

APPENDIX A

EMERGENCY OPERATING PROCEDURES WRITER'S GUIDE

8507310085 850729
PDR ADOCK 05000354
E PDR

EMERGENCY OPERATING PROCEDURES
WRITER'S GUIDE FOR
HOPE CREEK GENERATING STATION

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

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Revision 1

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide specific, detailed administrative instructions for the preparation of the EOPs from the Hope Creek P-STG to insure consistency of format, usage and technical presentation among all EOPs and revisions.

1.2 Scope

This writer's guide is applicable only to the production and revision of the Hope Creek EOPs.

2.0 EOP DESIGNATION AND NUMBERING

2.1 Definition

EOPs are procedures that provide the operator with directions to mitigate the consequences of a broad range of accidents and multiple equipment failures without the need to diagnose specific initiating events and to return the plant to a stable condition.

2.2 EOP Identification

Each EOP shall be uniquely identified. This identification permits easy administration of the process of procedure preparation, review, revision, distribution, and operator use. A descriptive title shall be used that also designates the scope.

2.3 Procedure Numbering

The numbering scheme described below shall be used for all Emergency Operating Procedures. The form shall be AA-BB.CC-XYZ(M), and is described below:

AA - This group identifies the originating department which is also responsible for all changes and reviews, as necessary. For EOPs the Operations Department designator of "OP" shall be used.

BB - This category is used to identify the procedure type. For EOPs, the "EO" designator shall be used.

CC - This field is used to determine the applicable plant system designator. Since no system is applicable to EOPs, the designation "ZZ" shall be used.

XYZ - Sequential procedure number. The EOPs will be sequentially identified in three distinct groups. The 100 series (i.e., 101, 102, etc.) will include the basic control procedures (i.e., R/PV Control, Containment Control, etc.). The 200 series will contain the contingency procedures (i.e., Level Restoration, RPV Emergency Depressurization, etc.). The 300 series will contain the required support procedures (i.e., bypassing interlocks, special equipment lineups, etc.).

A separate post scram recovery procedure will be developed, and will have 099 for its procedure number.

(M) - Denotes classification of the procedure. Safety-related procedures and procedures on equipment affecting safety-related systems are designated by the letter "Q". The following example demonstrates the use of this numbering scheme.

Example: -EO.ZZ-101(Q)

2.4 Revision Numbering

During the development phase, an alphabetical designator will be used to identify the procedure revision.

Example: Rev. A

When the EOPs are approved and implemented a numerical designator will be used to identify the procedure revision starting with 0.

Example: Rev. 0

3.0 PROCEDURE FORMAT

3.1 Format of EOP Control and Contingency Procedures (100 & 200 Series)

Each EOP Control and Contingency Procedure shall contain a Title Page, Table of Contents and the five sections described. The various sections of the procedure will be arranged in the sequence provided.

3.1.1 Page Layout

All procedure pages (except the flowcharts) should be 8 1/2" x 11" in size. The left hand margin of all text shall have adequate space (approximately 3/4 inch) to permit hole punching without obliterating copy.

3.1.2 Page Identification and Numbering

The procedure number shall be in the upper right and lower left corners of each page, additionally, the revision number will appear in the bottom right corner (except the flowcharts).

All pages of procedure shall be numbered sequentially, with the last page of the text being identified, "(LAST PAGE)", just to the right of the page number (except the flowcharts and Title Page).

3.1.3 Title Page and Table of Contents

The Title Page shall be in the format shown in Attachment 1 and shall include the procedure number, title, and revision. The title shall be a descriptive phrase to identify the scope of the procedure. Also, the remarks section may be used to summarize the changes made in the current revision. The Title Page will not be a numbered page. Space will be provided on the Title Page for the signatures required during the review and approval process. Review and approval requirements are contained in SA-AP.22-001(Q) "Preparation and Approval of Station Procedures".

The Table of Contents shall always be page 1 of the procedure and shall be in the format shown in Attachment 2. The page number of each section and each major division shall be listed.

