THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

PERRY NUCLEAR POWER PLANT

PROCEDURES GENERATION PACKAGE

Date Prepared: August 1985

Procedures Generation Package

Table of Contents

Procedures Generation Package

1.0 PURPOSE

To provide guidance in the development and implementation of Plant Emergency Instructions (PEIs).

2.0 SCOPE

This document outlines the program at Perry Nuclear Power Plant for developing PEIs based on plant specific technical guidelines developed from generic guidelines prepared by the BWROG Emergency Procedures Committee. Specific details are contained in the respective attachments.

The following elements are identified and described in this implementing document:

1. Plant-Specific Technical Guidelines
2. Writers Guide for PEIs
3. PEI Verification Program
4. PEI Validation Program
5. PEI Training Program

3.0 RESPONSIBILITY

3.1 The Operations Section General Supervisor is responsible for implementing the requirements of this document.

4.0 REFERENCES

4.1 INPO Guideline 82-016, Rev. 1, Emergency Operating Procedures Implementing Guidelines.

4.2 INPO Guideline 83-007, Emergency Operating Procedures Generation Package Guidelines.

4.3 INPO Guideline 82-017, Emergency Operating Procedures Writing Guidelines.

4.4 INPO Guideline 83-006, Emergency Operating Procedures Validation Guidelines.

4.5 INPO Guideline 83-004, Emergency Operating Procedures Verification Guidelines.

4.6 NUREG-0899.

4.7 NUREG-0737, Supplement 1.

4.8 Letter, Davidson (CEI) to Schwencer (NRC), 11/16/82.

4.9 Letter, Youngblood (NRC) to Edelman (CEI), 5/16/83.

4.10 Letter, Edelman (CEI) to Youngblood (NRC), 5/27/83, PY-CEI/NRR-045 L.

4.11 PAP-0507, Preparation, Review, Approval, Revision and Cancellation of Instructions.

5.0 DEFINITIONS

5.1 Control Room Simulator

A device that dynamically models the plant functions as presented in the control room.

5.2 Emergency Operating Procedure Guidelines (EPGs)

Generic guidelines developed by the BWR Owner's Group that provide technical bases for the development of PEIs.

5.3 Perry Specific Technical Guidelines (PSTG)

Guidelines developed from the EPG's which have been modified to reflect the Perry design. Included as Attachment 6.

5.4 Plant Emergency Instructions (PEIs)

Symptom-based instructions directing operator actions necessary to mitigate consequences of transients and accidents that may cause plant parameters to exceed reactor protection setpoints, engineered safety feature setpoints, or other appropriate technical limits.

5.5 Scenario

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

5.6 Simulator Validation

Method of validation whereby control room operators perform actual control functions on simulator equipment during a scenario for an observer/review team.

5.7 Source Documents

Documents or records upon which PEIs are based.

5.8 Symptoms

Plant characteristics that directly or indirectly indicate plant status.

5.9 Technical Accuracy

A characteristic of PEIs that indicates the degree to which proper incorporation of generic and/or plant-specific technical information from PEI source documents and plant hardware has been made.

5.10 Validation

The evaluation performed to determine that the actions specified in the PEI can be followed by trained operators in order to manage the emergency conditions.

5.11 Verification

The evaluation performed to confirm the written correctness of the PEIs and to ensure that the generic and/or plant-specific technical aspects have been properly incorporated.

5.12 Walk-Through Validation

Method of validation whereby control room operators conduct a step-by-step enactment of their actions during a scenario for an observer/ review team without necessarily carrying out the actual control functions.

5.13 Written Correctness

A characteristic of PEIs that indicates the degree to which proper incorporation of information from the writers guide for PEIs and other appropriate administrative policies has been made.

6.0 GENERAL

6.1 The Procedures Generation Package is broken down into five main sections: plant specific technical guidelines, a writer's guide, a verification plan, a validation plan, and a training plan. Each will be briefly described here and followed by a detailed description later in this document.

6.2 The Perry Specific Technical Guidelines will be developed from Revision 3 of the Emergency Procedures Guidelines (EPGs) prepared by the BWR Owner's Group Emergency Procedures Committee. When Revision 4 is completed and approved, the revised information will be incorporated using the established revision, review, and approval process (PAP-0507).

The methodology for development of the Perry guidelines is presented as Attachment 5. The actual guidelines are included as Attachment 6.

Deviations between the EPGs and the Perry Specific Technical Guidelines will be identified, analyzed to determine the safety significance of the deviations, and technically justified. They are included as Attachment 7.

6.3 The PEI Writer's Guide developed here will be incorporated into the permanent plant procedures manual as an Operations Section Administrative Procedure, Preparation of Plant Emergency Instructions. This will promote consistency among the PEI and ensuing revisions, independent of the composition of the writing team. The writer's guide will be revised, as necessary, based on feedback from training evolutions, operating experience, and validation. It will specify format, organization, and level of detail. The approved writer's guide is included as Attachment 1.

6.4 The Verification Plan is the evaluation performed to confirm the technical correctness of the PEIs and to ensure that applicable generic and plant-specific technical information has been incorporated properly. This evaluation also checks that the human factor aspects presented in the writer's guide have been applied. It will specify: how the verification will be performed and documented, how discrepancies will be resolved, and how the results are reviewed and used to generate revisions to PEIs. The Verification Plan is included as Attachment 2.

6.5 The Validation Plan is the evaluation performed to determine that the actions specified in the PEIs can be performed by the operator in order to manage the emergency conditions effectively. It will validate those parts of the PEIs not covered by any technical evaluation of the generic technical guidelines. It will specify: how (use of simulator or control room walk-through) steps will be

validated and documented, how discrepancies will be resolved, and how the results are reviewed and used to generate revisions to the PEIs, changes in conduct of operations (including shift composition), and modifications to the control room design. The Validation Plan is included as Attachment 3.

The process used to identify plant-specific parameters and other plant-specific information and control capability needs and how the characteristics of needed instruments and controls will be determined will be described in the Detailed Control Room Design Review Program Plan.

6.6 The Training Plan provides a description of the training objectives and the methods used to accomplish these objectives. Also covered are the methods for providing training when PEIs are revised and the evaluations to be performed to indicate satisfactory completion of the training objectives. The Training Plan is included as Attachment 4.

7.0 ATTACHMENTS

7.1 Attachment 1 - OAP-0507, Preparation of Plant Emergency Instructions.

7.2 Attachment 2 - PEI Verification Plan.

7.3 Attachment 3 - PEI Validation Plan.

7.4 Attachment 4 - PEI Training Plan.

7.5 Attachment 5 - Perry Specific Technical Guidelines Development Methodology.

7.6 Attachment 6 - Perry Specific Technical Guidelines.

7.7 Attachment 7 - Deviations from the Generic Guidelines.

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

PERRY NUCLEAR POWER PLANT OPERATIONS MANUAL

TITLE: PREPARATION OF PLANT EMERGENCY INSTRUCTIONS

REVISION: 1 EFFECTIVE DATE: 6-28-85

PREPARED: R. A. Stratman

SUBMITTED: N/A
PERRY PLANT TECHNICAL DEPARTMENT

SUBMITTED: R. J. Tadych 3 June 85
PERRY PLANT OPERATIONS DEPARTMENT

REVIEWED: B. D. Walrath 6-12-85
NUCLEAR Q.A. DEPARTMENT

APPROVED: C. M. Shuster 6-13-85
MANAGER - NUCLEAR Q.A. DEPARTMENT

PORC REVIEW AND RECOMMENDATION FOR APPROVAL MEETING NUMBER: 85-43

APPROVED: J. J. Waldron
MANAGER - PERRY PLANT TECHNICAL DEPARTMENT

APPROVED: M. D. Lyster
MANAGER - PERRY PLANT OPERATIONS DEPARTMENT

Preparation of Plant Emergency Instructions

OAP-0507

Table of Contents

10CFR50.59 Applicability Check

	Yes	No
Is there a change to the plant as described in the FSAR?	___	X
Is there a change to a procedure/instruction as described in the FSAR?	___	X
Is there a test or experiment not described in the FSAR?	___	X
Is there a change to the Technical Specifications?	___	X

(If yes, perform a 10CFR50.59 Safety Evaluation per PAP-0305)

Applicability Check
Performed By: R. J. Tadych   Date: 3 Jun 85

SCOPE OF REVISION:

Rev. 1 - This revision incorporates comments made by the NRC on the Procedures Generation Package for the Plant Emergency Instructions of which this procedure was a part. The major changes include:

1. The incorporation of the details in OAP-0502 directly, rather than by reference.
2. Clarification of logic terms.
3. Incorporation of the new format being used for the PEIs.
4. Clarification of the use of numerical values.
5. Clarification of referencing and branching.

PREPARATION OF PLANT EMERGENCY INSTRUCTIONS

1.0 PURPOSE

The purpose of this document is to provide administrative and technical guidance on the preparation of Plant Emergency Instructions (PEIs).

2.0 SCOPE

This procedure applies to the preparation of PEIs, found in the PNPP Operations Manual, Volume 4, Part C. The requirements for review, approval, revision and cancellation of instructions are contained in PAP-0507, Preparation, Review, Approval, Revision and Cancellation of Instructions.

3.0 RESPONSIBILITY

3.1 The Operations Section General Supervisor is responsible for implementation of this procedure.

4.0 REFERENCES

4.1 INPO Guideline 82-017, Emergency Operating Procedures Writing Guidelines.

4.2 OAP-0502, Preparation of System Operating Instructions.

4.3 BWROG Emergency Procedures Guidelines, Appendix B, Section 3.0.

4.4 PAP-0507, Preparation, Review, Approval, Revision, and Cancellation of Instructions.

5.0 DEFINITIONS

Not applicable.

6.0 DETAILS

6.1 Instruction Organization

The following section headings will be used for PEIs.

****************************BEGINNING OF FORMAT****************************

Title of Instruction

1.0 SCOPE

An explanation of the intent of the instruction.

2.0 ENTRY CONDITIONS

Those alarms, indications, operating conditions, automatic system actions, or other unique symptoms to be used by the operator in order to determine whether or not the instruction is applicable to the current plant conditions.

3.0 OPERATOR ACTIONS

Short, concise, identifiable instructions that give appropriate directions to the operator to place the plant in a safe condition.

4.0 ATTACHMENTS

Contingency actions required as a result of degraded conditions beyond those covered in OPERATOR ACTIONS.

5.0 FIGURES

Graphs or other information required by the operator to implement the PEI. In some cases figures may be placed in the body of the instruction, Sections 3.0 or 4.0, when appropriate.

********************************END OF FORMAT****************************

6.2 PEI Applicability

6.2.1 PEIs shall be written so that they are applicable to Unit 1.

6.2.2 The PEIs shall be written such that they can be performed by the minimum operating shift complement as defined in the Perry Nuclear Power Plant Technical Specifications.

6.2.3 The PEIs shall be written from the perspective of the control room operators. The directions and level of detail provided shall be consistent with this approach. Steps shall be written which account for the as-built configuration of the plant. Care shall be taken to ensure that no steps are written which direct the use of equipment controls, indicators or instrumentation which is not available.

6.3 Equipment Numbering (MPLs)

6.3.1 The following shall be used for the identification prefixes of Unit 1, Unit 2 and common components:

a. Unit 1 components shall use the prefix 1.
b. Unit 2 components shall use the prefix 2.
c. Common components shall use a blank as the prefix.

6.4 Use of Names and Component Identification Numbers

Names of valves, equipment, motor control center, etc., shall be taken from existing labels. Panel controls will be described by the exact nameplate label written in CAPS. Manual valves and other controls will be described by the component label with the first letter of each word capitalized; the writer may choose to write out abbreviated names for clarity (e.g., Heater 2A Drain to IP Condenser vs. Htr 2A Drn to IP condr). The author may refer to a system component that has been introduced in the section by a functionally abbreviated name in a step not requiring action for that component, (e.g., When both Heater 2A drains are shut, . . . vs. When both Heater 2A Drain to IP Condenser and Heater 2A Drain to Heater 1A are shut, . . .).

6.4.1 Valve Numbers

Valves which lack a GAI-unique MPL number will be identified by their vendor number. When a GAI P&ID shows the GAI valve number, the PEI will be revised to reflect the GAI valve number.

6.4.2 Panel Names

Panels should be identified in the first usage by their name and full panel number such as "ECCS Benchboard (1H13-P601)". Subsequent call outs within an instruction should be by the P number only, such as "P601", when no confusion is likely. (The P numbers are not unique throughout a unit.)

6.4.3 Electrical Names

Electrical equipment may have two numerical names assigned: the "electrical name" (e.g., F1B08, 100-PY-B) and the MPL number (e.g., 1R42-S001). When a separate "electrical name" exists, the PEI will use this name exclusively in Sections 1.0 through 7.0.

To standardize the use of hyphens in the "electrical name", use the following guide:

1. Hyphens should be used in names of:

Prefix-suffix buses*	(D-1-B, EF-1-A)
Transformers	(100-PY-B, LF-1-B)
Battery chargers	(FD-1-B)
MCC compartments	(F1B08-FF)

2. Hyphens should not be used in names of:

prefix only buses*	(L10, EH13)
MCCs	(F1B08)
breakers	(D1B02, L1001)

3. Spaces are not used in typing "electrical names".

*prefix-suffix buses are those which have a letter on each side of a numeral, such as D-1-B. Prefix only buses are those which have letters only before the numerals, such as L10 or XH11.

6.5 Use of Operating Terms

6.5.1 The following terms are to be used when describing an action:

1. Open - means to open a valve full open.

2. Jog open - means to open the valve in discrete increments. (i.e., by stopping valve travel periodically.) Use adverbs such as "slowly" when needed.

3. Throttle open - means to open to a position less than full open.

4. Close, jog close, throttle close as in a, b, and c.

5. When speaking of controllers, specify whether talking about the automatic setpoint or the manual control setpoint. Generally, use "adjust" for the automatic setpoint, because the operator is moving a thumbwheel; use "raise/lower" for the manual setpoint because the operator is pushing a raise/lower pushbutton.

6. Take...to - means to momentarily position and release the control switch. This phrase is to be used with control switches that spring return to another position.

7. Place...to or in - means to position and release the control switch. This phrase is to be used with control switches that maintain the last position in which it is placed.

8. Hold...in - means to position and hold the control switch until directed to release it. This phrase is to be used for control switches that spring return to another position.

6.5.2 The following terms are to be used when describing the status of a system or component:

1. In service/out of service: To state that equipment is or is not functioning in the plant cycle, e.g., demineralizer.

2. Running/shutdown: To describe the condition of rotating equipment, e.g., pump, turbine, fan, etc.

3. On line/off line: To state that a generating unit is or is not tied into the power grid, e.g., generator.

4. On/off: To state the condition of simple equipment, e.g., recorders and lights.

5. Energized/de-energized: To state the condition of electrical circuits, e.g., electrical bus and logic circuit.

6. Available: The state of condition of being ready and able to be used (placed into operation) to accomplish the stated (or implied) action or function; as applied to a system, this requires the operability of necessary

support systems (electrical power supplies, cooling water, lubrication, etc.)

6.6 Use of Cautions and Notes

Cautions and notes generally do not direct action. Use cautions and notes in the instruction as follows:

****

CAUTION

An explanation that pertains to personnel or equipment safety and precedes the applicable step. The caution statement will be distinguished from the instruction by the two lines of asterisks shown.

****

NOTE: An explanation that pertains to methods of operation or implementation of instructions. A note may precede or follow the applicable step. This typed block alongside the NOTE heading will be inset on the left margin.

Notes and Cautions should be written so that they are complete on one page and can be read without interruption by intervening steps.

6.7 Page Margins, Headings and Endings

Margins should be about one inch from the left edge and one inch from the right edge for all pages. Headings (page numbering) and endings of each page should be about one inch from top and bottom. This is to avoid problems when the instructions are duplicated and bound.

6.8 Page Numbering

Page numbering shall appear in the upper right hand corner of each page. Page numbering shall utilize a 1, 2, ... X - LAST method.

6.9 Instruction Step Numbering

Instruction steps in a section or subsection will be numbered and indented as follows:

1. Verify . . . .

    a. Check . . . .

        1) Position . . . . (not desirable)

The same step number scheme is to be used in both the right and left columns of the right hand pages of the instruction.

Every effort should be made to avoid using the 1) level of indenting.

6.10 Page Format

A dual page, dual column format shall be used.

6.10.1 The left page shall contain the conditional steps which are applicable while performing some or all of the steps on the right hand page. These steps on the left page correspond to the "If while....then" steps in the boxes of the plant specific technical guidelines.

6.10.2 The right hand page contains a dual column format.

1. "Instruction Step" Column

The left-hand column of the dual-column format will contain the Instruction Steps. The following rules are established for this column in addition to the general rules above:

a. Expected indications should be presented in this column.
b. Operator actions in this column should be appropriate for the expected indications.

2. "Contingency Steps" Column

Contingency Steps will be presented in the right-hand column of the dual-column format. Contingency Steps 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 Steps occurs in conjunction with tasks involving verification, observation, confirmation and monitoring.

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

6.11 Instruction Step Length and Content

Instruction steps will 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:

1. Instruction steps should deal with only one idea.

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

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

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

5. For steps that involve an action verb relating to three or more objects, the objects should be tested separately.

6. Limits should be expressed quantitatively whenever possible.

7. Mandatory sequence of steps is assumed unless otherwise stated.

8. Identification of components and parts should be complete.

9. Expected results of routine tasks need not be stated.

10. 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.

11. 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.

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

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

6.12 Use of Logic Terms

The logic terms and, or, not, if, if not, when, before and then are often necessary to describe precisely a set of conditions or sequence of actions. When logic statements are used, logic terms will be highlighted so that all the conditions are clear to the operator. Emphasis will be achieved by underlining.

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.

The dual-column format used on the right hand pages equates to the logic: if not the action in the left-hand column, then follow the action specified in the right-hand column.

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 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. The use of the word or shall always be in the inclusive sense. To specify the exclusive "or", the following may be used: "either A or B but not both".

3. When action steps are contingent upon certain conditions or combinations of conditions, but the operator is to continue in the procedure if the condition or conditions are not met, then the step shall begin with the word if followed by a description of the condition or conditions, a comma, the word then, followed by the action to be taken.

4. When action steps are contingent upon certain conditions or combinations of conditions, and the operator is not to continue in the instruction until these conditions are met, then the step shall begin with the logic word "When".

5. When action steps are to be taken before a condition or a combination of conditions exist, then the steps shall begin with the logic word "Before"; however, the use of "Before" does not infer or require that any specific margin be observed.

6. 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.

7. 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.

6.13 Calculations

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

6.14 Use of Underlining

Underlining shall be used for emphasis of logic terms, and the words CAUTION, NOTE, and concurrently.

6.15 Referencing and Branching to Other Instructions or Steps

6.15.1 Referencing is used when additional instructions or steps will be executed concurrently with the instruction presently being used.

Referencing steps either within the instruction being used or another instruction should be minimized.

