Heat Exchanger
IPOI	Integrated Plant Operating Instruction
IRM	Intermediate Range Monitor
IS	Intake Structure
LC	Load Center

APPENDIX 3
APPROVED ACRONYMS
 (Continued)

Acronym	Definition
LCO	Limiting Condition for Operation
LOCA	Loss-of-Coolant Accident
LOOP	Loss of Off-site Power
LPCI	Low Pressure Coolant Injection
LPRM	Local Power Range Monitor
MCC	Motor Control Center
MSIV	Main Steamline Isolation Valve
NPSH	Net Positive Suction Head
OI	Operating Instruction
OR	Offgas/Recombiner Building
OS	Offgas Stack
PH	Pumphouse
RB	Reactor Building
RCIC	Reactor Core Isolation Cooling
RMCS	Reactor Manual Control System
RSCS	Rod Sequence Control System
RT	Retention Building
RW	Radwaste
RWCU	Reactor Water Cleanup
RWM	Rod Worth Minimizer
RWS	River Water Supply
SBDG	Standby Diesel Generator
SBFU	Standby Filter Unit
SBGT	Standby Gas Treatment
SBLC	Standby Liquid Control
SRM	Source Range Monitor
SRV	Safety/Relief Valve
ST	Steam Tunnel

APPENDIX 3
APPROVED ACRONYMS
(Continued)

Acronym	Definition
SRV	Safety/Relief Valve
ST	Steam Tunnel
TAF	Top Active Fuel (344.5" above vessel bottom)
TB	Turbine Building

(See Bechtel Drawing No. 7884-M-102 for instrument identification acronyms.)

APPENDIX 4

NUMERICAL LISTING OF DAEC EMERGENCY PROCEDURES

EPC — Emergency Operating Procedures — General Operator Precautions

EOP 1 — Reactor Pressure Vessel (RPV) Control

EOP 2 — Primary Containment Control

APPENDIX 5
APPROVAL SHEET

EMERGENCY PROCEDURE NO. __

RPV LEVEL CONTROL

July 13, 1983

DUANE ARNOLD ENERGY CENTER
UNIT NO. 1
IOWA ELECTRIC LIGHT AND POWER COMPANY

Approved by: _____ Date: _____
Operations Supervisor

Reviewed by: _____ Date: _____
ALARA Coordinator

Reviewed by: _____ Date: _____
Chairman, Operations Committee

Approved by: _____ Date: _____
Plant Superintendent--Nuclear

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7/13/83

APPENDIX 6
REVISION SHEET

LIST OF EFFECTIVE PAGE REVISIONS

Page	Rev. No.	Page	Rev. No.	Page	Rev. No.	Page	Rev. No.
1	0						
2	0						
3	0						
4	0						
5	0						
6	0						
7	0						
8	0						
9	0						
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13	0						
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15	0						
16	0						
17	0						
18	0						
19	0						
20	0						

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APPENDIX 7
PAGE FORMAT

1.0 PURPOSE

The purpose of this procedure is to:

- (1) Restore and maintain RPV water level within a satisfactory range,
- (2) Shut down the reactor, and
- (3) Control RPV pressure and cool down the RPV to cold shutdown conditions (100°F < RPV water temperature < 212°F).

2.0 ENTRY CONDITIONS

The entry conditions for this guideline are ANY of the following:

- (1) RPV water level below + 170 in.
- (2) RPV pressure above 1035 psig
- (3) Drywell pressure above 2.0 psig
- (4) An isolation which requires OR initiates reactor scram
- (5) A condition which requires reactor scram, AND reactor power above 3%
OR cannot be determined.

3.D OPERATOR ACTIONS

RC-1 If reactor scram has not been initiated, initiated reactor scram.

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