3.1.4 Section 1.0 - Purpose

A clear statement defining the intent and scope of the procedure.

Example:

1.0 PURPOSE

The purpose of this procedure is to provide clear and concise instructions for the operators responding to an emergency or conditions that may degrade into an emergency.

The RPV Control Procedure provides the means to establish and maintain the reactor in a safe condition by controlling three RPV parameters:

- (a) reactor power,
- (b) reactor water level, and
- (c) reactor pressure.

By controlling the above listed parameters, the procedure seeks to;

- (1) maintain adequate core cooling, and
- (2) shutdown the reactor.

3.1.5 Section 2 - References

A comprehensive list of all references used to develop the procedure including name, numbers, and revision of each document when applicable. If there are no references, the word "None" shall be entered in this section.

Example:

2.0 REFERENCES

- 2.1 BWROG EMERGENCY PROCEDURE GUIDELINES, Rev. 3
- 2.2 SA-AP.ZZ-002(Q), "Stations Organization and Operating Practices", Rev. 0

3.1.6 Section 3 - Definitions

A list of terms, in alphabetical order, needing clarification as to their intent within the procedure. If there are no definitions, the word "None" shall be entered in the section.

Example:

- 3.9 Prevent - take whatever action is necessary to preclude the stated action, occurrence, etc. Where not otherwise qualified or prohibited, this includes jumpering (or opening) contacts in the control logic of system components, deenergizing equipment, overriding automatic signals, etc.

3.1.7 Section 4 - Responsibilities

A brief description of individual duties, by position, required to execute the EOPs.

Example:

- 4.2 Nuclear Shift Supervisor (NSS) - directs operations by giving specific directions and responsibility to the shift personnel.

3.1.8 Section 5 - Procedure

A flowchart using logic symbols to illustrate the operator actions will be developed from the information contained in the Plant Specific Technical Guidelines. Each step states briefly the operator action required. The make up of the flowchart will be dictated by Section 4 of this writer's guide.

3.1.8.1 Identification Information

- a. The following information shall appear in a title block and shall be arranged as indicated in the example.

- 1) Procedure Number
- 2) Procedure Title
- 3) "Hope Creek Generating Station"
- 4) Revision Number
- 5) Revision Date (month/day/year)

Example:

Procedure Number ---->

OP-EO.22-101(Q)

Procedure Title ---->

REACTOR/PRESSURE VESSEL
(RPV) CONTROL

HOPE CREEK
GENERATING STATION

Revision Number ---->

REV 0

REV

DATE 03/01/85

Rev.

<-- Date

- b. The Title Block shall appear in the lower right corner of the flowchart.

3.1.8.2 Flowchart Layout

The entire flowchart shall appear on one "page".

a. Entry Conditions

- 1) The entry condition(s) shall be arranged at the top of the flowchart. In the case of more than one entry condition, the arrangement shall also be to the left and right of center, at the top of the flowchart.

b. Steps

- 1) There shall be no interruptions in the flow of information between flowchart steps.

c. Graphs/Tables

- 1) Graphs/Tables shall be located on the flowchart in the vicinity of the first step that refers to that Graph/Table. Dashed lines shall be used to "point" to the Graph/Table, from the applicable step(s).

- 2) Graphs/Tables shall be numbered in the XX-Y-Z format, where:

XX - is the branch of the flowchart that the graph/table applies to.

Y - is the parameter of concern in the flowchart branch.

Z - is a sequential number of graphs used in that branch.

Example:

Drywell Pressure Control graph
number 2 would be numbered
DW-P-2

d. Cautions

- 1) Caution statements shall be presented as a group.
- 2) The group of caution statements shall be headed by the term, "OPERATOR CAUTIONS".
- 3) The group of caution statements shall not interfere with the function of the flowchart.

e. Notes

- 1) Use of notes on the EOPs shall be minimal.
- 2) When necessary, the note number will be provided in the EOP step.
- 3) The note itself shall be located near the cautions, and shall not interfere with the function of the flowchart.