Before deciding to direct the operator to reference another instruction, the following guidelines should be considered:

1. The total number of instructions to be in use at one time should be considered and minimized as much as possible.

2. If the information in question is material that is part of the expected knowledge of the adequately trained operator, a reference may not be necessary.

3. If the information to be referenced can be included in the Plant Emergency Instruction without greatly increasing its length, a reference should not be used.

4. Reference complete instructions or sections of an instruction, if possible. Tabbing referenced instructions or sections of instructions should be considered.

6.15.2 Branching will be used when the operator is to exit an instruction or step and enter another instruction or step. The following are typical branching phrases:

If . . . then proceed to . . .
If . . . then exit . . . and enter . . .
If . . . then . . . and proceed to . . .

Branching to another step or instruction should be minimized.

Before deciding to direct the operator to branch to either another step in the Plant Emergency Instruction or another instruction, the following guidelines should be considered:

1. If the Plant Specific Technical Guideline calls for an exit to another instruction, the branching should be considered.

2. If a sequence of actions is covered completely by another existing instruction and if the original instruction is not to be reentered, consider branching to the instruction.

3. If the information to be used can be included in the instruction without either greatly increasing its length or altering the purpose of the instruction, then a branch should not be used.

6.16 Level of Detail

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

To assist in determining the level of PEI detail, the following general rules apply:

1. For simple evolutions within the knowledge level of the operator which can be performed in the Control Room, a simple direction without details is acceptable. (i.e., "Start HPCS in the test mode from the CST to the Suppression Pool".)

2. For control circuitry that executes an entire function upon actuation of the control switch, the action verb appropriate to the component together with a brief explanation of the function to be performed suffices. Further amplification explaining how to operate the control device is neither required or desired. (i.e., "Open HPCS TO CNTMT OTBD ISOL VALVE, #E22-F004 to align HPCS to the RPV".)

3. Standard practices for observing 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.

6.17 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 and within the reading precision of the operator.

Figures include graphs, drawings, diagrams, flowcharts and illustrations. The following guides are presented for uniformity:

(If possible, figures and tables should be arranged so that they can be used without having to rotate the pages).

1. The figure number and its title are placed three line spaces below the figure field.

2. The figure field must not violate specified page margins.

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

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

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

6. Labeling of items within the figure should be accompanied by arrows pointing to the item.

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

8. In general, items within the figure should be labeled.

9. Lines in figures should be reproducible.

Tables should be typed using the following rules.

1. Type style and size should be the same as that for the rest of the instruction.

2. The table number and title should be located above the table field and three line spaces below 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, run-over 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.

6.18 Numerical Values

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

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

2. The number of significant digits should be determined based on number of significant digits available from the display using the guidelines listed below:

   a. For meters the number of significant digits corresponds to one half of the smallest division on the meter face.
   b. For digital readouts the number of significant digits is the number of digits output by the display.
   c. In cases where there is more than one display for the parameter, the number of significant digits should correspond to the display with the least number of significant digits.
   d. In cases where the value of a parameter at which an action is required is known to more significant digits than is available from the most limiting display, then the value should be rounded in a conservative direction to the number of significant digits corresponding to the most limiting display. An exception to this rule exists when the values are well known to the operator. Examples of such values are the high drywell pressure scram trip at 1.68 psig and the low RPV water level scram trip at 177.7 inches.

3. Acceptable 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 acceptable values as limits. Examples: 510°F maximum; 300 psig minimum; 580° to 600°F.

4. 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.

6.19 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. Abbreviations other than those listed in Attachment 1 of OAP-0502 and Table I of the EPGs should not be used. Consistency should be maintained throughout the instruction.

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 or 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 beneficial by saving reading time, ensuring clarity when space is limited, and communicating mathematical ideas.

6.20 Rotation of Pages

Rotation of printed matter should be avoided for PEIs.

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

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

2. The page margins do not rotate.

3. Page identification and numbering will not be rotated.

6.21 Hyphenation

Hyphenation of words should be avoided to facilitate operator reading.

6.22 Use of Foldout Pages

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

6.23 Use of Oversized Pages

Oversize pages should not be used. They should be reorganized or reduced to a standard page. If this cannot be done, a foldout page should be used.

6.24 Use of Reduced Pages

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

6.25 Reproduction

Reproduction will be done on machines producing legible, single-sided copies.

6.26 Revision Markings

Revision bars shall be placed as follows:

For the left hand page place, the revision bar to the right of the column changed.

For the right hand page:

1. To indicate a change in the left column, place a bar in the left margin alongside the change.

2. To indicate a change in the right column, place a bar in the right margin alongside the change.

6.27 Records

The following documents are generated by this procedure:

Quality Assurance Records

None

Non Quality Records

None

Records identification and dispcsition are accomplished in accordance with the Records Retention/Disposition Schedule (RR/DS) and handled in accordance with PAP-1701, Plant Records Management.

7.0 ATTACHMENTS

None

PEI Verfication Plan

1.0 PURPOSE

The purpose of this verification plan is to guide the administrative process used in the verification of the Plant Emergency Instructions (PEIs) and to assign responsibilities for carrying out the activities of the process.

2.0 SCOPE

This verification plan identifies and directs the phases of the verification process.

3.0 RESPONSIBILITY

3.1 The Manager, Perry Plant Operations Department shall approve all PEIs and revisions after recommendation for approval by PORC.

3.2 The Operations Section General Supervisor shall have overall responsibility for the PEI verification process. He shall determine when a verification is required and its scope. He shall approve the verification resolutions.

3.3 The Nuclear Design and Analysis Section General Supervising Engineer shall manage the technical evaluation portion of the process.

3.4 The Perry Training Section General Supervisor shall manage the written correctness evaluation portion of the process.

4.0 REFERENCES

4.1 INPO Guideline 83-004, Emergency Operating Procedures Verification Guidelines.

4.2 OAP-0507, Preparation of Plant Emergency Instructions.

5.0 DEFINITIONS

See Section 5.0 of the Procedures Generation Package.

6.0 DETAILS

Program Description

When developing this PEI verification program, the following major items were considered:

a. How PEI verification will be performed.
b. How completion of the PEI verification process will be documented.
c. What process will be used in resolving discrepancies.

The verification plan is based on the industry document Emergency Operating Procedures Verification Guideline (INPO 83-004).

The PEI Verification Plan ensures the PEIs are written in accordance with Attachment 1, OAP-0507, Preparation of Plant Emergency Instructions and correctly implement Attachment 6, Perry Specific Technical Guidelines.

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

6.1 Preparation Phase

The preparation phase consists of the following activities:

a. Designate personnel to conduct the comparative evaluation.
b. Obtain and review the PEI source documents.

6.1.1 Designate Personnel

The GS/GSE's shall appoint the necessary personnel as evaluators to conduct the comparative evaluation. Personnel should be appointed based on operating experience and understanding of plant hardware, the EPGs, and the writers guide.

6.1.2 Obtain and Review the PEI Source Documents

The listing of PEI source documents is provided on Sheet a of the PEI Verification Forms (Attachment 1) and shall be reviewed by the personnel conducting the assessment phase. These documents shall be reviewed to ensure they are complete, current, and applicable. Any additional applicable source documents shall be added.

6.2 Assessment Phase

In the assessment phase the evaluator shall:

a. Make a general review of the PEI using the instruction-specific portion of the evaluation criteria (Attachment 1, Sheet b) and source documents.

b. Indicate on Sheet a of the PEI Verification Forms (Attachment 1) that the evaluation was performed, either by checking the acceptable column or by designating the appropriate discrepancy sheet(s) for any discrepancies identified.
c. Make a step-by-step review of the PEI using the step, caution, note-specific portion of the evaluation criteria (Attachment 1, Sheet b) and source documents.
d. Indicate for each step on Sheet b of the PEI Verification Forms (Attachment 1) that the comparative evaluation was performed, either by checking the acceptable column or by designating the appropriate discrepancy sheet for any discrepancies identified.
e. Complete Sheet c of the PEI Verification Forms (Attachment 1) and forward the verification forms with the discrepancy sheets to the appropriate supervisor.

6.3 Resolution Phase

In the resolution phase, the appropriate supervisor shall:

a. Review the evaluators' comments and resolve any conflicts between the writers' and evaluators' comments.
b. Forward potential solutions to the Operations Section General Supervisor for review and approval.
c. Update applicable source documents and instructions with approved resolutions as directed by the Operations Section General Supervisor.

6.4 Documentation Phase

The documentation developed throughout the process will be maintained in accordance with PAP-1701, Plant Records Management.

7.0 ATTACHMENTS

7.1 Attachment 1 - PEI Verification, Sheets a-c.

7.2 Attachment 2 - Evaluation Criteria Checklist.

7.3 Attachment 3 - Discrepancy Sheet.

PEI Verification

Page ____ of ____

PEI Title: ______________________________

PEI Number: ______________________ Revision: __________

Scope of Verification: ______________________________

____

PEI Source Documents Used:

1. EPGs, Rev. ______
2. FSAR, Section ______ Amendment ______
3. OAP-0507, Rev. ______
4.
5.
6.
7.

Evaluators: ______________________________

Instruction - General Verification

AREAS	ACCEPTABLE	DISCREPANCY SHEET #(s)
Legibility	______	______
PEI Format Consistency	______	______
Identification Information	______	______
Technical Accuracy	______	______

PEI Verification

PEI ____ Rev. ____
Page ____ of ____

STEP, CAUTION, NOTE-SPECIFIC VERIFICATION

STEP NUMBER, CAUTION, OR NOTE	WRITTEN CORRECTNESS		TECHNICAL ACCURACY	
	ACCEPTABLE	DISCREPANCY SHEET #	ACCEPTABLE	DISCREPANCY SHEET #

PEI Verification

PEI ____ Rev. ____

Page ____ of ____

Verification Completion Date: ____________________

Performed By: ____________________

____

____

____

Reviewed By: ____________________

All actions required by the verification have been completed and approved.

____________________ Operations Section General Supervisor

____________________ Date

Evaluation Criteria Checklist

NOTE: Reference 4.1 is abbreviated as VEG. Reference 4.2 is abbreviated as PEIF.

Area	Reference
I. INSTRUCTION - GENERAL	
A. Written Correctness	
1. Legibility	
a. Are the page margins maintained on all pages?	PEIF 6.7
b. Are the text, tables, graphs, figures, and charts legible to the evaluator?	PEIF 6.17
2. PEI Format Consistency	
a. Do the following sections exist in each PEI: SCOPE ENTRY CONDITIONS OPERATOR ACTIONS CONTINGENCIES ATTACHMENTS	PEIF 6.1
b. Is the operator actions section presented in a dual-column format?	PEIF 6.7
c. Is the cover sheet prepared in accordance with PAP-0507?	PAP-0507, Att. 1
d. Does each page correctly provide the following: 1) instruction number 2) revision number 3) page numbers	PEIF 6.8
II. STEP, CAUTION, NOTE-SPECIFIC	
A. Written Correctness	
1. Information Presentation	
a. Are instruction steps numbered correctly?	PEIF 6.10

Area	Reference
b. Are instruction steps constructed to comply with the following:	
1) Steps deal with only one idea.	PEIF 6.11, 6.16
2) Sentences are short and simple.	PEIF 6.11, 6.16
3) Operator actions are specifically stated.	PEIF 6.11, 6.16
4) Objects of operator actions are specifically stated.	PEIF 6.11
5) Objects of operator actions are adequately stated.	PEIF 6.11, 6.16
6) If there are three or more objects, they are listed.	PEIF 6.11
7) Abbreviations are correct and understandable to the operator.	PEIF 6.19
d. Do instruction steps make proper use of logic structure?	PEIF 6.12
e. Are cautions used appropriately?	PEIF 6.6
f. Are cautions placed properly?	PEIF 6.6
g. Are cautions constructed to comply with the following:	
1) They do not generally contain operator actions.	PEIF 6.6
2) They make proper use of emphasis.	PEIF 6.6
h. Are notes properly used?	PEIF 6.6
i. Are notes properly placed?	PEIF 6.6
j. Are notes worded so that they generally do not contain operator actions?	PEIF 6.6
k. Are numerical values properly written?	PEIF 6.18
l. Are values specified in such a way that mathematical operations are not required of the user?	PEIF 6.18
m. Is a chart or graph provided in the instruction for necessary operator calculations?	PEIF 6.13
n. Are units of measurement in the PEI the same as those used on equipment?	PEIF 6.18

Area	Reference
2. Procedure Referencing and Branching	
a. Do the referenced and branched instructions identified in the PEIs exist for operator use?	PEIF 6.15
b. Is the use of referencing minimized?	PEIF 6.15
c. Are referencing and branching instructions correctly worded?	PEIF 6.15
1) "concurrently" (referencing)	
2) "if ... then proceed to ... (branching)	
3) "if ... then exit ... and enter ... (branching)	
4) "if ... then ... and proceed to ... (branching)	
d. Do the instructions avoid routing users past important information such as cautions preceding steps?	VEG 3.2.5
e. Are the exit conditions compatible with the entry conditions of the referenced or branched instructions?	VEG 3.2.5

B. Technical Accuracy

<u>NOTE</u>: Perry Specific Technical Guidelines is abbreviated as PSTG.

Area	Reference
1. Entry Conditions or Symptoms Information	
a. Are the entry conditions of the PSTG listed correctly?	VEG 3.3.1
b. If additional entry conditions have been added, do they comply with the following:	VEG 3.3.1
1) Appropriate entry conditions for which the PEI should be used.	
2) Not excessive.	
2. Instructional Step, Caution, and Note Information	
a. Are PEI/PSTG differences:	VEG 3.3.2
1) documented	
2) explained	
b. Is the PSTG technical foundation (strategy) changed by the following changes in PEI steps, cautions, or notes:	VEG 3.3.2

Area	Reference
1) elimination 2) addition 3) sequence 4) alteration	
c. Are correct, plant-specific adaptions incorporated per PSTG: 1) systems 2) instrumentation 3) limits 4) controls 5) indications	VEG 3.3.2
d. Have licensing commitments applicable to PEIs been addressed?	VEG 3.3.2
e. Are differences between the licensing commitments and the PEIs or PSTG documented?	VEG 3.3.2
3. Quantitative Information	
a. Do the quantitative values, including tolerance bands, used in the PEI comply with applicable PEI source documents?	VEG 3.3.3
b. Where EPG values are not used in the PEI, are the PEI values computed accurately?	VEG 3.3.3
c. When calculations are required by the PEI, are equations presented with sufficient information for operator use?	VEG 3.3.3
4. Plant Hardware Information	
a. Is the following plant hardware specified in the PEI available for operator use: 1) equipment 2) controls 3) indicators 4) instrumentation	VEG 3.3.4

Discrepancy Sheet: Number _____

PEI: __________ Rev.: ____________ Step Number: ________________

Discrepancy: ____

____

____

____

____

____

____

Evaluator: ____ Date: __________

Resolution: ____

____

____

____

____

____

____

Supervisor: ____ Date: __________

Approved: YES NO (circle one)

Operations Section
General Supervisor: ________________________________ Date: __________

Resolution
Incorporated By: ___________________________________ Date: __________

PEI Validation Plan

1.0 PURPOSE

The purpose of this plan is to guide the administrative process used in the validation of the Plant Emergency Instructions (PEIs) and to assign responsibilities for the process.

2.0 SCOPE

This plan identifies the aspects of the validation program process and gives guidance that encompasses both validation methods, walk-through and simulator. Specific guidance for each method is presented in its appropriate checklists (See Attachments 1 and 2).

3.0 RESPONSIBILITY

3.1 The Manager, Perry Plant Operations Department shall approve all PEIs and revisions after recommendation for approval by PORC.

3.2 The Operations Section General Supervisor (GSO) shall be responsible for the following:

3.2.1 Managing the validation program and ensuring its smooth coordination with the training program.

3.2.2 Determining if validation is needed and its scope.

3.2.3 Selecting the validation method or methods.

3.2.4 Appointing and training an observer/reviewer team.

1. Three to six persons for the simulator validation method.
2. One person per operator for the walk-through validation method (one-on-one).

3.2.5 Completing applicable portions of the PEI Validation Form, Attachment 4.

3.2.6 Arranging for rotating operator crews through the training/validation sessions.

3.2.7 Scheduling simulator training time for validation purposes as appropriate.

3.2.8 Reviewing discrepancies and resolutions forwarded by observer/review personnel.

3.2.9 Ensuring that all revisions are reviewed by the NDAS Human Factors Unit.

3.2.10 Forwarding recommended resolutions and procedure changes for approval.

4.0 REFERENCES

4.1 INPO Guideline 83-006, Emergency Operating Procedures Validation Guideline.

4.2 BWR Owners Group Emergency Procedures Guidelines, Revision 3.

4.3 Results of PEI verification.

4.4 OAP-0507, Preparation of Plant Emergency Instructions.

5.0 DEFINITIONS

See section 5.0 of the Procedures Generation Package.

6.0 DETAILS

6.1 Program Description

When developing this PEI validation program, the following major items were considered:

1. How PEI validation will be performed.
2. How to appropriately use simulators or walk-throughs for validation.
3. How operating and training experience will be integrated into the program evaluation.
4. The evaluation criteria to be applied and the methods to be followed in resolving discrepancies.
5. How completion of the PEI validation process will be documented.

The program is based on the industry document Emergency Operating Procedures Validation Guideline (INPO 83-006).

This plan addresses the following objectives:

1. PEIs are usable, i.e., they can be understood and followed without confusion, delays, and errors.

2. A correspondence exists between the instructions and the Control Room/plant hardware.

3. The instructions presented in the PEIs are compatible with the shift staffing, qualifications, training, and experience of the operating staff.

4. A high level of assurance exists that the instructions will work, i.e., the instructions guide the operator in mitigating transients and accidents.

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

6.1.1 Preparation

Each validation method will use the applicable evaluation criteria presented in Table 1, and the scenario to be used will be recorded on the appropriate scenario form:

1. Walk-Through Scenario Form, (Attachment 1, Sheet d).

2. Simulator Scenario Form, (Attachment 2, Sheet d).

Further specific guidance in preparation for each validation method is presented in the checklist for the validation method (Attachments 1 and 2).

6.1.2 Assessment

Specific guidance for assessment using each validation method is presented on the checklist for each validation method (Attachments 1 and 2).

6.1.3 Resolution

Resolution will be accomplished by reviewing discrepancies and comments presented on the Discrepancy Sheet, (Attachment 4). The observer/reviewer will propose solutions, if needed, and forward to the Operations Section General Supervisor for approval, with the other designated documentation.

6.2 Validation Method Selection Criteria

The simulator validation methodology will generally be utilized in preference to the walk-through methodology. The simulator validation methodology allows for evaluation of both the operator and plant response to the PEIs in real time. However, some situations may dictate the use of a complete walk-through or a partial walk-through, partial simulator methodology. Some situations which may require the use of the walk-through methodology are listed below:

1. A particular instrument, control circuit or system is not simulated.

2. The simulator is not programmed to provide the correct response in a specific scenario, and this scenario is necessary to validate the PEIs.

3. A particular instrument, control circuit or system is not simulated correctly.

Validation will be utilized for those operator actions to be performed in the primary control area of the control room. Actions to be performed outside of this area will be validated through the control room task analysis or through the use of a plant walk-through methodology.

6.3 Scenario Selection Criteria

Scenarios should be selected such that all sections and major or representative paths in the PEIs are utilized. Other factors which should be considered when selecting scenarios are listed below.

1. The validation methodology to be utilized, simulator or walk-through, should be considered. Generally, more detail and direction will be needed in scenarios which are to be utilized in validations using the walk-through methodology.

2. The limitations of the simulator should be considered. Scenarios should be developed which fully exercise the PEIs while making the most use of the capabilities of the simulator. This will minimize the necessity to use the walk-through methodology.

3. The relative probabilities of the events described in the scenarios should be considered. Higher probability events should be chosen in preference to lower probability events. This will maximize the usefulness of the validation by exercising the PEIs in the most likely scenarios.

6.4 Documentation

The documented items needed to provide a history of the validation program are specified on each validation method checklist (Attachment 1 and 2). These items will be maintained as a validation package in the document control storage area.

7.0 ATTACHMENTS

7.1 Attachment 1 - Checklist for Walk-Through Method of Validation.

7.2 Attachment 2 - Checklist for Simulator Method of Validation.

7.3 Attachment 3 - PEI Validation Form.

7.4 Attachment 4 - Discrepancy Sheet.

7.5 Attachment 5 - Table 1, Evaluation Criteria.

Checklist for Walk-Through Method of Validation

1.0 PURPOSE

The purpose of this checklist is to provide guidance for the walk-through method of validating PEIs.

2.0 VALIDATION PROCESS

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

2.1 Preparation

The designated observer/reviewer will be responsible for the following:

1. Using and completing the PEI Validation Form (Attachment 1, sheet d).
2. Reviewing the scope of the validation designated by the Operations Supervisor or his representative.
3. Developing or modifying scenarios to support the scope of validation and filling out the Walk-Through Scenario Form (Attachment 2).
4. Modifying/selecting the developed evaluation criteria to support the scope of validation.
5. Developing or modifying scenarios which are time dependent to support the scope of the validation.
6. Selecting operators that are representative of the training level expected of all the operators.
7. Scheduling the needed resources for walk-through.
   a. observer/reviewer(s)
   b. operator(s) involved
   c. control room or control room simulator
   d. set of PEIs and support instructions

2.2 Assessment

The designated observer/reviewer will perform the following duties:

1. Brief the operator on the scope of validation and how the assessment will be conducted.

2. Follow the developed or modified scenario by first giving the plant initial conditions and then give the changing plant parameters while walking through the instructions.

3. At the completion of each scenario, perform the following actions:

   a. Evaluate the usability of the PEI's.
   b. Direct the operating crew to complete the evaluation criteria checklist included as Attachment 5.

4. Conduct a debriefing with the operators as soon as possible after each walk-through assessment, using the following sequence:

   a. Brief the participants on the purpose and objectives for debriefing.
   b. Have operators present problems and discrepancies which they had identified during assessment.
   c. Have operators provide possible reasons for problems.
   d. Present other problems and discrepancies identified during assessment.
   e. Have operators describe possible reasons for the other problems.
   f. Summarize the findings of the debriefing for the operators.

5. Record discrepancies and comments on Attachment 4.

2.3 Resolution

2.3.1 The designated observer/reviewer will perform the following duties:

1. Review comments and discrepancies.

2. Propose resolutions for the Operations Section General Supervisor.

3. Submit the validation package to the Operations Section General Supervisor.

2.3.2 The Operations Section General Supervisor will perform the following duties:

1. Review proposed resolutions with appropriate staff.

2. Select resolutions for incorporation in the PEIs.

3. Present the revised PEIs for review and approval.

3.0 DOCUMENTATION

The following documentation will be submitted as a validation package:

1. Completed PEI Validation Forms (Attachment 3).

2. Completed Discrepancy Sheets (Attachment 4).

3. Completed Walk-Through Scenario Forms (Attachment 1, Sheet d).

4. Evaluation Criteria used.

5. PEIs used for the validation.

Walk-Through Scenario Form

PEI- ______________________________

Title: ______________________________

Date: ____________________

Purpose: ____

____

Scenario Description: ________________________________

____

____

____

____

On attached sheets, list the following information:

- Initial Plant Conditions
- Narrative Summary
- Control Room Data Sheets which list plant conditions, events, etc.

Checklist for Simulator Method of Validation

1.0 PURPOSE

The purpose of this checklist is to provide guidance for the simulator method of validating PEIs.

2.0 VALIDATION PROCESS

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

2.1 Preparation

The designated observer/reviewer team will be responsible for the following:

1. Using and completing the PEI Validation Form (Attachment 3).
2. Reviewing the scope of the validation as directed by the Operations Section General Supervisor or his representative.
3. Developing or modifying scenario runs to support the scope of validation.
4. Completing the upper portion of the Simulator Scenario Form (Attachment 2, Sheet d) and forwarding to the simulator supervisor.
5. Developing data collection techniques.
6. Evaluating plant-to-simulator characteristics.
7. Making the required adjustments to the PEI set to use on the simulator.
8. Selecting and scheduling the operating crews.
9. Modifying/selecting the evaluation criteria to support the scope of validation.
10. Selecting operators that are trained to the level expected of all the operators.
11. Ensuring the PEIs and supporting procedures are available.

2.2 Assessment

The designated observer/reviewer team will perform the following duties:

1. Brief the operating crew on the scope of the validation and how the assessment will be conducted.

2. Ensure the observer/reviewer team does not interfere or interact with the operating crew.

3. Brief the operating crew on initial plant conditions for each scenario run.

4. At the completion of each scenario perform the following actions:

   a. Evaluate the usability of the PEIs.
   b. Direct the operating crew to complete the evaluation criteria checklist included as Attachment 5.

5. Conduct a debriefing with the operating crew as soon as possible after each scenario run using the following sequence:

   a. Brief the participants on the purpose and objectives for debriefing.
   b. Have operators present problems and discrepancies which they had identified during assessment.
   c. Have operators provide possible reasons for problems.
   d. Present other problems and discrepancies identified during assessment.
   e. Have operators describe possible reasons for the other problems.
   f. Summarize the findings of the debriefing for the operators.

6. Record discrepancies and comments on Attachment 4.

2.3 Resolution

2.3.1 The designated observer/reviewer team will perform the following duties:

1. Review comments and discrepancies.

2. Propose resolutions on Attachment 4 to the GSO.

3. Submit the validation package to the GSO.

2.3.2 The GSO will perform the following duties:

1. Review proposed resolutions with appropriate staff.

2. Select resolutions for incorporation in the PEIs.

3. Present the revised PEIs for review and approval.

3.0 DOCUMENTATION

The following documentation will be submitted with the validation package:

1. Completed PEI Validation Forms (Attachment 3).

2. Completed Discrepancy Sheets (Attachment 4).

3. Completed Simulator Scenario Forms (Attachment 2, Sheet d).

4. Evaluation criteria used.

5. PEIs used for the validation.

6. Data on plant-to-simulator characteristics.

Simulator Scenario Form

PEI- ______________________ Revision: __________

Title: ______________________

Date: ______________

Purpose: ______________________________________

____

Scenario Description: ______________________________

____

____

____

____

Initial Plant Conditions: __________________________

____

____

Simulator Sequence (to be completed by the simulator supervisor):

TIME   EVENT/REMARKS/OBSERVER COMMENT

PEI Validation Form

Page ____ of ____

PEI- ______________________________ Revision: ______________

PEI Title: ____

Scope of Validation: ____

____

Validation Method of Methods to be Used: ________________________

____

Designated Observer/Reviewer(s):

____

____

____

Preparation
Completed on: ________________ By: ____________________________

Assessment
Completed on: ________________ By: ____________________________

Operator(s) Involved:	Qualification: (SRO, RO, Other)
______________________________	____________________________
______________________________	____________________________
______________________________	____________________________
______________________________	____________________________
______________________________	____________________________
______________________________	____________________________

Resolution
Completed on: ________________ By: ____________________________

Documentation
Package
Forwarded on: ________________ By: ____________________________

Discrepancy Sheet: Number ______

PEI- ______________________________ Revision: _______________

Step Number: _______________________

Discrepancy:

____

____

____

____

____

Evaluator: ______________________________________ Date: __________

Resolution:

____

____

____

____

____

____

Supervisor: _____________________________________ Date: __________

Approved: YES NO (circle one)

Operations Section
General Supervisor: ______________________________ Date: __________

Resolution
Incorporated By: ________________________________ Date: __________

Table 1

Evaluation Criteria

Legend:

X - applicable to the validation method
O - not applicable to the validation method
W-T - walk-through validation method
S - simulator validation method

Applicable to: W-T	S	I. USABILITY
		A. LEVEL OF DETAIL
X	X	1. Is there sufficient information to perform the specified actions at each step?
X	X	2. Are the alternatives adequately described at each decision point?
X	X	3. Are the labeling, abbreviations, and location information as provided in the PEI sufficient to enable the operator to find the needed equipment?
X	X	4. Is the PEI missing information needed to manage the emergency condition?
X	X	5. Are the contingency actions sufficient to address the symptoms?
X	X	6. Are the titles and numbers sufficiently descriptive to enable the operator to find referenced and branched instructions?
		B. UNDERSTANDABILITY
X	X	1. Is the PEI easy to read?
X	X	2. Are the figures and tables easy to read with accuracy?
X	X	3. Can the values on figures and charts be easily determined?
X	X	4. Are CAUTION and NOTE statements readily understandable?

Applicable to:

W-T	S	
X	X	5. Are the PEI steps readily understandable?
		II. OPERATIONAL CORRECTNESS
		A. PLANT COMPATIBILITY
X	X	1. Can the actions specified in the instruction be performed in the designated sequence?
X	X	2. Are there alternate success paths that are not included in the PEIs?
X	X	3. Can the information from the plant instrumentation be obtained as specified by the PEI?
O	X	4. Are the plant symptoms specified by the PEI adequate to enable the operator to select the applicable PEI?
O	X	5. Are the PEI entry conditions appropriate for the plant symptoms displayed to the operator?
X	X	6. Is information or equipment not specified in the PEI required to accomplish the task?
O	X	7. Do the plant responses agree with the PEI basis?
X	X	8. Are the instrument readings and tolerances stated in the PEI consistent with the instrument values displayed on the instruments?
X	X	9. Is the PEI physically compatible with the work situation (too bulky to hold, binding would not allow them to lay flat in work space, no place to lay the PEIs down to use)?
X	O	10. Are the instrument readings and tolerances specified by the PEI for remotely located instruments accurate?

Applicable to:

W-T	S	
		B. OPERATOR COMPATIBILITY
X	X	1. If time intervals are specified, can the action steps be performed on the plant within or at the designated time intervals?
X	X	2. Can the action steps be performed by the operating shift?
X	X	3. If specific actions are assigned to individual shift personnel, does the PEI adequately aid in the coordination of actions among shift personnel where necessary?
X	X	4. Can the operating shift follow the designated action step sequences?
X	X	5. Can the particular steps or sets of steps be readily located when required?
X	X	6. Can the exit point be returned to without omitting steps when required?
X	X	7. Can instruction branches be entered at the correct point?
X	X	8. Are PEI exit points specified adequately?

PEI Training Plan

1.0 PURPOSE

To provide a description of the program for providing training on the Plant Emergency Instructions (PEIs).

2.0 SCOPE

This document describes the training objectives and the methods used to accomplish those objectives; describes the plan for addressing revisions to PEIs in the training program; and identifies the techniques for evaluating the training to ensure the objectives are being met.

3.0 RESPONSIBILITY

3.1 The Perry Training Section General Supervisor shall ensure that the objectives of this document are met both for initial and requalification training programs and for the initial PEIs and future revisions.

3.2 The Operations Section General Supervisor shall ensure that personnel are available to receive the training described by this plan.

4.0 REFERENCES

4.1 Letter, Youngblood (NRC) to Edelman (CEI), 5/6/83.

5.0 DEFINITIONS

None

6.0 DETAILS

6.1 Training Objectives and Methods

6.1.1 Students must understand the technical bases for the PEIs.

6.1.2 Students must have a working knowledge of the technical content of the PEIs.

6.1.3 Students must understand the philosophy of symptom oriented emergency instructions.

6.1.4 Students must be capable of executing the PEIs under operational conditions.

6.2 Initial PEI Training Program Outline

The training program for the PEIs consists of classroom and simulator segments.

6.2.1 Initial PEI Classroom Training Program

The initial PEI classroom training segment consists of approximately 30 hours of direct contact hours of instruction. The major topics covered in this training are listed below.

1. The philosophy of the event oriented PEIs as differentiated from event specific instructions.
2. The format and structure of the PEIs.
3. An explanation of each step in the PEIs. This explanation includes both the purpose and, where applicable, the technical basis for the step.
4. An explanation of the technical basis for each limit or curve utilized in the PEIs.
5. A walk-through discussion of several events demonstrating the use and interrelationships of the PEIs both to other PEIs as well as other event based off-normal instructions.

A comprehensive written examination is administered on completion of the classroom segment of the initial PEI Training Program. This examination tests the operators' knowledge of all the topics covered in the classroom segment.

6.2.2 Initial PEI Simulator Training Program

The initial PEI simulator training segment consists of 8 hours of direct contact instruction. This segment follows successful completion of the classroom segment. This instruction is given to crews which resemble as closely as possible the normal shift complement in the control room.

The scenarios used in this training are selected using the guidelines listed in the PEI Validation Plan, Attachment 3 of the PGP, Section 6.3.

Operator performance in the simulator segment is evaluated as part of the overall operator license training program.

6.3 PEI Revisions

Minor revisions (those that are editorial in nature) will normally be covered through required reading, briefings, or lectures. Major revisions (those that affect intent or significantly affect the sequence of actions) will be evaluated and will be addressed using the appropriate methods described in Section 6.2. Normally, major revisions will be covered initially through required reading, with supplemental simulator/walk-through exercises conducted in requalification training as required.

7.0 ATTACHMENTS

None

Perry Specific Technical Guidelines Development Methodology

1.0 PURPOSE

To describe the methodology to be used in converting the generic Emergency Procedure Guidelines (EPGs) Revision 3 developed by the BWR Owner's Group into the Perry Specific Technical Guidelines (PSTGs).

2.0 SCOPE

This document will address the means used to document and justify any deviations between the EPGs, and the PSTGs. For the purposes of this document, any plant specific information, setpoint, or calculation will be considered a deviation. The intent of this is to provide documentation for these types of information.

3.0 RESPONSIBILITY

3.1 The Operations Section General Supervisor (GSO) will assign an Evaluator and approve all Deviation Sheets.

3.2 The Nuclear Design and Analysis Section Lead Engineer will approve all setpoints, calculations, and design information (except as noted in 6.2.4).

4.0 REFERENCES

None

5.0 DEFINITIONS

None

6.0 DETAILS

6.1 An individual (Evaluator) assigned by the GSO will prepare the PSTG based on Revision 3 of the EPGs. For each deviation from the EPGs, whether it is caused by incorporating plant specific information or

to correct a deficiency in the EPG itself, a Deviation Sheet (Attachment 1) will be prepared by the Evaluator. If a deviation appears in more than one step, this fact will be noted on the Deviation Sheet - separate sheets will not be prepared.

6.2 Examples of Deviations include:

1. Setpoint

   Example: Drywell high pressure scram at 1.68 psig.

2. Calculation

   Example: Cold shutdown boron weight is 753 pounds.

3. EPG Deficiency

   Example: RC/Q does not address Alternate Rod Insertion.

4. Design Information

   Example: SRV re-opening pressure for Dikkers valves is 0 psig.

   (However, the fact that Perry does not have a HPCI system does not require NDAS verification).

However, renumbering of steps or changes resulting from renumbering of steps are not Deviations.

6.3 If the deviation is the result of requiring design information, a setpoint, or a calculation, the Deviation Sheet will be forwarded to the NDAS Lead Engineer who will assign it to a responsible engineer for review.

6.3.1 The Reviewer will provide a justification for the deviation. This may either be done in the assigned space or by referencing another document.

6.3.2 The Reviewer will return the Deviation Sheet to the NDAS Lead Engineer who will approve or reject it. If approved it will be forwarded to the GSO for review and approval per Step 6.5. If rejected it will be returned to the Reviewer with comments. Once a satisfactory justification is provided, it will be approved and forwarded.

6.4 If the deviation is not the result of requiring design information, a setpoint, or a calculation, the Evaluator will send the Deviation Sheet to a Reviewer designated by the GSO.

6.4.1 After preparing a justification, the Reviewer will circle N/R (Not Required) above the NDAS Lead Engineer's signature line and forward it to the GSO for review and approval per Step 6.5.

6.5 The GSO will review and approve the Deviation Sheet. If not approved, it will be returned with comments to the Reviewer (through the NDAS Lead Engineer if appropriate) for revision. Steps 6.3 or 6.4 will be repeated until a satisfactory justification is supplied.

6.6 After approval by the GSO, the Deviation Sheet will be returned to the person responsible for preparing the PSTG. Once incorporated in the PSTG, it will be signed off and maintained for incorporation in the PGP as Attachment 7.

7.0 ATTACHMENTS

7.1 Attachment 1 - Deviation Sheet.

Deviation Sheet: Number ____

EPG Step Number(s): ______________________________

PSTG Step Number(s): ______________________________

Deviation:

____

____

____

____

____

____

Evaluator: ______________________ Date: __________

Justification:

____

____

____

____

____

____

Reviewer: ______________________ Date: __________

Approved: YES NO N/R (circle one)

NDAS Lead
Engineer: ______________________ Date: __________

Approved: YES NO (circle one)

GSO: ______________________ Date: __________

Incorporated: ______________________ Date: __________

Perry Specific Technical Guidelines

Table of Contents

TABLE 1

PSTG ABBREVIATIONS

ADS	-	Automatic Depressurization System
APRM	-	Average Power Range Monitor
CRD	-	Control Rod Drive
ECCS	-	Emergency Core Cooling System
HCU	-	Hydraulic Control Unit
HPCS	-	High Pressure Core Spray
HVAC	-	Heating, Ventilating and Air Conditioning
LCO	-	Limiting Condition for Operation
LOCA	-	Loss of Coolant Accident
LPCI	-	Low Pressure Coolant Injection
LPCS	-	Low Pressure Core Spray
MSIV	-	Main Steamline Isolation Valves
NDTT	-	Nil-Ductility Transition Temperature
NPSH	-	Net Positive Suction Head
RCIC	-	Reactor Core Isolation Cooling
RCIS	-	Rod Control and Information System
RHR	-	Residual Heat Removal
RPS	-	Reactor Protection System
RPV	-	Reactor Pressure Vessel
RWCU	-	Reactor Water Cleanup
SLC	-	Standby Liquid Control
SORV	-	Stuck Open Relief Valve
SPMU	-	Suppression Pool Makeup System
SRV	-	Safety Relief Valve

TABLE 2
OPERATOR PRECAUTIONS

GENERAL

This section lists "Cautions" which are generally applicable at all times.