3.2 Format of EOP Support Procedure (300 Series)

To accomplish the purpose of the EOP Support Procedures it is necessary to provide the operator with step by step directions, therefore the EOP Support Procedures will be written in the System Operating Procedure (SOP) Format. These procedures will be written in accordance with Attachment 2 of OP-AP.ZZ-001(Q), "Preparation and Approval of Operations Department Procedures". A sample EOP Support Procedure is included as Attachment 7.

4.0 FLOWCHART GUIDELINES

4.1 Symbol Coding

4.1.1 Standardization

- a. Flowchart symbols used shall only be those listed in Attachment 3.

4.1.2 Ease of Identification

- a. Major symbol blocks (action steps, decision steps, retainment steps) shall be a unique shape that is readily detected and discriminable, as illustrated by Attachment 3.
- b. Symbols shall be used to aid the operator in finding the correct entry and exit point into and out of a flowchart (Procedure-to-Procedure symbols).
- c. Symbol coding shall be used consistently.

4.2 Step Numbering

4.2.1 Multiple Branch EOPs

- a. Multiple branch procedure steps will use the AA/B-C format
 - 1) AA - will be the procedure designator.
 - 2) B - will be the branch of the procedure.

3) C - will be the sequential step number.

Example:

Reactor Control, level branch, step 3 will appear as;

RC/L-3

4.2.2 Single Branch EOPs

a. Single branch procedure steps will use the AA-B format

1) AA - will be the procedure designator.

2) B - will be the sequential step number.

Example:

Level Restoration step 5 will appear as;

LR-5

4.3 Functional Flow and Branching

4.3.1 Grouping of Paths

a. The spacing of paths shall be sufficient to provide a minimum of clutter allowing the operator easy and accurate movement through flowchart branches.

b. The direction of flow shall be apparent through the use of directional arrows.

4.3.2 Flowchart Branching

a. All exits from a flowpath shall be designated by the use of an exit arrow (see Attachment 3). All exit arrows will be directed to the right side of the procedure and will include the number of the procedure and the step to be entered, if other than at the beginning.

1) The step number, when required, of the procedure to be entered shall be located to the immediate right of the exit symbol.

- b. When a flowpath is to be executed concurrently with the current flowpath, it shall be designated through the use of an execute concurrently symbol (see Attachment 3). All execute concurrently symbols will be directed to the right side of the procedure and will include the number of the procedure and the step to be entered, if other than at the beginning.
 - 1) The step number, when required, of the procedure to be entered shall be located to the immediate right of the execute concurrently symbol.
- c. All entries into a flowpath when directed from other flowpaths shall be designated through the use of an entry arrow (see Attachment 3). All entrances shall be from the left side of the procedural step, and shall contain the number of the procedure and the step number(s) that necessitated entry.
 - 1) The step number that necessitated entry shall be located under the entry arrow symbol, listed vertically in the case of multiple steps per procedure.
- d. All decision steps in a flowpath shall require a choice of one of two opposite possibilities, i.e. yes/no, high/low, etc.
 - 1) The positioning of the opposite possibilities shall not interfere with the objective of 4.3.1.a.
- e. When referencing another procedure within the body of the flowchart, the procedure classification designator shall not be used.

Example: OP-EO.ZZ-202 instead of
OP-EO.ZZ-202(Q)

4.4 Content

4.4.1 Clarity and Conciseness

- a. Flowpath actions shall be written as short, concise statements.

- b. Contingency action statements will be clear and concise.
- c. Questions in decision steps shall be written clearly.
- d. Action blocks shall contain action instructions as specific verbs. Attachment 5 is a list of suggested verbs.
- e. Caution statements will be worded as stated in the Plant Specific Technical Guidelines.
- f. Adverbs and articles shall be used as little as possible in Flowpaths.
- g. The use of double negatives shall be avoided.