CAUTION 1

(N/A)

CAUTION 2

(N/A)

CAUTION 3

(N/A)

CAUTION 4

(N/A)

CAUTION 5

(N/A)

CAUTION 6

(N/A)

CAUTION 7

(NA)

CAUTION 8

(N/A)

CAUTION 9

(N/A)

SPECIFIC

This section lists "Cautions" which are applicable at one or more specific points within the guidelines. Where a "Caution" is applicable, it is enclosed in a box. Example: 10

CAUTION 10

(N/A)

CAUTION 11

If a high drywell pressure ECCS initiation signal 1.68 psig (drywell pressure which initiates ECCS) occurs or exists while depressurizing, prevent injection from those LPCS and LPCI pumps not required to assure adequate core cooling prior to reaching their maximum injection pressures.

CAUTION 12

Do not throttle RCIC turbine below 2000 rpm (minimum turbine speed limit per turbine vendor manual).

CAUTION 13

Cooldown rates above 100°F/hr may be required to accomplish this step.

CAUTION 14

Do not depressurize the RPV below 60 psig (RCIC low pressure isolation setpoint), unless motor driven pumps sufficient to maintain RPV water level are running and available for injection.

CAUTION 15

Open SRVs in the following sequence if possible: B21-F051D, 47B, 47F, 41G, 51B, 41D, 51A, 47C, 41K, 47G, 41C, 47D, 51G, 41B, 41E, 41F, 41A, 51C, 47H.

CAUTION 16

Bypassing low RPV water level MSIV isolation interlocks may be required to accomplish this step.

CAUTION 17

Cooldown rates above 100°F/hr may be required to conserve RPV water inventory, protect primary containment integrity, or limit radioactive release to the environment.

CAUTION 18

If continuous LPCI operation of any RHR pump is required to assure adequate core cooling, do not divert that pump from the LPCI mode.

CAUTION 19

(N/A)

CAUTION 20

Defeating RCIS interlocks may be required to accomplish this step.

CAUTION 21

Elevated containment pressure may trip the RCIC turbine on high exhaust pressure.

CAUTION 22

Defeating isolation interlocks may be required to accomplish this step.

CAUTION 23

(N/A)

CAUTION 24

(N/A)

CAUTION 25

A rapid increase in injection into the RPV may induce a large power excursion and result in substantial core damage.

CAUTION 26

Large reactor power oscillations may be observed while executing this step.

CAUTION 27

Whenever RHR is in the LPCI mode, inject through the heat exchangers as soon as possible.

CAUTION 28

(Later)

CAUTION 29

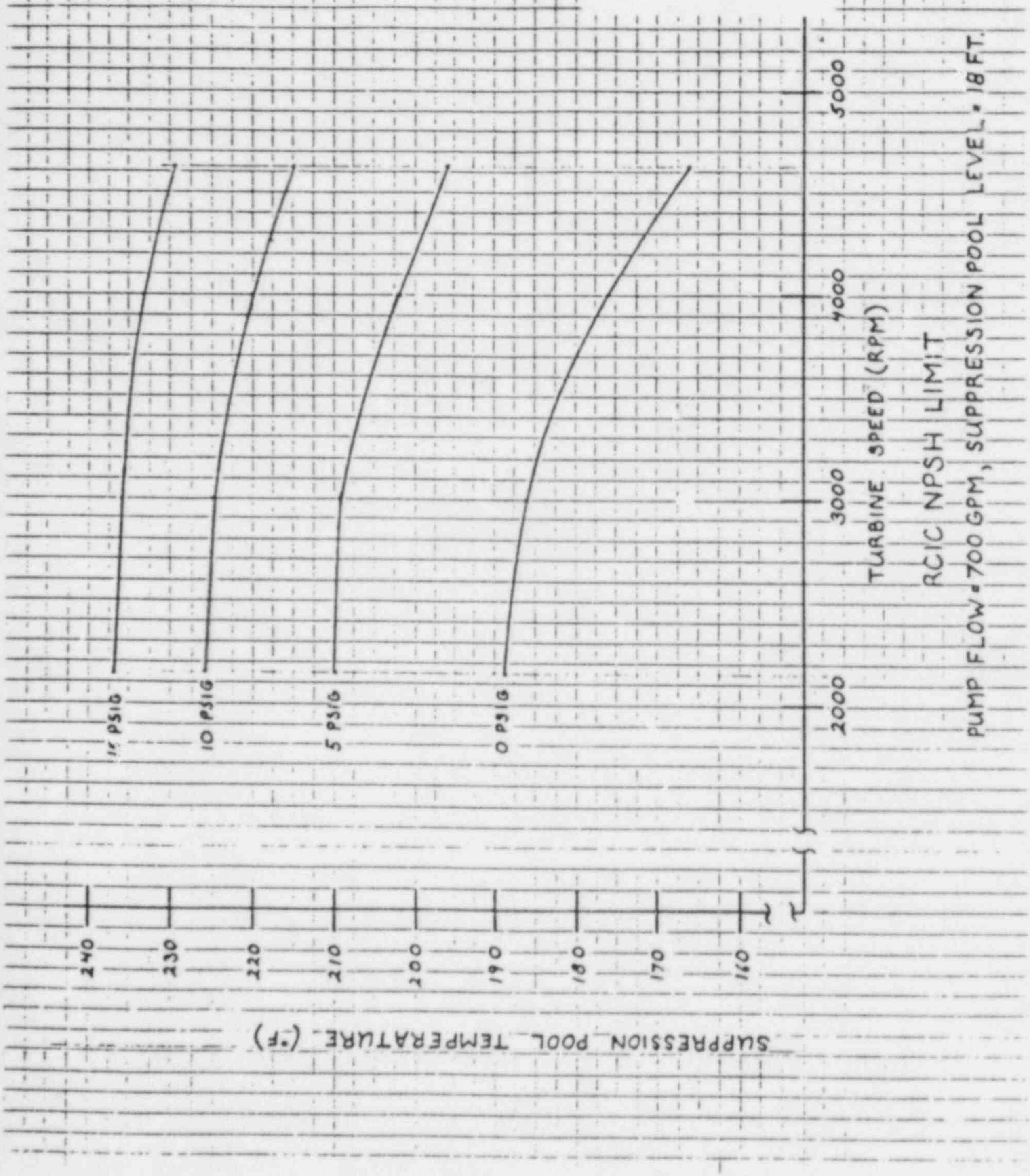
Observe NPSH requirements for the RCIC pump when taking suction from the Suppression Pool (Figure 1).

CAUTION 30

If signals of high suppression pool water level 18 ft. 4.9 in. (high level suction interlock) or low condensate storage tank water level 63,300 gal. (low level suction interlock) occur, confirm automatic transfer of or manually transfer HPCS and RCIC suction from the condensate storage tank to the suppression pool.

Caution 29, Figure 1

RCIC NPSH



RPV CONTROL GUIDELINE

PURPOSE

The purpose of this guideline is to:

1. Maintain adequate core cooling,

2. Shut down the reactor, and

3. Cool down the RPV to cold shutdown conditions (70°F   RPV water temperature   200°F). (cold shutdown conditions)

ENTRY CONDITIONS

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

1. RPV water level below 177.7 in. (low level scram setpoint).

2. RPV pressure above 1064.7 psig (high RPV pressure scram setpoint).

3. Drywell pressure above 1.68 psig (high drywell pressure scram setpoint).

4. A condition which requires reactor scram, and reactor power above 4% (APRM downscale trip) or cannot be determined.

5. A condition which requires MSIV isolation.

OPERATOR ACTIONS

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

RC-2 Position the REACTOR SYSTEM MODE SWITCH to SHUTDOWN.

Irrespective of the entry conditions, execute Steps RC/L, RC/P, and RC/Q concurrently.

RC/L Monitor and control RPV water level.

RC/L-1 Initiate each of the following which should have initiated but did not:

a. Isolation
b. ECCS
c. Standby diesel generators
d. HPCS diesel generator

If while executing the following step: a. Any control rod is not inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), enter the instruction developed from CONTINGENCY 7. b. RPV water level cannot be determined, RPV FLOODING IS REQUIRED; enter the instruction developed from CONTINGENCY 6. c. RPV Flooding is required, enter the instruction developed from CONTINGENCY 6.

RC/L-2 Restore and maintain RPV water level between 183 in. and 218 in. with one or more of the following systems: 11 28 30

1. Condensate/feedwater system 1450 - 0 psig (RPV pressure range for system operation).

2. CRD system 1990 - 0 psig (RPV pressure range for system operation).

3. RCIC system 1177 - 60 psig (RPV pressure range for system operation. 12 29

4. HPCS system 1403 - 0 psig (RPV pressure range for system operation).

5. LPCS system 295 - 0 psig (RPV pressure range for system operation).

6. LPCI system 225 - 0 psig (RPV pressure range for system operation). 27

If RPV water level cannot be restored and maintained above 183 in., maintain RPV water level above 0 in. (top of active fuel).

If RPV water level can be maintained above 16.5 in. (top of active fuel) and the ADS timer has initiated, prevent automatic RPV depressurization by resetting the ADS timer.

If RPV water cannot be maintained above 16.5 in. (top of active fuel), enter the instruction developed from CONTINGENCY 1.

RC/L-3 When either:

1. All control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), or

2. 916 pounds of (Cold Shutdown Boron Weight) of boron have been injected into thbe RPV, or

3. The reactor is shutdown and no boron has been injected into the RPV, maintain RPV level between 183 in. and 218 in.

RC/L-4 When RPV level can be maintained between 183 in. and 218 in., proceed to cold shutdown in accordance with ONI-C71, Reactor Scram.

RC/P Monitor and control RPV pressure.

If while executing the following steps:	
a. Emergency RPV Depressurization is anticipated and all control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), rapidly depressurize the RPV with the main turbine bypass valves.	13
b. Emergency RPV Depressurization or RPV Flooding is required and less than 8 SRVs are open, enter the instruction developed from CONTINGENCY 2.	
c. RPV Flooding is required and at least 8 SRVs are open, enter the instruction developed from CONTINGENCY 6.	

RC/P-1 If any SRV is cycling, manually open SRVs until RPV pressure drops to 920 psig (RPV pressure at which all turbine bypass valves are fully open).

If while executing the following steps:	
a. Suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit (Figure 1), maintain RPV pressure below the Limit.	13 14
b. Suppression pool water level cannot be maintained below the Suppression Pool Load Limit (Figure 2), maintain RPV pressure below the Limit.	13 14
c. Steam Cooling is required, enter the instruction developed from CONTINGENCY 3.	

> If while executing the following steps:
>
> a. Boron Injection is required, and
> b. The main condenser is available, and
> c. There has been no indication of gross fuel failure or steam line break,
>
> Open MSIVs to re-establish the main condenser as a heat sink. [16]

RC/P-2 Control RPV pressure below 1033 psig (SRV low-low set lift pressure) with the main turbine bypass valves. [14]

RPV pressure control may be augmented by one or more of the following systems:

a. SRVs only when suppression pool water level is above 5 ft. 1-3/8 in. (elevation of top of SRV discharge device). If the continuous SRV pneumatic supply is or becomes unavailable, place the control switch for each SRV in the OFF position. [15]
b. RCIC
c. Turbine driven feedwater pumps.
d. RWCU (recirculation mode) if no boron has been injected into the RPV.
e. Main steam line drains.
f. RWCU (blowdown mode) if no boron has been injected into the RPV.
g. Steam jet air ejectors.
h. Steam condensing mode of RHR.

RC/P-3 When ONI-C71, Reactor Scram, is entered from step RC/L-4 proceed to cold shutdown in accordance with ONI-C71.

RC/Q Monitor and control reactor power

> If while executing the following steps:
>
> a. All control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), terminate boron injection and enter ONI-C71.
> b. The reactor is shutdown and no boron has been injected into the RPV, enter ONI-C71.

RC/Q-1 If reactor power is above 4% (APRM downscale trip) or cannot be determined, initiate Alternate Rod Insertion.

RC/Q-2 If reactor power is above 4% (APRM downscale trip) and the main turbine-generator is on-line, confirm or initiate recirculation flow runback to minimum.

RC/Q-3 If reactor power is above 4% (APRM downscale trip) or cannot be determined, trip the recirculation pumps.

Execute Steps RC/Q-4 and RC/Q-5 concurrently.

RC/Q-4 If the reactor cannot be shutdown before suppression pool average temperature reaches the Boron Injection Initiation Temperature (Figure 3) BORON INJECTION IS REQUIRED; inject boron into the RPV with SLC and prevent automatic initiation of ADS.

RC/Q-4.1 If boron is not being injected into the RPV by RWCU, confirm automatic isolation or manually isolate RWCU.

RC/Q-4.2 Continue to inject boron until 916 pounds (Cold Shutdown Boron Weight) of boron have been injected into the RPV.

RC/Q-4.3 Enter ONI-C71.

RC/Q-5 Insert control rods as follows:

RC/Q-5.1 If any scram valve is not open, then remove the following fuses:

F18A	F18B
F18E	F18F
F18C	F18D
F18G	F18H

(Scram valve fuses)

When control rods are not moving inward, replace the following fuses:

F18A	F18B
F18E	F18F
F18C	F18D
F18G	F18H

RC/Q-5.2 Reset the reactor scram.

Reset ARI.

If the reactor scram or ARI cannot be reset, continue in this instruction at step RC/Q-5.4.

RC/Q-5.3 Drain the scram discharge volume and initiate a manual reactor scram.

1. If control rods moved inward, return to Step RC/Q-5.2.

2. Initiate ARI.

3. If control rods moved inward, return to step RC/Q-5.2.

4. If the scram and ARI can be reset, reset the reactor scram and ARI.

   If the reactor scram or ARI cannot be reset, continue in this instruction at Step RC/Q-5.4.

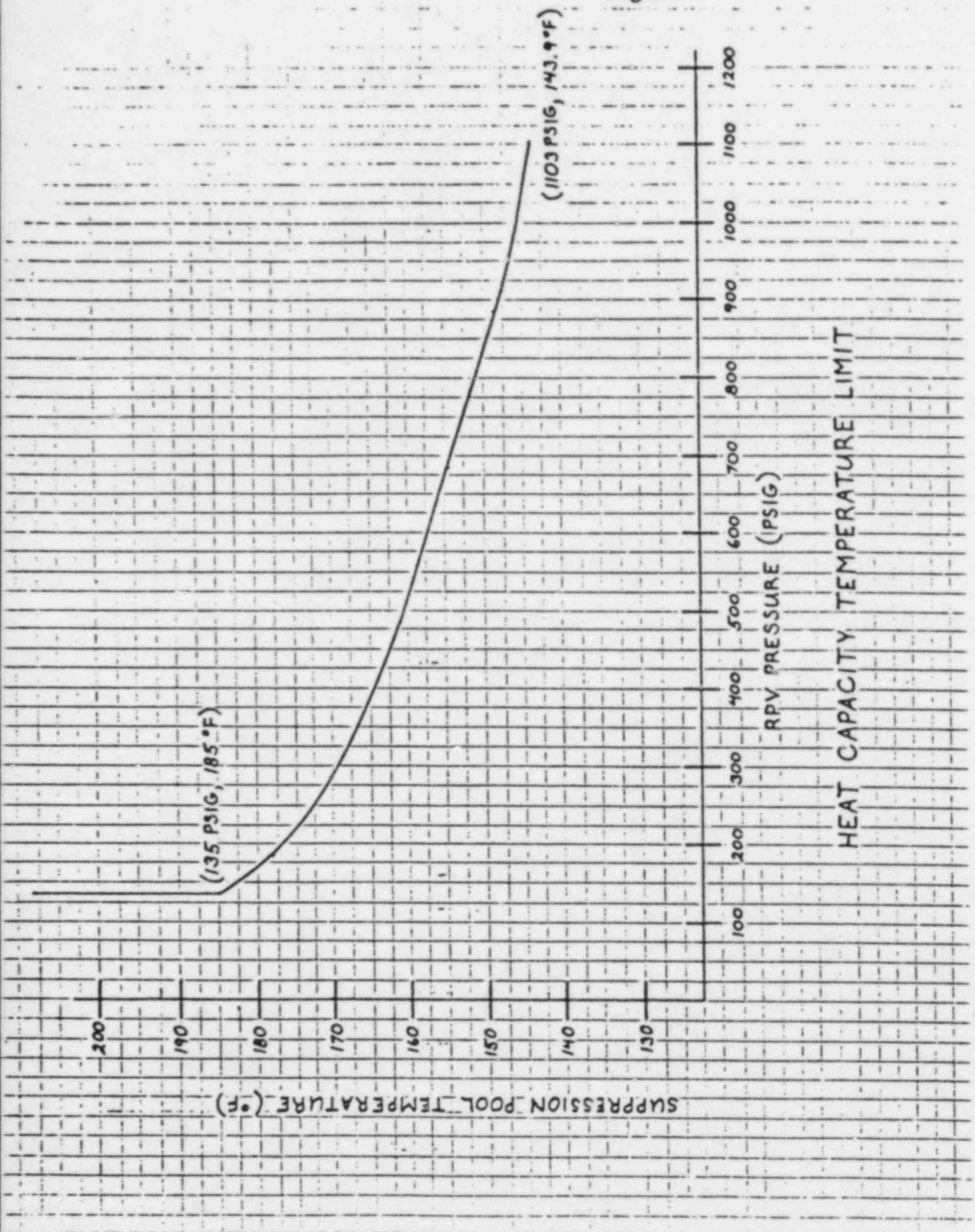
RC/Q-5.4 Manually insert control rods as follows:

If while executing the following steps the reactor scram and ARI can be reset and control rods moved inward following the last scram, reset the reactor scram and ARI and return to Step RC/Q-5.3.