4.4.2 Complexity

- a. The number of actions called out per action block shall be minimized.
- b. Objects or conditions appearing in an action block shall be listed and bulleted for ease of identification.
- c. Decision steps using "and/or" logic should be avoided.
- d. Complex evolutions should be described in a series of steps, with each step made as simple as possible.
- e. Objects of operator actions should be specifically stated.
- f. Short, simple sentences should be used.
- g. Instruction steps should deal with one idea only.
- h. When actions are required based upon receipt of an annunciated alarm, the alarm setpoint should be listed.
- i. When system response dictates a time frame within which the instruction must be accomplished, denote the time frame. However, avoid using time to initiate operator actions, as operator actions should be related to plant parameters.

4.4.3 Sufficiency and Appropriateness of Information.

- a. Limits should be expressed quantitatively.
- b. Identification of components and parts should be technically correct and complete.
- c. If required for proper understanding, describe the system response time associated with performance of the instruction.
- d. When additional confirmation of system response is considered necessary, prescribe the backup readings to be made.
- e. Any graphs that are included in the flowcharts shall be of sufficient size to allow the operator to determine whether plant conditions are in the safe or unsafe regions of the curve.
- f. Values utilized in the flowcharts shall correspond to the values that the operator can obtain from plant instrumentation.
 - 1) The units utilized in the flowcharts shall correspond to the units obtained from the plant instrumentation.

4.4.4 Consistency of Terminology

- a. Terms within and among flowcharts shall be consistent.

4.5 Use of Logic Terms

When logic statements are used, logic terms will be highlighted so that all the conditions are clear to the operator. Highlighting will be achieved by underlining. Use logic term as follows:

- a. Avoid the use of AND and OR within the same action. When AND or OR are used together, the logic can be very ambiguous.
- b. 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 four conditions. If five or more conditions need to be joined, a list format shall be used.

- c. 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.
- d. 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, a comma, and the word THEN followed by the action to be taken. WHEN is used for an expected condition. IF is used to determine the specific course of action based upon plant conditions.
- e. Use of IF NOT should be avoided.
- f. Conditional statements shall be written so that the description of the condition appears first, followed by the action instructions.

Example: IF RPV WATER LEVEL CANNOT BE MAINTAINED
ABOVE +12.5" THEN MAINTAIN RPV WATER LEVEL
ABOVE TAF.

4.6 Component Identification

The following rules are to be followed with regard to component identification:

- a. When the engraved names and numbers on legend plates and alarm windows are specifically the item of concern in the procedure, the engraving should be quoted verbatim.
- b. If the component is seldom used or difficult to locate, location information should be given. If the control is located on a local panel, give the local panel number, the building and the elevation (example: 10C076, Rx Bldg, elev. 145).
- c. Valves shall be identified by the following criteria:
 - 1) Power operated valves shall be identified in the flowchart by the handswitch engraved name followed by the two letter system designator, a hyphen and the valve operator number.

Example:

Stm Pkg Exh Condensate Inlet Isol Vlv
AD-HV1660

- 2) Manually operated valves shall be identified in the flowchart by the noun name (as identified by the valve lineup list) followed by the two letter system designator, a hyphen and the valve number.

Example:

CRD Chrg Wtr Hdr Inlet Isln Vlv
BF-V045

4.7 Level of Detail

The level of detail required is the detail that a newly trained and licensed operator would desire during an emergency condition. To assist in determining the level of detail, the following rules apply:

- a. 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; recommended action verbs to be utilized are:
 - 1) For power-driven rotating equipment: Start, Stop.
 - 2) For valves: Open, Close, Throttle Open, Throttle Close, Throttle.
 - 3) For power distribution breakers: Synchronize and Close, Trip.
- b. For multiposition control switches that have more than one position for a similar function: placement to the desired position should be specified.