1. Start all CRD pumps.

2. Rapidly insert control rods manually. 20

Figure 1

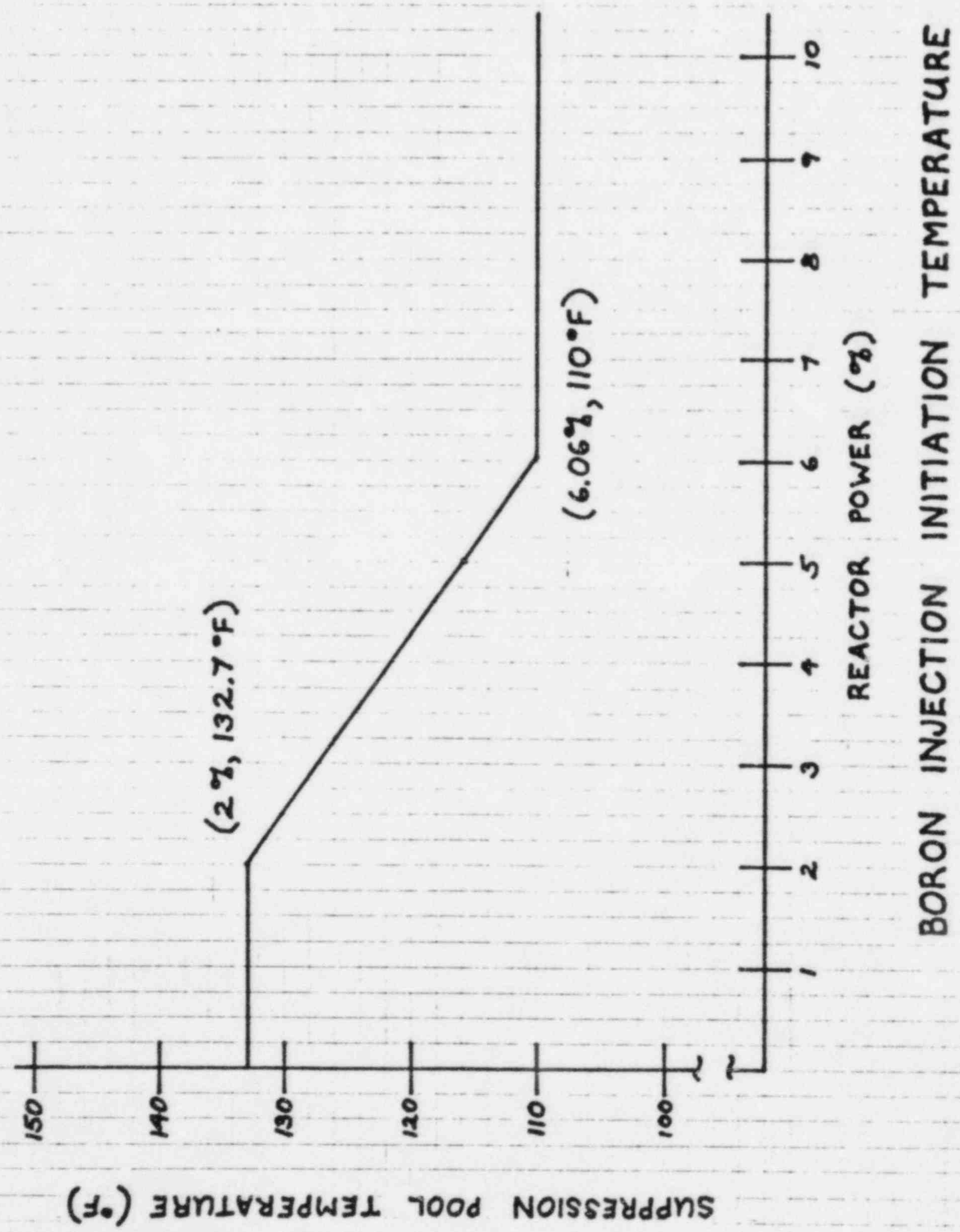

HEAT CAPACITY TEMPERATURE LIMIT
RPV PRESSURE (PSIG)
100
200
300
400
500
600
700
800
900
1000
1100
1200
(1103 PSIG, 143.9°F)
(135 PSIG, 185°F)
200
190
180
170
160
150
140
130
SUPPRESSION POOL TEMPERATURE (°F)

Suppression Pool Load Limit

Figure 2

(Later)

Figure 3


BORON INJECTION INITIATION TEMPERATURE
REACTOR POWER (%)
SUPPRESSION POOL TEMPERATURE (°F)
(2%, 132.7°F)
(6.06%, 110°F)
1
2
3
4
5
6
7
8
9
10
100
110
120
130
140
150

PRIMARY CONTAINMENT CONTROL GUIDELINE

PURPOSE

The purpose of these guidelines is to:

1. Maintain primary containment integrity, and
2. Protect equipment in the primary containment.

ENTRY CONDITIONS

The entry conditions for these guidelines are any of the following:

1. Suppression pool average temperature above 95°F (most limiting suppression pool temperature LCO) during normal operation.
2. Drywell average temperature above 135°F (drywell temperature LCO).
3. Containment average temperature above 90°F (containment temperature LCO).
4. Drywell pressure above 1.68 psig (high drywell pressure scram setpoint).
5. Suppression pool water level above 18 ft. 6 in. (maximum suppression pool water level LCO).
6. Suppression pool water level below 18 ft. 0 in. (minimum suppression pool water level LCO).

OPERATOR ACTIONS

SP/T Monitor and control suppression pool temperature.

SP/T-1 Close all SORVs.

SP/T-2 When suppression pool average temperature exceeds 95°F, (most limiting suppression pool temperature LCO), operate available suppression pool cooling. 18

SP/T-3 Before suppression pool average temperature reaches 110°F, scram the reactor.

SP/T-4 If suppression pool average temperature cannot be maintained below the Heat Capacity Temperature Limit (Figure 1), maintain RPV pressure below the limit; enter the instruction developed from the RPV Control Guidelines at Step RC-1 and execute it concurrently with this instruction. 29 13 14

If suppression pool average temperature and RPV pressure cannot be restored and maintained below the Heat Capacity Temperature Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

DW/T Monitor and control drywell temperature.

DW/T-1 When drywell average temperature exceeds 135°F, operate available drywell cooling. 28

DW/T-2 If drywell average temperature cannot be maintained below 330°F (maximum temperature at which ADS qualified or drywell design temperature, whichever is lower), EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter the instruction developed from the RPV Control Guidelines at Step RC-1 and execute it concurrently with this instruction.

CN/T Monitor and control containment temperature.

CN/T-1 When containment average temperature exceeds 90°F (containment temperature LCO), operate available containment cooling. 28

If while executing the following steps containment spray has been initiated, when containment pressure drops below (later) psig, terminate containment spray.

CN/T-2 Before containment average temperature reaches 185°F (containment design temperature), but only if containment pressure is above (later) psig (Mark III Containment Spray Initiation Pressure Limit), initiate containment spray. 18

CN/T-3 If containment average temperature cannot be maintained below 185°F (containment design temperature), EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter the instruction developed from the RPV Control Guideline at Step RC-1 and execute it concurrently with this instruction.

PC/P Monitor and control primary containment pressure.

PC/P-1 Operate the following systems, as required:

1. Containment pressure control systems.

2. Bakup Hydrogen Purge mode of the Combustible Gas Control System only when the temperature in the space being evacuated is below 212°F (Maximum Noncondensible Evacuation Temperature). 21

> If while executing the following steps containment spray has been initiated, when containment pressure drops below (later) psig, terminate containment spray.

PC/P-2 Before suppression chamber pressure reaches the Pressure Suppression Pressure (Figure 2) but only if containment pressure is above (later) psig (Mark III Containment Spray Initiation Pressure Limit), initiate containment spray. 18

PC/P-3 If containment pressure cannot be maintained below the Pressure Suppression Pressure (Figure 2), EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

PC/P-4 If containment pressure cannot be maintained below the Primary Containment Design Pressure (Figure 3), RPV FLOODING IS REQUIRED.

PC/P-5 If containment pressure cannot be maintained below the Primary Containment Pressure Limit (Figure 4), then irrespective of whether adequate core cooling is assured, initiate containment spray.

PC/P-6 If containment pressure exceeds the Primary Containment Pressure Limit, then irrespective of the offsite radioactive release rate, vent the primary containment in accordance with (instruction for containment venting) to reduce and maintain pressure below the Primary Containment Pressure Limit. 22

SP/L Monitor and control suppression pool water level.

SP/L-1 Maintain suppression pool water level between 18 Ft. 6 in. (maximum suppression pool water level LCO) and 18 Ft. 0 in. (minimum suppression pool water level LCO). Suppression pool makeup may be augmented by the Suppression Pool Makeup System (SPMU). 29 30

If SPMU has been initiated, maintain suppression pool water level between 22 Ft. 6 in. (SPMU initiation setpoint plus suppression pool water level increase which results from SPMU operation) and 18 Ft. 0 in. (minimum suppression pool water level LCO).

If suppression pool water level cannot be maintained above 18 Ft. 0 in. (minimum suppression pool water level LCO), execute Step SP/L-2.

If suppression pool water level cannot be maintained below 18 Ft. 6 in. (maximum suppression pool water level LCO) 22 Ft. 6 in. (SPMU initiation setpoint plus suppression pool water level increase which results from SPMU operation if SPMU has been initiated), execute Step SP/L-3.

SP/L-2 SUPPRESSION POOL WATER LEVEL BELOW 18 Ft. 0 in. (minimum suppression pool water level LCO).

Maintain suppression pool water level above the Heat Capacity Level Limit (Figure 5).

If suppression pool water level cannot be maintained above the Heat Capacity Level Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter the instruction developed from the RPV Control Guidelines at Step RC-1 and execute it concurrently with this instruction.

SP/L-3 SUPPRESSION POOL WATER LEVEL ABOVE 18 Ft. 6 in. (maximum suppression pool water level LCO) 22 Ft. 6 in. (SPMU initiation setpoint plus suppression pool water level increase which results from SPMU operation if SPMS has been initiated).

Execute Steps SP/L-3.1 and SP/L-3.2 concurrently.

SP/L-3.1 Maintain suppression pool water level below the Suppression Pool Load Limit (Figure 6).

If suppression pool water level cannot be maintained below the Suppression Pool Load Limit, maintain RPV pressure below the Limit. 13 14

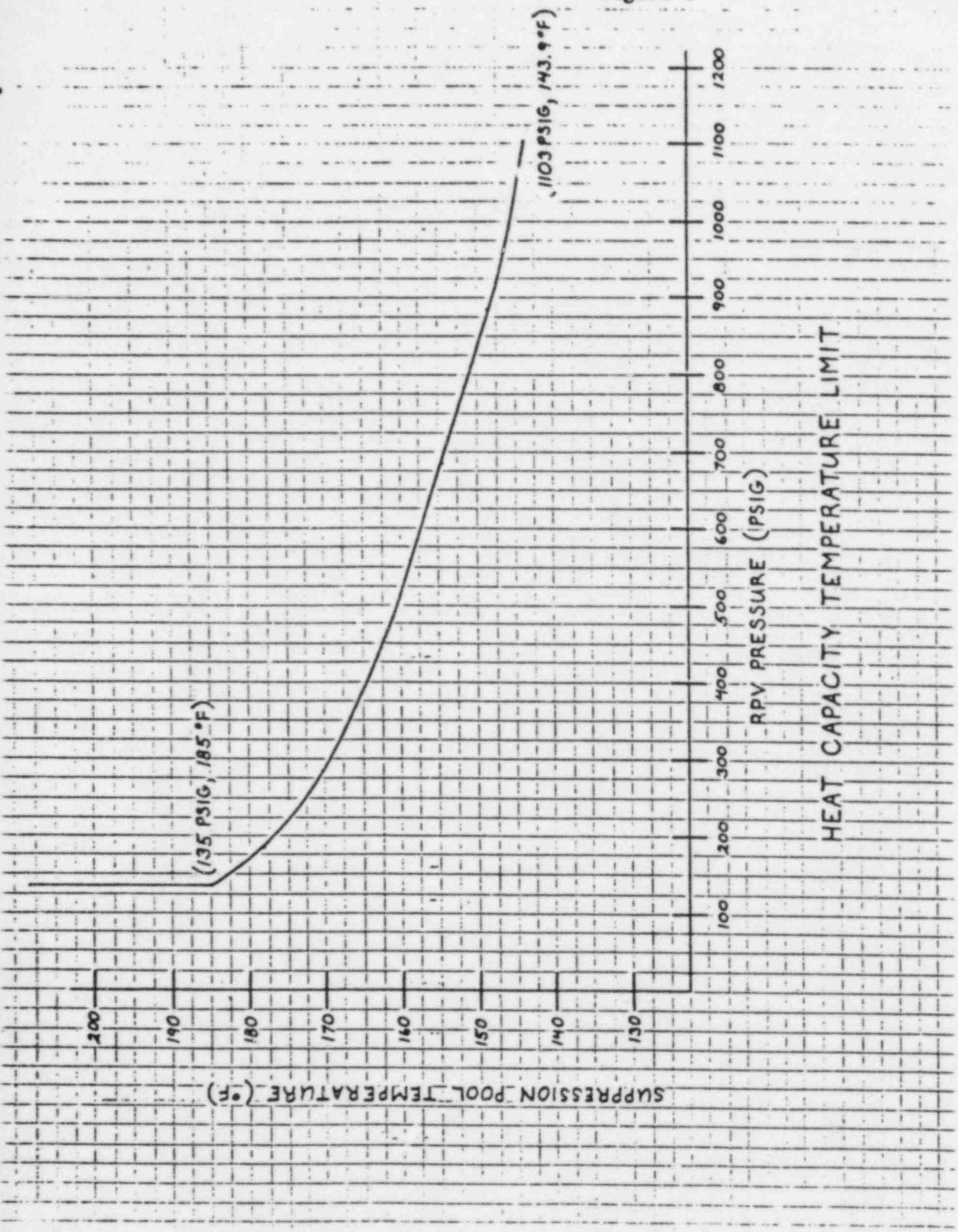
If suppression pool water level and RPV pressure cannot be maintained below the Suppression Pool Load Limit but only if adequate core cooling is assured, terminate injection into the RPV from sources external to the primary containment except from boron injection systems and CRD.

If suppression pool water level and RPV pressure cannot be restored and maintained below the Suppression Pool Load Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter the instruction developed from the RPV Control Guidelines at Step RC-1 and execute it concurrently with this instruction.

SP/L-3.2 Before suppression pool water level reaches 66 ft. 2 in. (Maximum Primary Containment Water Level Limit) but only if adequate core cooling is assured, terminate injection into the RPV from sources external to the primary containment except from boron injection systems and CRD.

When primary containment water level reaches 66 ft. 2 in. (Maximum Primary Containment Water Level Limit), terminate injection into the RPV from sources external to the primary containment irrespective of whether adequate core cooling is assured.

Figure 1


HEAT CAPACITY TEMPERATURE LIMIT
RPV PRESSURE (PSIG)
SUPPRESSION POOL TEMPERATURE (°F)
(135 PSIG, 185°F)
1103 PSIG, 143.9°F)
100
200
300
400
500
600
700
800
900
1000
1100
1200
200
190
180
170
160
150
140
130

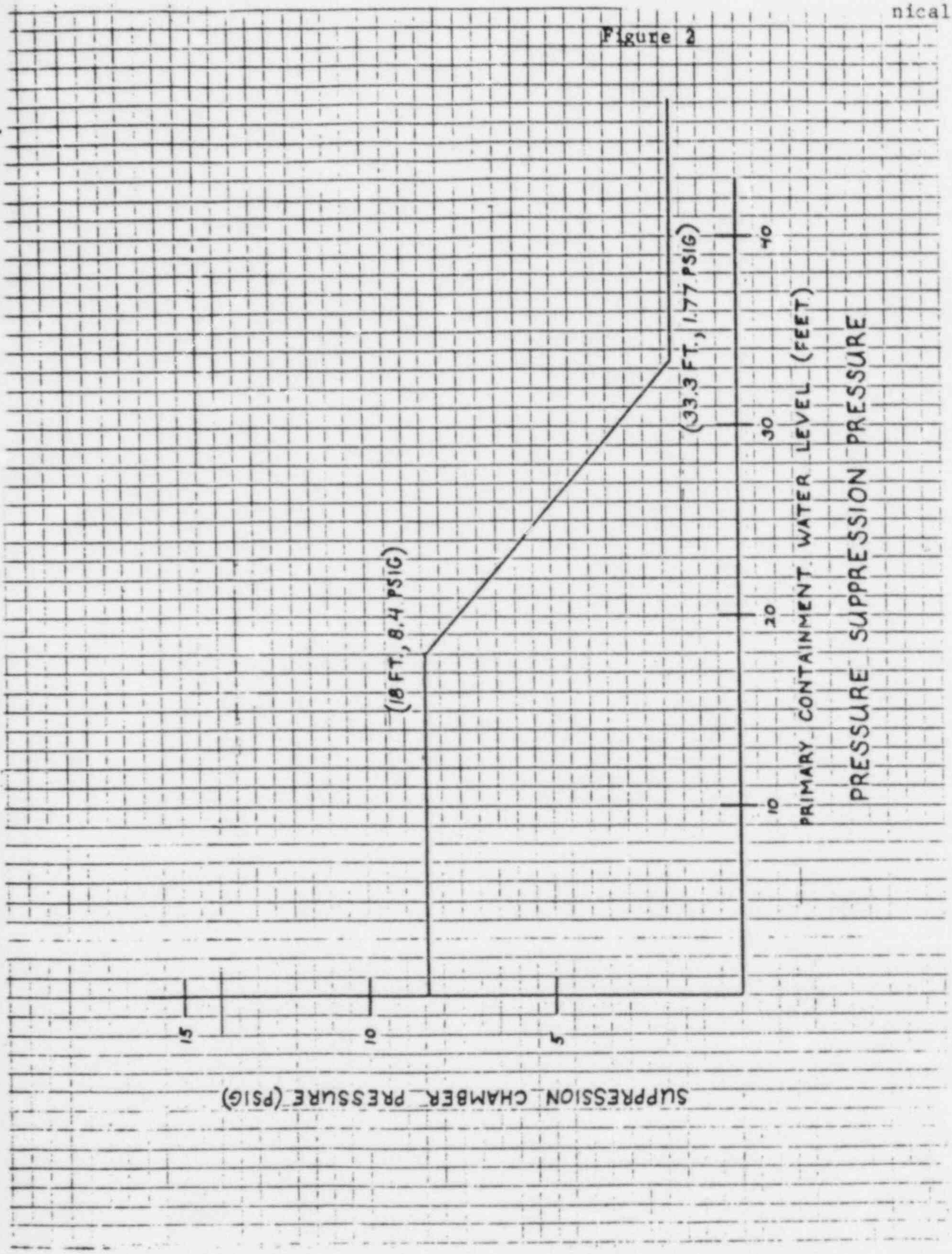
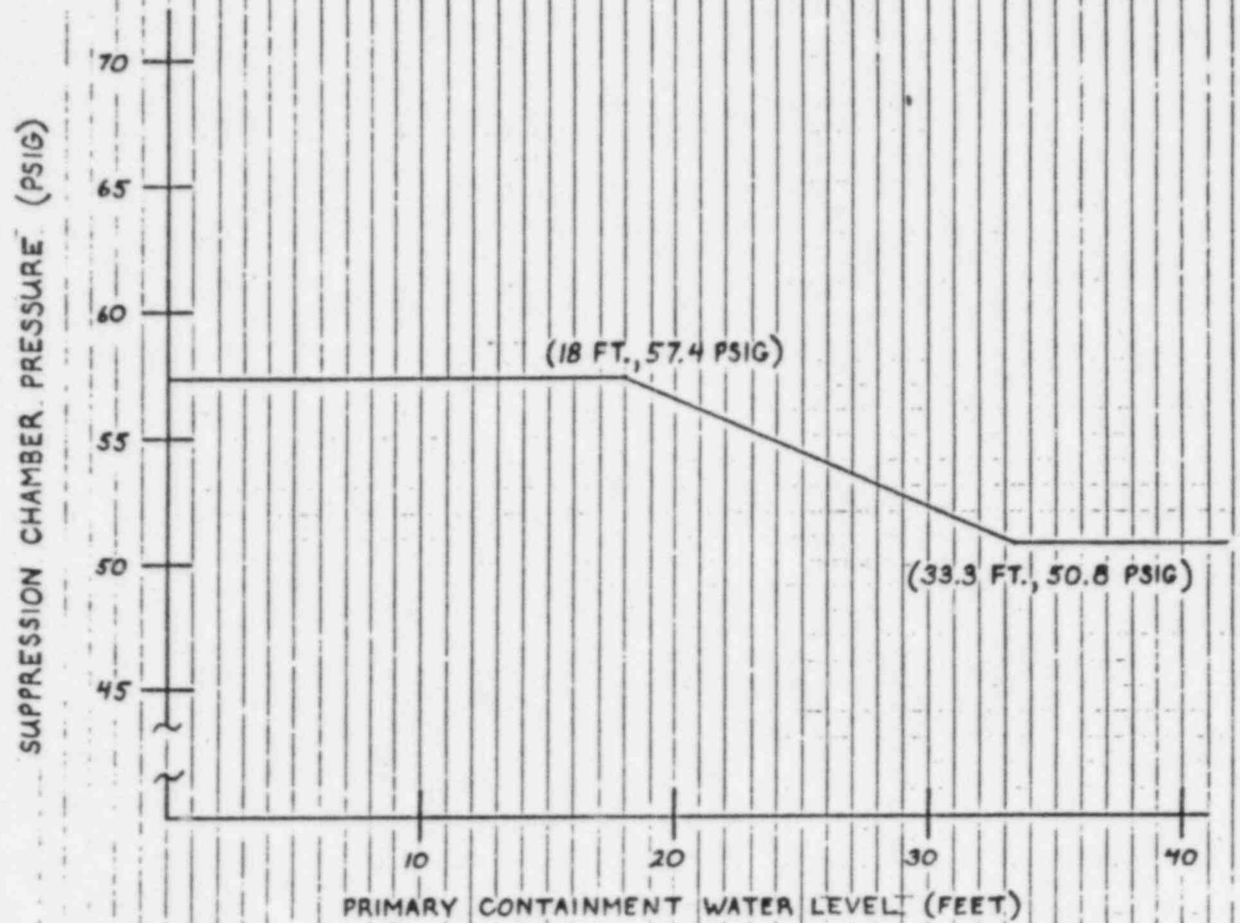