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

- a. When doubt exists, the compound word should be restructured to avoid hyphenation.
- b. Hyphens should be used in the following circumstances:
 1. In compounds with "self".
 2. When the last letter of the first word is the same vowel as the first letter of the second word.
 3. When misleading or awkward consonants would result by joining the words.
 4. To avoid confusion with another word.
 5. When a letter is linked with a noun.
 6. After two letter system identifier in valve descriptions.

5.3 Nomenclature/Punctuation

5.3.1 Abbreviations

- a. Abbreviations shall be used with discretion and shall be supported by an abbreviation list included as Attachment 4, as well as additional abbreviations listed in SA-AP.ZZ-001(Q).
- b. Abbreviations shall be used consistently within and among flowcharts. The use of abbreviations should be minimized. Abbreviations may be used where necessary to save time and space, and when their meaning is unquestionably clear to the intended reader. Consistency should be maintained throughout the procedure.

5.3.2 Punctuation

- a. Punctuation shall be used in flowcharts in accordance with the rules for standard American English, with the following exceptions:
 - 1) Question marks shall not be used following the interrogative contained within a decision step.
 - 2) Periods shall not be used in action steps containing single statements.
 - 3) Parentheses shall be used to indicate system designators.
 - 4) Brackets are not to be used.

5.3.3 Methods of Emphasis

- a. Conditional words shall be underlined.
- b. Commands shall be bold type.

5.4 Vocabulary

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

- a. Utilize simple words (i.e., short words of few syllables).
- b. Utilize common usage.
- c. Utilize words that are concrete rather than vague, specific rather than general, familiar rather than formal, precise rather than blanket.
- d. Define key words that may be understood in more than one sense.
- e. Verbs with specific meanings should be used.

5.5 Numerical Values

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

- a. Arabic numerals should be used.
- b. For numbers less than unity, the decimal point should be preceded by a zero; for example: 0.1.

- c. Utilize a tolerance band whenever possible.
- d. Utilize the same units that appear on plant instrumentation.
- e. Utilize values that are readable by the operator on plant instrumentation.
- f. Utilize the conservative value within the precision of operator readability (persons are generally able to read one-half the distance between instrument markings accurately).

Example:

An upper engineering limit of 22.75 psig exists. However the operator can read only .2.5 psig or 23.0 psig with any precision. Therefore, the limit of 22.5 psig should be used in the procedure.

5.6 Readability/Style

5.6.1 Character Size

- a. Character size shall be sufficient to be readable, to permit rapid and accurate recognition under conditions of normal and emergency lighting.
- b. Characters shall be CAPITALS in flowcharts except as follows:
 - 1) symbol usage dictates otherwise.
 - 2) acronyms are pluralized by a lower case "s". Example: MSIVs
 - 3) Where two numbers are joined as a range "and" shall be lower case. Example: 12.5 and 54

5.6.2 Character Style

- a. Character style shall meet human factors standards.
- b. Character style use shall be consistent through out Sections 1 through 4. Character style use may be different in Section 5, than is used in Sections 1 through 4 but shall be used consistently in Section 5.
- c. The spacing between letters and words shall provide for rapid and accurate character recognition.

5.6.3 Contrast

- a. To ensure adequate contrast, dark (black) character on a light (white) background shall be used.

5.6.4 Reproduction Clarity

- a. All copies of EOPs shall be clearly legible. When it is necessary to replace the entire procedure or parts of the procedure because of revisions, use, wear, etc., the quality of the replacement copy shall be equal to that of the original. Personnel who reproduce an EOP shall ensure that when copies are made, the entire EOP is reproduced (i.e., that no instructions or parts of instructions are omitted).

5.6.5 Glare

- a. Protective coverings (or display surfaces) for flowcharts shall minimize the possibility of glare.

5.7 Ease of Use

5.7.1 Verification Provisions

- a. The flowcharts shall be designed to permit tracking of movement through its branches.

5.7.2 Size of Flowcharts

- a. Flowcharts shall be sized to permit ease of use.
- b. Flowcharts may vary in size based on the amount of information contained.