(33.3 FT., 1.77 PSIG)
(18 FT., 8.4 PSIG)
10
20
30
40
PRIMARY CONTAINMENT WATER LEVEL (FEET)
PRESSURE SUPPRESSION PRESSURE
15
10
5
SUPPRESSION CHAMBER PRESSURE (PSIG)

Figure 2

PRIMARY CONTAINMENT DESIGN PRESSURE

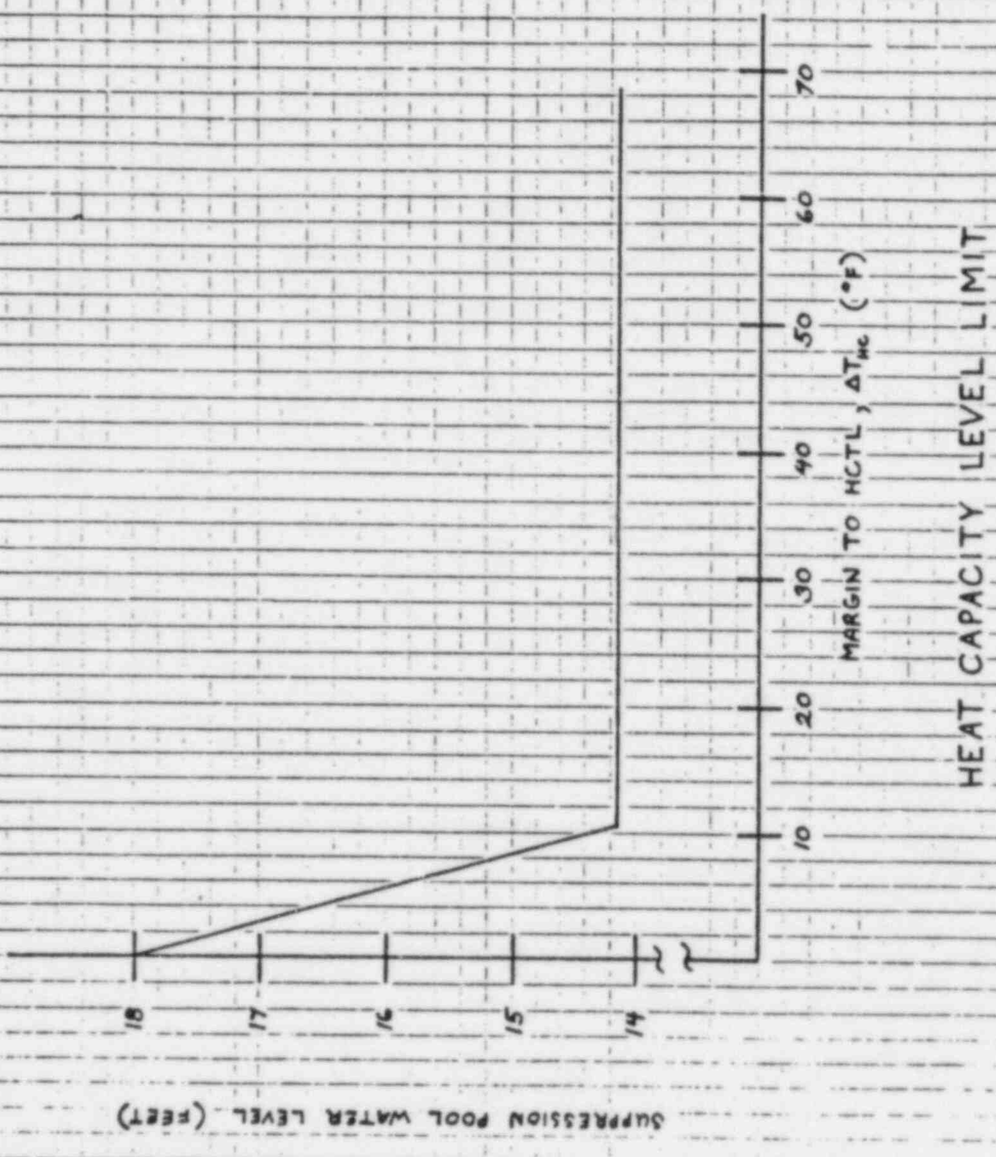
Figure 3

Figure 4



PRIMARY CONTAINMENT PRESSURE LIMIT

Figure 5


HEAT CAPACITY LEVEL LIMIT
MARGIN TO HCTL, ΔT_HC (°F)
10
20
30
40
50
60
70
SUPPRESSION POOL WATER LEVEL (FEET)
14
15
16
17
18

Suppression Pool Load Limit

Figure 6

(Later)

RADIOACTIVITY RELEASE CONTROL GUIDELINE

PURPOSE

The purpose of this guideline is to limit radioactivity release into areas outside the primary and secondary containments.

ENTRY CONDITIONS

The entry condition for this guideline is:

1. Offsite radioactivity release rate above the offsite release rate which requires an Alert.

OPERATOR ACTIONS

RR-1 Isolate all primary systems that are discharging into areas outside the primary and secondary containments except systems required to assure adequate core cooling or shut down the reactor.

RR-2 If offsite radioactivity release rate approaches or exceeds the offsite release rate which requires a General Emergency and a primary system is discharging into an area outside the primary and secondary containments, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter the instruction developed from the RPV Control Guidelines at Step RC-1 and execute it concurrently with this instruction.

CONTINGENCY 1
LEVEL RESTORATION

If while executing the following steps:

1. Any control rod is not inserted to or beyond position 02, (Maximum Subcritical Banked Withdrawal Position), enter the instruction developed from CONTINGENCY 7.

2. RPV water level cannot be determined, RPV FLOODING IS REQUIRED; enter the instruction developed from CONTINGENCY 6.

3. RPV Flooding is required, enter the instruction developed from CONTINGENCY 6.

C1-1 Line up for injection and start pumps in 2 or more of the following injection subsystems:

a. Condensate/feedwater
b. HPCS
c. LPCI-A
d. LPCI-B
e. LPCI-C
f. LPCS

27

If less than 2 of the injection subsystems can be lined up, commence lining up as may of the following alternate injection subsystems as possible:

a. RHR - emergency service water crosstie
b. Fire system
c. ECCS keep-full systems
d. SLC (test tank)
e. SLC (boron tank)
f. Suppression Pool Cleanup (via RHR)
g. Suppression Pool Cleanup (via liquid radwaste, RWCU, and RHR)
h. Condensate transfer (via RHR)
i. Condensate Transfer (via condensate demineralizers, liquid radwaste and RHR
j. Condensate Transfer (via RWCU filter/demineralizer and RHR)

If while executing the following steps:

1. The RPV water level trend reverses or RPV pressure changes region, return to Step C1-2.

2. RPV water level drops below 16.5 in. (ADS initiation setpoint), prevent automatic initiation of ADS.

C1-2 Monitor RPV pressure and water level. Continue in this instruction at the step indicated in the following table.

RPV PRESSURE REGION

~~450~~ 295 psig[1] 60 psig[2]

RPV LEVEL	HIGH	INTERMEDIATE	LOW
INCREASING	C1-3	C1-4	C1-5
DECREASING	C1-6		C1-7

[1] RPV pressure at which LPCI/LPCS shutoff head (whichever is higher) is reached.

[2] RCIC low pressure isolation setpoint.

C1-3 RPV WATER LEVEL INCREASING, RPV PRESSURE HIGH

Enter the instruction developed from the RPV Control Guidelines at Step RC/L.

C1-4 RPV WATER LEVEL INCREASING, RPV PRESSURE INTERMEDIATE

If RCIC is not available and RPV pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV pressure is decreasing, enter the instruction developed from the RPV Control Guidelines at Step RC/L.

If RCIC is not available and RPV pressure is not increasing, enter the instruction developed from the RPV Control Guidelines at Step RC/L.

Otherwise, when RPV water level reaches 177.7 in. (low level scram setpoint), enter the instruction developed from the RPV Control Guidelines at Step RC/L.

C1-5 RPV WATER LEVEL INCREASING, RPV PRESSURE LOW

If pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV pressure is decreasing, enter the instruction developed from the RPV Control Guideline at Step RC/L.

Otherwise, enter the instruction developed from the RPV Control Guideline at Step RC/L.

C1-6 RPV WATER LEVEL DECREASING, RPV PRESSURE HIGH OR INTERMEDIATE

If RCIC or CRD is not operating, restart whichever is not operating.

If no injection subsystem is lined up for injection with at least one pump running, start pumps in alternate injection subsystems which are lined up for injection.

When RPV water level drops to 16.5 in. (top of active fuel):

1. If no system, injection subsystem or alternate injection subsystem is lined up with at least one pump running, STEAM COOLING IS REQUIRED. When any system, injection subsystem or alternate injection subsystem is lined up with at least one pump running, return to Step C1-2.

2. Otherwise, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV water level is increasing or RPV pressure drops below 60 psig (RCIC low pressure isolation setpoint), return to Step C1-2.

C1-7 RPV WATER LEVEL DECREASING, RPV PRESSURE LOW

If HPCS or LPCS are not operating, start pumps in alternate injection subsystems which are lined up for injection.

If RPV pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

When RPV water level drops to 16.5 in. (top of active fuel), enter instruction developed from CONTINGENCY #4.

CONTINGENCY 2
EMERGENCY RPV DEPRESSURIZATION

C2-1 When either:

13 14

1. Any control rod is not inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), and all injection into the RPV except from boron injection systems and CRD has been terminated and prevented, or

2. All control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position).

C2-1.1 If suppression pool water level is above 5 ft. 6 in. (elevation of top of SRV discharge device):

1. Open all ADS valves.

2. If any ADS valve cannot be opened, open other SRVs until 8 (number of SRVs dedicated to ADS) valves are open.

C2-1.2 If less than 3 (Minimum Number of SRVs Required for Emergency Depressurization) SRVs are open, rapidly depressurize the RPV using one or more of the following systems (use in order which will minimize radioactive release to the environment): 22

a. Main condenser
b. Turbine driven feedwater pumps
c. RWCU (recirculation mode) if no boron has been injected into the RPV
d. Main steam line drains
e. RCIC steam line
f. RWCU (blowdown mode) if no boron has been injected into the RPV
g. Steam jet air ejectors
h. Steam condensing mode of RHR

If RPV Flooding is required, enter the instruction developed from CONTINGENCY 6.

C2-2 Enter the instruction developed from the RPV Control Guidelines at Step RC/P-3.

CONTINGENCY 3
STEAM COOLING

If while executing this step Emergency RPV Depressurization is required or any system, injection subsystem, or alternate injection subsystem is lined up for injection with at least one pump running, enter the instruction developed from CONTINGENCY 2.

C3-1 When RPV water level drops to -112.6 in. (Minimum Zero-Injection RPV Water Level) or if RPV water level cannot be determined, open one SRV.

When RPV pressure drops below 700 psig (Minimum Single SRV Steam Cooling Pressure), enter the instruction developed from CONTINGENCY 2.

CONTINGENCY 4
CORE COOLING WITHOUT LEVEL RESTORATION

If, while executing the following steps, any control rod is not inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), enter the instruction developed from Contingency 7.

C4-1 Open all ADS valves.

13

If any ADS valve cannot be opened, open other SRVs until 8 (number of SRVs dedicated to ADS) valves are open.

C4-2 Operate HPCS and LPCS subsystems taking suction from the suppression pool if possible.

When either LPCS or HPCS is injecting greater than its Minimum Spray Flow and RPV pressure is below the appropriate Maximum RPV Spray Pressure, terminate injection into the RPV from sources external to the primary containment except from HPCS, LPCS or CRD.

Core Spray Subsystem	Minimum Spray Flow (gpm)	Maximum RPV Spray Pressure (psig)
HPCS	(later)	(later)
LPCS	(later)	(later)

C4-3 When RPV water level is restored to 16.5 in. (top of active fuel), enter the instruction developed from the RPV Control Guideline at Step RC/L.

CONTINGENCY #5
ALTERNATE SHUTDOWN COOLING

(Deleted)

CONTINGENCY 6
RPV FLOODING

C6-1 If any control rod is not inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), flood the RPV as follows:

> If while executing the following steps:
>
> 1. RPV water level can be determined, and
> 2. Containment pressure can be maintained below the Primary Containment Design Pressure (Figure 1),
>
> Then:
>
> 1. If any control rod is not inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), enter the instruction developed from CONTINGENCY 7, and the instruction developed from the RPV Control Guideline at Step RC/P-4 and execute these instructions concurrently.
> 2. If all control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), enter the instruction developed from the RPV Control Guidelines at Steps RC/L and RC/P-4 and execute these steps concurrently.

C6-1.1 Terminate and prevent all injection into the RPV except from boron injection systems and CRD until RPV pressure is below the Minimum Alternate RPV Flooding Pressure.

Number of open SRVs	Minimum Alternate RPV Flooding Pressure (psig)
8	87
7	102
6	121
5	149
4	190
3	259
2	396
1	808

If less than 1 (minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure) SRVs can be opened, continue in this instruction.

C6-1.2 If at least 3 (Minimum Number of SRVs Required for Emergency Depressurization) SRVs can be opened, close the MSIVs, main steam line drain valves, RCIC and RHR steam condensing isolation valves.

C6-1.3 Commence and slowly increase injection into the RPV with the following systems until at least 1 (minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure) SRV is open and RPV pressure is above the Minimum Alternate RPV Flooding Pressure: 25

a. Motor driven feedwater pumps
b. Condensate pumps
c. CRD

If at least 1 (minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure) SRV is not open or RPV pressure cannot be increased to above the Minimum Alternate RPV Flooding Pressure, commence and slowly increase injection into the RPV with the following systems until at least 1 (minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure) SRV is open and RPV pressure is above the Minimum Alternate RPV Flooding Pressure:

a. HPCS
b. LPCS
c. LPCI 27
d. RHR - emergency service water crosstie
e. Fire system
f. ECCS keep-full systems
g. SLC (test tank)
h. SLC (boron tank)
i. Suppression pool cleanup
j. Condensate transfer

C6-1.4 Control injection to maintain at least 1 (minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure) SRV opens and RPV pressure above the Minimum Alternate RPV Flooding Pressure but as low as practicable.

C6-1.5 When all control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), continue in this instruction.

C6-2 If at least 3 (Minimum Number of SRVs Required for Emergency Depressurization) SRVs can be opened or if a HPCS or motor driven feedwater pump is available for injection, close the MSIVs, main steam line drain valves, RCIC and RHR steam condensing isolation valves.

C6-3 If RPV water level cannot be determined, flood the RPV as follows:

If while executing step 6.3.1-5, RPV water level can be determined, continue in this instruction at Step C6-4.

C6-3.1 Commence and increase injection into the RPV with the following systems until at least 3 (Minimum Number of SRVs Required for Emergency Depressurization) SRVs are open and RPV pressure is not decreasing and is 130 psig (Minimum RPV Flooding Pressure) or more above containment pressure:

a. HPCS
b. Motor driven feedwater pump
c. LPCS
d. LPCI 27
e. Condensate pumps
f. CRD
g. RHR emergency service water crosstie
h. Fire System
i. ECCS keep-full systems
j. SLC (test tank)
k. SLC (boron tank)
l. Suppression pool cleanup
m. Condensate transfer

C6-3.2 Control injection to maintain at least 3 (Minimum Number of SRVs Required For Emergency Depressurization) SRVs open and RPV pressure at least 112 psig (Minimum RPV Flooding Pressure) above suppression chamber pressure but as low as practicable.

C6-3.3 When:

1. RPV water level instrumentation is available, and

2. Temperature is below 212°F, and

3. Containment pressure is below the Primary Containment Design Pressure, and

4. RPV pressure has remained at least (later) psig (Minimum RPV Flooding Pressure) above containment pressure for at least the Minimum Core Flooding Interval.

Number of open SRVs	Minimum Core Flooding Interval (min)
7 or more	(later)
6	(later)
5	(later)
4	(later)
3	(later)

Terminate all injection into the RPV and reduce RPV water level.

C6-3.4 If RPV water level indication is not restored within the Maximum Core Uncovery Time Limit (Figure 2) after commencing termination of injection into the RPV, return to Step C6-3.

C6-3.5 Enter the instruction developed from the RPV Control Guideline at Steps RC/L and RC/P-4 and execute these instructions concurrently.

If while executing the following steps RPV water level cannot be determined, continue in this instruction at Step C6-3.