5.7.3 Place Keeping

- a. A **L** will be placed next to each step on the flowchart as a placekeeping aid to the operators.

ATTACHMENT 1

SAMPLE TITLE PAGE

HOPE CREEK GENERATING STATION

OP-EO.ZZ-

Remarks:

Prepared By:	_____	_____	Date	
Reviewed By:	SRO	_____	Date	
Reviewed By:	Operating Engr - Hope Creek	_____	Date	
ALARA Review:	Radiation Protection Dept.	_____	Date	
Reviewed By:	Site Engineering Dept.	_____	Date	
Reviewed By:	SQAE	_____	Date	
SORC Review:	Chairman	_____	Date	Mtg. No.
Approved By:	Operations Mgr - Hope Creek	_____	Date	

ATTACHMENT 2

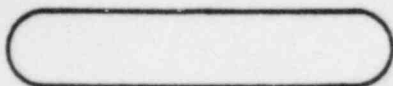
SAMPLE TABLE OF CONTENTS

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	PURPOSE.....	
2.0	REFERENCES.....	
3.0	DEFINITIONS.....	
4.0	RESPONSIBILITIES.....	
5.0	PROCEDURE.....(see flowchart)	

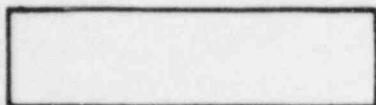
ATTACHMENT 3

FLOWCHART SYMBOLS



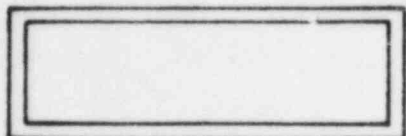
ENTRY CONDITION -

Contains the condition which requires entry into, and execution of, the appropriate procedure (only applies to 100 series).



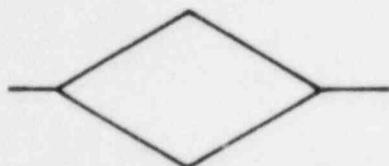
ACTION STEP -

Contains the procedural actions to be implemented. It may also be used to define contingency action steps, i.e., IF . . . THEN . . .



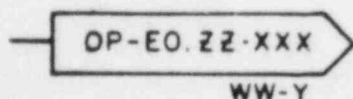
RETAINMENT STEP -

Contains information and/or contingency action conditions which must be retained in the operator's memory throughout the execution of the procedural steps which follow.



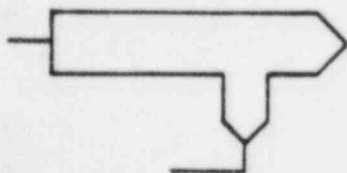
DECISION STEP -

Contains interrogative information, the results of which will determine future actions.



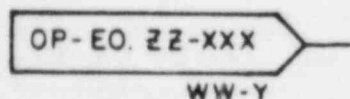
EXIT ARROW -

Requires the operator to leave the flowpath at that point. If required, it will also contain the procedure number and/or step which then must be entered.



EXECUTE CONCURRENTLY =

Requires the operator to enter the designated procedure and perform the stated actions while continuing in the existing flowpath.



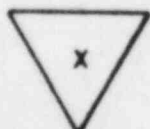
ENTRY ARROW -

Designates the point at which the procedure is entered when directed by the procedure step listed within the arrow.



OPERATOR CAUTION -

Designates that a specific caution is applicable to the step. The number(s) contained within the circle correspond to an explanation of the caution which is provided on the procedure.



FLOWCHART BREAK/CONTINUE

Designates that a flowchart branch is continued at the identical symbol elsewhere on the page.

ATTACHMENT 4

ABBREVIATION LIST

ADS	- Automatic Depressurization System
BLDG	- Building
CRD	- Control Rod Drive
COL	- Column
COMB	- Combination/Combined
DIFF	- Differential
DRWL	- Drywell
ECCS	- Emergency Core Cooling Systems
ECG	- Event Classification Guide
FT	- Feet
FRVS	- Filtration, Recirculation, and Ventilation System
HCU	- Hydraulic Control Unit
HPCI	- High Pressure Coolant Injection System
HVAC	- Heating, Ventilation, Air Conditioning
IN (")	- Inches
IRM	- Intermediate Range Monitoring System
LBS	- Pounds
LPCI	- Low Pressure Coolant Injection System
MAX	- Maximum
MIN	- Minimum
MSIV	- Main Steam Isolation Valve
MSL	- Main Steam Line
M/U	- Main Unit
MWe	- Megawatts electric
NPSH	- Net Positive Suction Head
PCIS	- Primary Containment Isolation System
PRESS	- Pressure
PSIG	- Pounds per square inch - gauge
RAD	- Radiation/Radioactivity
RCIC	- Reactor Core Isolation Cooling System
RECIRC	- Recirculation System
REV	- Revision
RFPT	- Reactor Feed Pump Turbine
RPM	- Revolutions Per Minute
RPV	- Reactor Pressure Vessel
RSCS	- Rods Sequence Control System
RWCU	- Reactor Water Cleanup System
RWM	- Rod Worth Minimizer
S/D	- Shutdown
SDV	- Scram Discharge Volume
SECT	- Section
SJAE	- Steam Jet Air Ejector
SLC	- Standby Liquid Control System
SRV	- Safety Relief Valve
SRM	- Safety Relief Valve
SUPP	- Suppression
TAF	- Top of Active Fuel
TEMP	- Temperature
°F/HR	- Degrees Fahrenheit per Hour

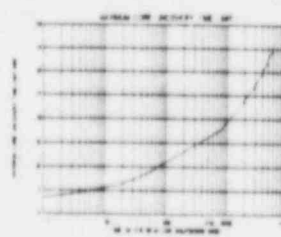
ATTACHMENT 5

COMMANDS LIST

BYPASS
CLOSE
COMMENCE
CONTINUE
CONTROL
DEFEAT
DEPRESSURIZE
DIRECT
ESTABLISH
INCREASE
INITIATE
INJECT
INSERT
ISOLATE
LOWER
LINE UP
MAINTAIN
OPEN
OPERATE
PLACE
PREVENT
RAISE
RAPIDLY
REDUCE
RESET
RESTORE
RETURN
RUNBACK
SCRAM
SHUTDOWN
SLOWLY
START
STOP
TERMINATE
TRIP
VERIFY

ATTACHMENT 6

SAMPLE FLOWCHART



2. 在 10 个数据中，找出最大值和最小值，并输出。

IP-60-22-100	
REALTOR FL 300-900	
WORK (X) YES LEADERSHIP (X) YES	
REV 1	REV DATE 1-85

ATTACHMENT 7

SAMPLE EOP SUPPORT PROCEDURE (300 series)

DE-ENERGIZATION OF SCRAM SOLENOIDS

OP-EO.ZZ-302(Q)

Remarks:

Prepared By:	<u>Patrick B. Gardner</u>	<u>4/3/85</u>	
		Date	
Reviewed By:	<u>SRO</u>	<u> </u>	
		Date	
Reviewed By:	<u>Operating Engr - Hope Creek</u>	<u> </u>	
		Date	
ALARA Review:	<u>Radiation Protection Dept.</u>	<u> </u>	
		Date	
Reviewed By:	<u>Site Engineering Dept.</u>	<u> </u>	
		Date	
Reviewed By:	<u>SOAE</u>	<u> </u>	
		Date	
SORC Review:	<u>Chairman</u>	<u> </u>	<u> </u>
		Date	Mtg. No.
Approved By:	<u>Operations Mgr - Hope Creek</u>	<u> </u>	
		Date	

DE-ENERGIZATION OF SCRAM SOLENOIDS

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DE-ENERGIZATION OF SCRAM SOLENOIDS

1.0 PURPOSE

This procedure outlines the steps necessary to cause control rod insertion by the removal of fuses associated with the scram inlet and outlet valve solenoids.