C6-4 If RPV water level can be determined, flood the RPV as follows: 28

C6-4.1 Commence and increase injection into the RPV with the following systems until RPV water level is increasing:

a. HPCS
b. Motor driven feedwater pump
c. LPCS
d. LPCI 27
e. Condensate pumps
f. CRD
g. RHR - emergency service water crosstie
h. Fire System
i. ECCS keep-full systems
j. SLC (test tank)
k. SLC (boron tank)
l. Suppression pool cooling
m. Condensate transfer

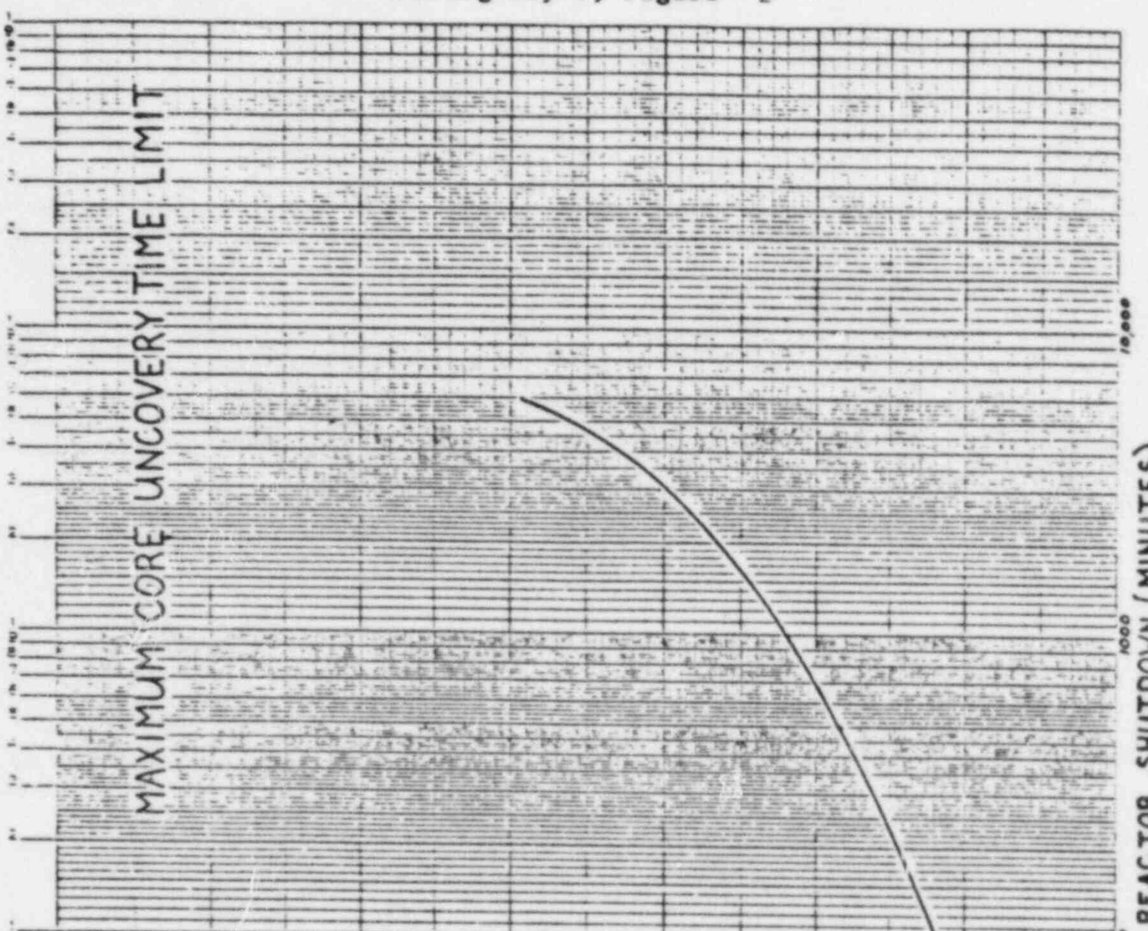
C6-4.2 Control injection to maintain RPV water level increasing.

C6-4.3 When containment pressure can be maintained below the Primary Containment Design Pressure, enter the instruction developed from the RPV Control Guidelines at Steps RC/L and RC/P-4 and execute these instructions concurrently.

Contingency 6, Figure 1

PRIMARY CONTAINMENT DESIGN PRESSURE

Contingency 6, Figure- 2



CONTINGENCY 7
LEVEL/POWER CONTROL

If while executing the following steps:

1. RPV water level cannot be determined, RPV FLOODING IS REQUIRED; enter the instruction developed from CONTINGENCY 6.

2. RPV Flooding is required, enter the instruction developed from CONTINGENCY 6.

3. All control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), enter the instruction developed from the RPV Control Guidelines at Step RC/L.

C7-1 If:

1. Reactor power is above 4% (APRM downscale trip) or cannot be determined, and

2. Suppression pool temperature is above the Boron Injection Initiation Temperature, (Figure 1), and

3. Either an SRV is open or opens or drywell pressure is above 1.68 psig (high drywell pressure scram setpoint),

Then:

1. If any MSIV is open, bypass low RPV water level MSIV isolation interlocks, and

2. Lower RPV water level by terminating and preventing all injection into the RPV except from boron injection systems and CRD until either: 26

   a. Reactor power drops below 4% (APRM downscale trip), or

   b. RPV water level reaches 0 in. (Flow Stagnation Water Level), or

   c. All SRVs remain closed and drywell pressure remains below 1.68 psig (high drywell pressure scram setpoint).

If while executing the following steps Emergency RPV Depressurization is required, continue in this instruction at Step C7-2.1.

If while executing the following steps: 1. Reactor power is above 5% (APRM downscale trip) or cannot be determined, and 2. RPV water level is above 16.5 in. (Flow Stagnation Water Level), and 3. Suppression pool temperature is above the Boron Injection Initiation Temperature, (Figure 1), and 4. Either an SRV is open or opens or drywell pressure is above 1.68 psig (high drywell pressure scram setpoint), return to Step C7-1.

C7-2 Maintain RPV water level either: 30, 25

1. If RPV water level was deliberately lowered in Step C7-1, at the level to which it was lowered, or

2. If RPV water level was not deliberately lowered in Step C7-1, between 177.7 in. (low level scram setpoint) and 219.5 in. (high level trip setpoint).

with the following systems:

1. Condensate/feedwater system 1450 - 0 psig (RPV pressure range for system operation)

2. CRD system 1990 - 0 psig (RPV pressure range for system operation)

3. RCIC system 1177 - 60 psig (RPV pressure range for system operation) 12

If RPV water level cannot be so maintained, maintain RPV water level above 16.5 in. (top of active fuel) with these systems.

If RPV water level cannot be maintained above 16.5 in. (top of active fuel), EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

C7-2.1 Terminate and prevent all injection into the RPV except from boron injection systems and CRD until RPV pressure is below the Minimum Alternate RPV Flooding Pressure.

Number of open SRVs	Minimum Alternate RPV Flooding Pressure (psig)
8	87
7	102
6	121
5	149
4	190
3	259
2	396
1	808

If less than 1 (minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure) SRVs can be opened, continue in this instruction.

C7-2.2 Commence and slowly increase injection into the RPV with the following systems to restore and maintain RPV water level above 16.5 in. (top of active fuel): 25

a. Condensate/feedwater system
b. CRD
c. RCIC

If RPV water level cannot be restored and maintained above 16.5 in. (top of active fuel), commence and slowly increase injection into the RPV with the following systems to restore and maintain RPV water level above 16.5 in. (top of active fuel):

a. HPCS
b. LPCS
c. LPCI
d. RHR - emergency service water crosstie
e. Fire System
f. ECCS keep-full systems
g. SLC (test tank)
h. SLC (boron tank)
i. Suppression pool cleanup
j. Condensate transfer

> If while executing the following step reactor power commences and continues to increase, return to Step C7-1.

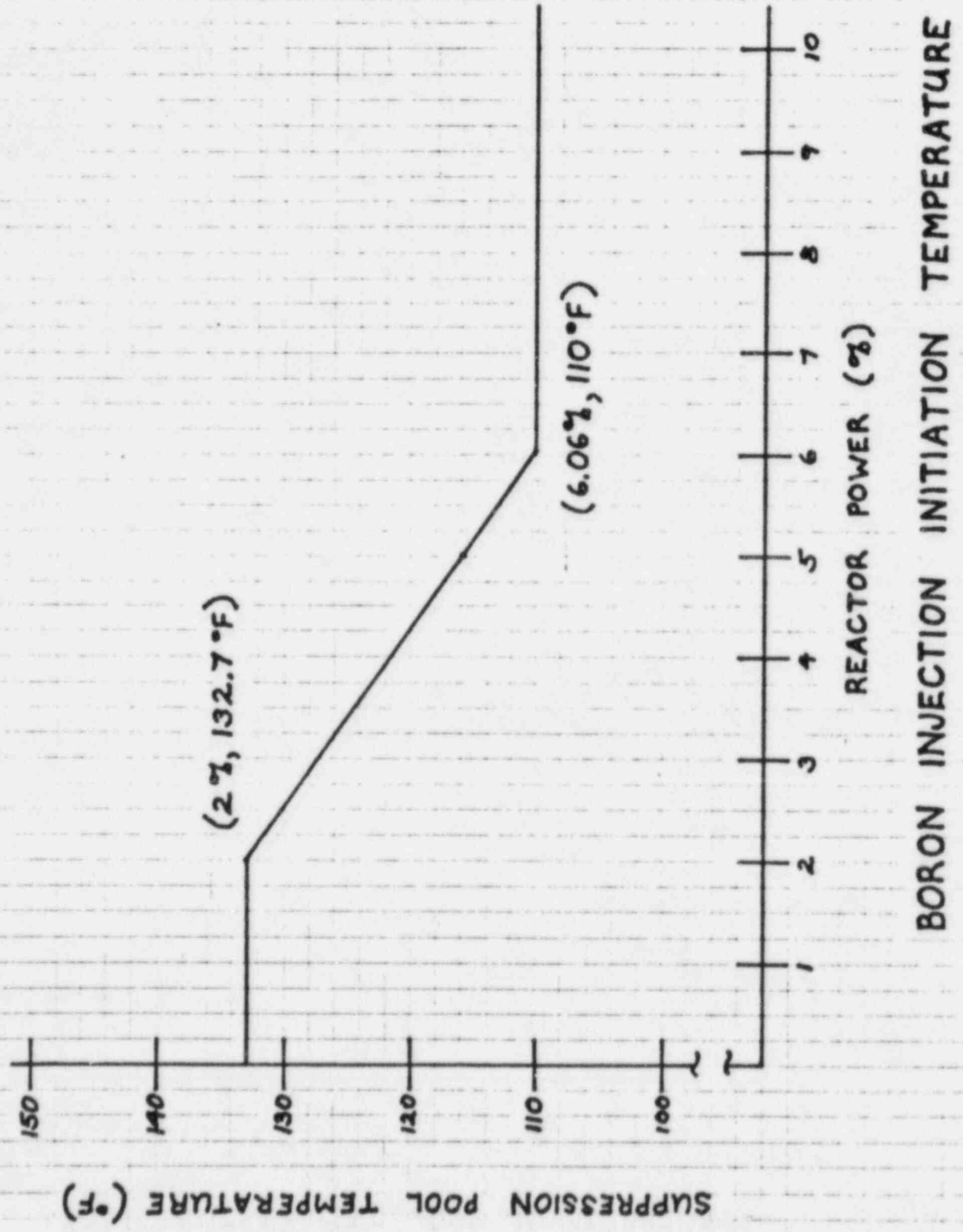
C7-3 When 315 pounds (Hot Shutdown Boron Weight) of boron have been injected or all control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position), restore and maintain RPV water level between 177.7 in. (low level scram setpoint) and 219.5 in. (high level trip setpoint).

If RPV water level cannot be restored and maintained above 177.7 in. (low level scram setpoint), maintain RPV water level above 16.5 in. (top of active fuel).

If RPV water level cannot be maintained above 16.5 in. (top of active fuel), EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; return to Step C7-2.1.

C7-4 When RPV level can be maintained above 183 in., then proceed to cold shutdown in accordance with ONI-C71.

Contingency 7 Figure 1



Attachment 7 to the PGP

Deviations from the Generic Guidelines

Deviation Sheet: Number 1

EPG Step Number(s): Table 1 - EPG Abbreviations

PSTG Step Number(s): Table 1 -PSTG Abbreviations

Deviation:

Abbreviation for Rod Control and Information System added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Abbreviation used in CAUTION 20.

Reviewer: RA Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Sadyde Date: 5 Sept 85

Incorporated: R.A. Stratman Date: 9/6/85

Deviation Sheet: Number 2

EPG Step Number(s): Table 1

PSTG Step Number(s): Table 1

Deviation:

Abbreviation for Rod Control System was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not incorporate a Rod Sequence Control System.

Reviewer: RA Stratman Date: 7/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 7/6/85

Deviation Sheet: Number 3

EPG Step Number(s): CAUTION 1

PSTG Step Number(s): CAUTION 1 and elsewhere

Deviation:

Symbol "#" was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Symbol "#" is used by convention at Perry to designate where utilized equipment is being referenced. Removed for human factor consideration.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: MAS Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 3a

EPG Step Number(s): CAUTIONS 1, 2, & 3

PSTG Step Number(s): N/A

Deviation:

CAUTIONS 1, 2, & 3

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The direction provided by CAUTIONS 1, 2 & 3 will be presented in the training program for the Plant Emergency Instructions. It is not felt to be appropriate to physically include this information in the Plant Emergency Instructions.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 3b

EPG Step Number(s): CAUTIONS 4

PSTG Step Number(s): CAUTION 27

Deviation:

General CAUTION 4 deleted and relocated as Specific CAUTION 27.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

It is more appropriate to make CAUTION 4 a Specific CAUTION and locate it in the Perry Specific Technical Guideline whenever operation of LPCI is directed and it is appropriate to inject through the heat exchanger.

Reviewer: R A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ____________ Date: ________

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 4

EPG Step Number(s): CAUTION 5

PSTG Step Number(s): N/A

Deviation:

CAUTION 5 has been deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The methodology for the determination of Suppression Pool, Drywell and Containment average temperatures will be contained in SOI-D23. It is not appropriate to reference this instruction, SOI-D23, in the Plant Emergency Instructions.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ________ Date: ________

Approved: (YES) NO (circle one)

GSO: R. J. Sobyda Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 5

EPG Step Number(s): CAUTION 6

PSTG Step Number(s): CAUTION 28

Deviation:

General CAUTION 6 has been deleted and redesignated as Specific CAUTION 28. In addition, CAUTION 28 is marked "Later".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

1) It is more appropriate to make CAUTION 6 a Specific CAUTION and locate it as appropriate in those portions of the PSTG dealing with control of RPV. level.

2) Uncertainties in the calculational methodology have prevented finalization of this table. This will be addressed when the PEIs are prepared.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Linden Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Fedyck Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 6

EPG Step Number(s): CAUTION 7

PSTG Step Number(s): N/A

Deviation:

CAUTION 7 was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not utilize heated reference leg instruments.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. [illegible] Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 7

EPG Step Number(s): CAUTION 8

PSTG Step Number(s): CAUTION 29

Deviation:

1) CAUTION 8 has been deleted and redesignated as Specific CAUTION 29.

2) Perry specific curves for NPSH requirements for the RCIC pump when taking suction from the suppression pool used in place of EPG curves.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

1) It is more appropriate to make General CAUTION 8 a specific CAUTION and locate it as appropriate in those portions of the PSIG dealing with RCIC operation.

2) Reference Perry Specific calculation 11016-29 Rev. 0. Only the RCIC pump has a potential NPSH problem. LPCS, HPCS, and RHR pumps will not encounter NPSH problems at any suppression pool temperatures with containment pressure between 0 psig and 15 psig. NOTE: This and other calculations are available for inspection at the Perry site, but are not included in the PGP.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tedych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 8

EPG Step Number(s): CAUTION 9

PSTG Step Number(s): CAUTION 30

Deviation:

General CAUTION 9 has been deleted and relocated as Specific CAUTION 30.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

It is more appropriate to make CAUTION 9 a Specific CAUTION and locate it in the Perry Specific Technical Guideline whenever the conditions specified are likely to occur.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Date:

Approved: YES NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 9

EPG Step Number(s): CAUTION 9

PSTG Step Number(s): CAUTION 9

Deviation:

Perry specific value for:

1) Suppression pool high level interlock and,

2) Condensate storage tank low level interlock are used in place of the EPG values.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

1) Reference GE Documents 22A3131AS Rev. 3 and 22A6089AA, Rev. 5

2) Reference Proof and Review Copy of Technical Specification Tables 3.3.3-2 and 3.3.5-2.

Reviewer: [signature] Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R.J. Tadgoh Date: 9 Sept 85

Incorporated: RA Stratman Date: 9/9/85

Deviation Sheet: Number 10

EPG Step Number(s): CAUTION 10

PSTG Step Number(s): N/A

Deviation:

CAUTION 10 has been deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

It is not appropriate to include the information contained in CAUTION 10 in the Plant Emergency Instructions themselves. This direction is covered in the training program for the Plant Emergency Instructions and is standard Operating practice as well.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R J Tabyck Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 11

EPG Step Number(s): CAUTION 11 and elsewhere

PSTG Step Number(s): CAUTION 11; RPV Control Guidelines - Entry Condition 3; Primary Containment Control Guideline - Entry Condition 4: C7-1

Deviation:

Perry specific value for drywell high pressure scram setpoint used in place of value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification Table 2.2.1-1.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Linde Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 12

EPG Step Number(s): CAUTION 11

PSTG Step Number(s): CAUTION 11

Deviation:

Last sentence deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The restoration to Auto/Standby is inappropriate for a CAUTION.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ____________ Date: ________

Approved: (YES) NO (circle one)

GSO: R. J. Jadyck Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 13

EPG Step Number(s): CAUTION 12

PSTG Step Number(s): CAUTION 12

Deviation:

Perry specific value for RCIC turbine minimum speed limit used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry Steam Turbine manual VPF-3622-165-1 pg. 5-8.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Linder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 14

EPG Step Number(s): CAUTION 13 and elsewhere

PSTG Step Number(s): CAUTION 13; CAUTION 17; RC/P-3

Deviation:

EPG value for RPV cooldown rate LCO verified correct for Perry.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification - 3.4.6.1.b.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: MAS Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 15

EPG Step Number(s): CAUTION 14 and elsewhere

PSTG Step Number(s): CAUTION 14; C1-2; C1-6

Deviation:

Perry specific value for RCIC low pressure isolation setpoint used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference G.E. design specification data sheet 22A3735AD, Rev. 3, item 3.1.6.10.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R.J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 16

EPG Step Number(s): CAUTION 15

PSTG Step Number(s): CAUTION 15

Deviation:

SRV opening sequence specified in PSTG.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The following criteria were used in selecting the SRV opening sequence:

a. distribute heat addition load to suppression pool;

b. avoid additional challenges to SRVs which perform the ADS function.