2.0 PREREQUISITES

- 2.1 Scram condition present and not all rods inserted to or beyond notch position 02.
- 2.2 Scram Discharge Volume vent and drain valves are closed.

3.0 PRECAUTIONS AND LIMITATIONS

- 3.1 The Nuclear Shift Supervisor shall log the starting and completion times of this procedure.
- 3.2 All steps in this procedure are to be completed in sequence unless otherwise specified.

4.0 EQUIPMENT REQUIRED

- 4.1 Rubber gloves
- 4.2 Fuse pullers
- 4.3 Flashlight

5.0 PROCEDURE

5.1 De-energization of Scram Solenoids

- 5.1.1 Ensure that all Prerequisites have been satisfied IAW Section 2.0.

NOTE 5.1.2

Inward control rod motion should be observed with the removal of the fuses.

- 5.1.2 At Local Panel H11P609 Bay A (Control Room)
REMOVE fuses labeled

F-31 C71A-F18A
F-49 C71A-F18E

- 5.1.3 At Local Panel H11P609 Bay F (Control Room)
REMOVE fuses labeled
 - F-28 C71A-F18C
 - F-42 C71A-F18G
- 5.1.4 At Local Panel H11P611 Bay F (Control Room)
REMOVE fuses labeled
 - F-29 C71A-F18H
 - F-47 C71A-F18D
- 5.1.5 At Local Panel H11P611 Bay A (Control Room)
REMOVE fuses labeled
 - F-30 C71A-F18F
 - F-44 C71A-F18B
- 5.1.6 When all control rods are inserted to or beyond notch position 02, re-install the fuses using Attachment 1.

6.0 ATTACHMENTS

- 6.1 Attachment 1, Scram Solenoid Energization

7.0 REFERENCES

- 7.1 P&IDs: None
- 7.2 Logic Diagrams: None
- 7.3 Electrical Diagrams: None
- 7.4 HCGS Vendor Manuals: None
- 7.5 Panel Drawings: None
- 7.6 Valve Index: None
- 7.7 DITS: None
- 7.8 GE Documents: 791E414AC Sht. 6, Rev. 5
Sht. 14, Rev. 5
- 7.9 HCGS System Description: None
- 7.10 FSAR: None
- 7.11 Standard Technical Specifications: None
- 7.12 Other References: None

ATTACHMENT 1

SCRAM SOLENOID ENERGIZATION

- 6.1.1 At Local Panel H11P609 Bay A (Control Room) INSTALL fuse labeled //F-31 C71A-F18A// into position F-31.
- 6.1.2 At Local Panel H11P609 Bay A (Control Room) INSTALL fuse labeled //F-49 C71A-F18E// into position F-49.
- 6.1.3 At Local Panel H11P609 Bay F (Control Room) INSTALL fuse labeled //F-28 C71A-F18C// into position F-28.
- 6.1.4 At Local Panel H11P609 Bay F (Control Room) INSTALL fuse labeled //F-42 C71A-F18G// into position F-42.
- 6.1.5 At Local Panel H11P611 Bay A (Control Room) INSTALL fuse labeled //F-30 C71A-F18F// into position F-30.
- 6.1.6 At Local Panel H11P611 Bay A (Control Room) INSTALL fuse labeled //F-44 C71A-F18B// into position F-44.
- 6.1.7 At Local Panel H11P611 Bay F (Control Room) INSTALL fuse labeled //F-29 C71A-F18H// into position F-29.
- 6.1.8 At Local Panel H11P611 Bay F (Control Room) INSTALL fuse labeled //F-47 C71A-F18D// into position F-47.

INITIAL	VERIFY
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INITIAL	VERIFY

INITIAL	VERIFY
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INITIAL	VERIFY
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INITIAL	VERIFY
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INITIAL	VERIFY
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INITIAL	VERIFY

INITIAL	VERIFY
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Performed By _____
Signatures

Date _____

Reviewed By Senior Nuclear Shift Supervisor

Date _____