Reference 304-025, 026, 027 and 028, revisions K, H, N, and E respectively.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R J Sedych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 17

EPG Step Number(s): CAUTION 16

PSTG Step Number(s): CAUTION 16

Deviation:

Phrase "ventilation system and" was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Steam tunnel cooling system (M47) at Perry does not automatically start cn low RPV water level, therefore there are no interlocks to bypass. Reference M47 system elementary print 208-139 sheets 1 and 2, Rev. D and M47 System Design Description dated 9/8/82.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 17a

EPG Step Number(s): CAUTION 17

PSTG Step Number(s): N/A

Deviation:

CAUTION 17 has been deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

CAUTION 17 explained the reasons for depressurizing and as such is not really a CAUTION.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Sedych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 18

EPG Step Number(s): CAUTION 18

PSTG Step Number(s): CAUTION 18

Deviation:

Step was reworded.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

EPG wording was ambiguous. PSTG wording is more explicit about prohibiting diversion of any RHR pump that is required to assure adequate core cooling.

Reviewer: Robert A. Stratman Date: 4/22/85

Approved: YES NO N/R (circle one) [N/R circled]

NDAS Lead Engineer: Date:

Approved: YES NO (circle one) [YES circled]

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 19

EPG Step Number(s): CAUTION 19

PSTG Step Number(s): N/A

Deviation:

CAUTION 19 has been deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

CAUTION 19 was deleted for two reasons:

1) The direction provided by the PSTG to inject until the Cold Shutdown Boron weight has been injected negates the need for this Caution.

2) It is normal operating practice to followup automatic actions.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Jadyeh Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 20

EPG Step Number(s): CAUTION 20

PSTG Step Number(s): CAUTION 20

Deviation:

Reference to RSCS changed to RCIS.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not utilize on RSCS. This function is performed by RCIS.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 21

EPG Step Number(s): CAUTION 21 and elsewhere

PSTG Step Number(s): CAUTION 21 and elsewhere

Deviation:

Perry specific term "containment" used in place of EPG term "suppression chamber".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The Mark III design at Perry does not utilize a suppression chamber separate from the containment.

Reviewer: R. A. Stratman Date: 4/22/ 85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R J Tobyth Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 22

EPG Step Number(s): CAUTION 23

PSTG Step Number(s): N/A

Deviation:

CAUTION 23 was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Not applicable to Mark III containments. Referred to drywell spray system which is not used at Perry. Similar to Deviation Sheet 83.

Reviewer: R. A. Stratman Date: 4/22/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 23

EPG Step Number(s): CAUTION 24

PSTG Step Number(s): N/A

Deviation:

CAUTION 24 was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This CAUTION is used only in the EPG Secondary Containment Control Guideline, which is not applicable to Perry (see Deviation Sheet Number 101).

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 24

EPG Step Number(s): RPV Control Guideline - Purpose; and elswhere

PSTG Step Number(s): RPV Control Guideline - Purpose; and elsewhere

Deviation:

Items listed in EPG's were marked with bullets (*). PSTGs numbered these items.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Numbering these items makes it easier to reference them.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ________ Date: ________

Approved: (YES) NO (circle one)

GSO: R.J. Tabych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 25

EPG Step Number(s): RPV Control Guidelines - Purpose

PSTG Step Number(s): RPV Control Guidelines - Purpose 3

Deviation:

Perry specific value for minimum RPV water temperature used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.4.6.1

Reviewer: Matt Scharnagl [signature] Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender [signature] Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych [signature] Date: 9 Sept 85

Incorporated: Robert A. Stratman [signature] Date: 9/9/85

Deviation Sheet: Number 26

EPG Step Number(s): RPV Control Guidelines - Purpose

PSTG Step Number(s): RPV Control Guidelines - Purpose 3

Deviation:

Perry specific value for maximum RPV water temperature in cold shutdown used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification Table 1.2.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: RBS Richard A. Pinder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 27

EPG Step Number(s): RPV Control Guideline - Entry Condition; and elsewhere

PSTG Step Number(s): RPV Control Guideline - Entry Condition 1; RC/L-2; C7-2; C7-3

Deviation:

Perry specific value for RPV low water level scram setpoint used in place of EPG value. (Also note that all RPV water levels are referenced to the top of active fuel).

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification Table 2.2.1-1.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: for Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: RJ Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 28

EPG Step Number(s): RPV Control Guideline - Entry Condition; and elsewhere

PSTG Step Number(s): RPV Control Guideline - Entry Condition 2; and elsewhere

Deviation:

Perry specific value for RPV high pressure scram setpoint used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification Table 2.2.1-1.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: for Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: P J Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 29

EPG Step Number(s): RPV Control Guideline - Entry Condition; and elsewhere

PSTG Step Number(s): RPV Control Guideline - Entry Condition 4; RC/Q-3; RC/Q-4; C7-1

Deviation:

Perry specific value for APRM downscale trip used in place of EPG value.

Evaluator: R. A. Stratman   Date: 4/22/85

Justification:

Reference GE Design Specification data sheet 22A3739AD Rev. 10.

Reviewer: [signature]   Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: [signature]   Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych   Date: 9 Sept 85

Incorporated: [signature]   Date: 9/9/85

Deviation Sheet: Number 29a

EPG Step Number(s): RC/Q-1

PSTG Step Number(s): RC-2

Deviation:

Added new step RC-2, and deleted step RC/Q-1.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The normal scram procedure directs the operator to immediately place the REACTOR SYSTEM MODE SWITCH in SHUTDOWN; thus, it is desirable to keep the Plant Emergency Instructions consistent.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tabyck Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 30

EPG Step Number(s): RC/L-1

PSTG Step Number(s): RC/L-1

Deviation:

Wording has been revised.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Revision simplified the content without altering the intent.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Sadlyh Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 31

EPG Step Number(s): RC/L-1

PSTG Step Number(s): RC/L-1

Deviation:

Item C, "Emergency diesel generators" is included in list of systems which should be initiated if conditions require. Also, the word "Emergency" has been changed to - "Standby".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Entry Condition 3 automatically starts the standby diesel generators. The system title revision reflects Perry specific terminology. Reference drawings 208-216 sheets 5 and 6, revision E.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 32

EPG Step Number(s): RC/L-1

PSTG Step Number(s): RC/L-1

Deviation:

"HPCS diesel generator" was added to the list of equipment to be initiated if conditions required.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Entry Condition 3 supplies an automatic start signal to the HPCS diesel generator. Reference drawing 208-066 sheet B101, revision F.

Reviewer: Marty Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Cuiler Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Sedgeh Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 33

EPG Step Number(s): "Box" preceding RC/L-2

PSTG Step Number(s): "Box" preceding RC/L-2

Deviation:

In the first condition, the phrase "Boron injection is required" has been deleted. In its place has been inserted the phrase "Any control rod is not inserted to or beyond Position 02 (Maximum Subcritical Withdrawal Position)".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The PSTG is now constructed such that Contingency 7 is used to control RPV water level anytime all control rods are not inserted beyond Position 02. This is consistent with the latest thinking of the generic EPGs.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R.J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 34

EPG Step Number(s): RC/L-2; C7-2; C7-3

PSTG Step Number(s): RC/L-2; C7-2; C7-3

Deviation:

Perry specific value for RPV high water level entry used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification Table 2.2.1-1.

Reviewer: [signature] Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R.J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 35

EPG Step Number(s): RC/L-2; C7-2

PSTG Step Number(s): RC/L-2; C7-2

Deviation:

Perry specific value for range of operation of condensate/feedwater system used in place of EPG values.

Evaluator: R. A. Stratman   Date: 4/22/85

Justification:

Preliminary value based on specified shutoff head of the turbine driven feedwater pumps. Actual value will be determined during pre-operational testing and will take into account elevation difference between pump discharge and point of injection into the RPV. Reference Feedwater System Design Description, pg. 3, dated 10/14/81.

Reviewer: Marty Schumacher   Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Linden   Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych   Date: 9 Sept 85

Incorporated: Robert A. Stratton   Date: 9/9/05

Deviation Sheet: Number 36

EPG Step Number(s): RC/L-2; C7-2

PSTG Step Number(s): RC/L-2; C7-2

Deviation:

Perry specific value for range of operation of CRD system used in place of EPG values.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Preliminary value based on specified shutoff head of the control rod drive pumps. Actual value will be determined during pre-operational testing and will take into account elevation difference between pump discharge and point of injection into the RPV. Reference GE design specification data sheet 22A6094AA, revision 3, item 4.4.

Reviewer: Mark Schurock Date: 9/9/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Richard A. Linde Date: 9-9-85

Approved: YES NO (circle one)

GSO: R. J. Tadyol Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 37

EPG Step Number(s): RC/L-2; C7-2

PSTG Step Number(s): RC/L-2; C7-2

Deviation:

Perry specific values for range of operation of RCIC system used in place of EPG values.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference GE Design Specification data sheet 22A6089AA, revision 5, section 4.2 (note: shutoff head information is unavailable); draft Technical Specification Table 3.3.2-2.

Reviewer: Mark Schumock Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 38

EPG Step Number(s): RC/L-2 and elsewhere

PSTG Step Number(s): RC/L-2 and elsewhere

Deviation:

Reference to HPCI deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry does not have a HPCI system in its design.

Reviewer: Robert A Stratman Date: 7/9/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tabyda Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 7/6/85

Deviation Sheet: Number 39

EPG Step Number(s): RC/L-2

PSTG Step Number(s): RC/L-2

Deviation:

Perry specific values for range of operation of HPCS system used in place of EPG values.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-27, Rev. 0.

Reviewer: Mark Schumacher Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 40

EPG Step Number(s): RC/L-2

PSTG Step Number(s): RC/L-2

Deviation:

Perry specific values for range of operation of LPCS used in place of EPG values.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Preliminary value based on specified shutoff head of the LPCS pump. Actual value will be determined during pre-operational testing and will take in account elevation difference between pump discharge and point of injection with the RPV. Reference GE design specification data sheet 22A3125AM, revision 2, section 4.1.2.b.

Reviewer: [signature] Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 41

EPG Step Number(s): RC/L-2

PSTG Step Number(s): RC/L-2

Deviation:

Perry specific values for range of operation of LPCI used in place of EPG values.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Preliminary value based on specified shutoff head of the RHR pump. Actual value will be determined during pre-operational testing and will take into account elevation difference between pump discharge and point of injection into the RPV. Reference GE design specification data sheet 22A3139AM, revision 7, section 4.1.2.b.

Reviewer: Mark Schumacher Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R J. Tadgel Date: 9 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 42

EPG Step Number(s): RC/L-2 and elsewhere

PSTG Step Number(s): RC/L-2; C1-6; C1-7; C4-3; C7-2; C7-2.2; C7-3

Deviation:

Perry specific value for top of active fuel used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference correspondence PY-CEI/GEN-755 and PY-GEN/CEI-2196.

Reviewer: Mark Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 43

EPG Step Number(s): RC/L-2; RC/P-4

PSTG Step Number(s): RC/L-2; RC/P-4

Deviation:

Steps referring to CONTINGENCY 5 were deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Contingency 5 has been deleted - See Deviation Sheet Number 118.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 43a

EPG Step Number(s): RC/Q-4.2

PSTG Step Number(s): RC/L-3; RC/Q-5.2

Deviation:

1) Perry specific value for Cold Shutdown Boron Weight used in place of EPG value.

2) The test for reactor shutdown has been moved from RC/P to RC/L. See deviation sheet 57.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-5, Rev. 0.

Reviewer: Mark Schumacher Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 43b

EPG Step Number(s): RC/P-3 and elswhere

PSTG Step Number(s): RC/L-3 and elsewhere

Deviation:

1) Perry specific value for maximum subcritical banked withdrawal position used in place of EPG value.

2) The test for reactor shutdown has been moved from RC/P to RC/L. See deviation sheet 57.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Value based on bounding calculations performed by fuel/reactor vendor for BWR 6 design.

Reviewer: Robert A Stratman Date: 9/5/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 44

EPG Step Number(s): RC/L-3 and elsewhere

PSTG Step Number(s): RC/L-4 and elsewhere

Deviation:

Where Perry specific instructions are known, they are included and referenced by instruction number.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Included to aid the preparer of the Plant Emergency Instructions developed from the PSTG. Note: SOI- System Operating Instruction; ONI- Off-Normal Instruction.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 45

EPG Step Number(s): RC/L-3

PSTG Step Number(s): RC/L-4

Deviation:

Step no longer unconditionally directs the operator to proceed to cold shutdown.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Since RC/P, RC/L, and RC/Q are executed concurrently, the operator is directed in only one of these, RC/L, to proceed to cold shutdown.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ________ Date: ________

Approved: (YES) NO (circle one)

GSO: R. J. Gedych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 46

EPG Step Number(s): RC/P, First Condition in the box preceding step RC/P-1.

PSTG Step Number(s): RC/P, First Condition in the box preceding step RC/P-1.

Deviation:

The phrase "Boron injection is not required" was deleted and the phrase "all control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position)" was added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This condition determines that water level be controlled per the directions in Contingency 7; hence, Emergency RPV Depressurization is to be controlled by Contingency 7 as well. This condition prohibits depressurization with the Bypass Valves, if RPV level is being maintained per Contingency 7.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 47

EPG Step Number(s): RC/P; C2-1.2; C4-1

PSTG Step Number(s): RC/P; C2-1.1; C4-1

Deviation:

Perry specific number of SRVs dedicated to ADS function used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference drawing 302-608 revision B.

Reviewer: Marty Schumack Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 48

EPG Step Number(s): RC/P-1 and elsewhere

PSTG Step Number(s): RC/P-1 and elsewhere

Deviation:

Reference to the isolation condenser was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not incorporate isolation condensers.

Reviewer: R. A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadgol Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 49

EPG Step Number(s): RC/P-1

PSTG Step Number(s): RC/P-1

Deviation:

Perry specific value for RPV pressure at which all turbine bypass valves are fully open is 920.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This is the control setting for the bypass system at 100% power at Perry.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: ________ Date: ________

Approved: YES NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 50

EPG Step Number(s): RC/P-1; SP/T-4

PSTG Step Number(s): RC/P-1; SP/T-4

Deviation:

Perry specific curve for Heat Capacity Temperature Limit used in place of EPG curves.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-3, Rev.0.

Reviewer: Marty Schurnck Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 51

EPG Step Number(s): RC/P-1; SP/L-3.1

PSTG Step Number(s): RC/P-1; SP/L-3.1

Deviation:

Curve is marked "Later".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Uncertainties in the calculational methodology have prevented finalization of this curve. This will be addressed when the PEIs are prepared.

Reviewer: [signature] Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: [signature] Date: 9-9-85

Approved: (YES) NC (circle one)

GSO: R. J. Tabyde Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 52

EPG Step Number(s): RC/P-2

PSTG Step Number(s): RC/P-2

Deviation:

Perry specific value for the low-low set SRV lift pressure is used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.4.2.2.

Reviewer: Marty Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 53

EPG Step Number(s): RC/P-2

PSTG Step Number(s): RC/P-2

Deviation:

Phrase added which covered the case where SRVs had already lifted and the Low-Low Set function had already activated.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.4.2.2.

Reviewer: Mark Schrumpf Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadysh Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 54

EPG Step Number(s): RC/P-2; C1-1.2

PSTG Step Number(s): RC/P-2; C2-1.1

Deviation:

Perry specific value for elevation of top of SRV discharge device used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference drawing 301-734, revision J.

Reviewer: Mark Schumack Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Sedych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 55

EPG Step Number(s): RC/P-2

PSTG Step Number(s): RC/P-2

Deviation:

Phrase "depressurize with sustained SRV opening" was changed to "place the control switch for each SRV in the OFF position".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

If SRVs must be used to augment RPV pressure control, and if the continuous SRV pneumatic supply is unavailable, the valves should be closed to limit the number of cycles on the valves, thereby conserving pneumatic pressure so that the valves would be available if Emergency Depressurization were subsequently required.

Reviewer: [signature] Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: [signature] Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: [signature] Date: 6 Sept 85

Incorporated: [signature] Date: 9/9/85

Deviation Sheet: Number 56

EPG Step Number(s): RC/P-2

PSTG Step Number(s): RC/P-2

Deviation:

Phrase "[other steam driven equipment]" replaced by steam condensing mode of RHR, turbine driven feedwater pumps, and steam jet air ejectors.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design permits the use of these components to augment RPV pressure control systems.

Reviewer: Marty Schwartz Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 57

EPG Step Number(s): RC/P-3

PSTG Step Number(s): N/A

Deviation:

Deviation 57 in Revision 0 is no longer applicable.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The test for reactor shutdown has been moved to RC/L-3 and the exit to cold shutdown has been moved to RC/L-4. This will allow the reactor cooldown to be accomplished per ONI-C71, Reactor Scram. Direction will be provided in ONI-C71 for cooldown when the reactor is shutdown using liquid boron. Further, for every entry into the emergency instruction a cooldown will not be required in order to exit the emergency instruction.

Reviewer: Robert A. Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ____ Date: ____

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 58

EPG Step Number(s): RC/P-3 and elsewhere

PSTG Step Number(s): N/A

Deviation:

Deviation 58, Revision 0 is no longer applicable.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

See deviation 57.

Reviewer: Robert A Stratman Date: 7/4/85

Approved: YES NO N/R (circle one) — N/R circled

NDAS Lead Engineer: ________ Date: ________

Approved: YES NO (circle one) — YES circled

GSO: R. J. Tabych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 59

EPG Step Number(s): RC/P-3; RC/Q-4.2

PSTG Step Number(s): N/A

Deviation:

Deviation 59, Revision 0, is no longer applicable.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

See deviation 57.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ____ Date: ____

Approved: (YES) NO (circle one)

GSO: R. J. Jadyk Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 60

EPG Step Number(s): RC/P-3

PSTG Step Number(s): N/A

Deviation:

Deviation 60, Revision 0, is no longer applicable.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

See deviation 57.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Sadyh Date: 5 Sept 85

Incorporated: RA Stratman Date: 9/6/85

Deviation Sheet: Number 60a

EPG Step Number(s): RC/P4

PSTG Step Number(s): N/A

Deviation:

Step RC/P4 was deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

See deviation 57.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R.J. Sadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 60b

EPG Step Number(s): RC/P5

PSTG Step Number(s): RC/P3

Deviation:

The exit to cold shutdown is now made from step RC/L4.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

See deviation 57.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 61

EPG Step Number(s): RC/Q-1

PSTG Step Number(s): RC/Q-1

Deviation:

Step not included in PSTG.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Step was inserted as RC-2. See deviation sheet 29a.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: _____ Date: _____

Approved: (YES) NO (circle one)

GSO: R. J. Gadyoh Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 62

EPG Step Number(s): N/A

PSTG Step Number(s): RC/Q-1

Deviation:

New step added which directs the operator to manually initiate Alternate Rod Insertion if reactor power is above 5% or cannot be determined.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design incorporates the Alternate Rod Insertion function which is separate and redundant to the reactor protection/control rod drive scram function.

Reviewer: Robert A Stratman Date: 9/6/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadgoh Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 63

EPG Step Number(s): RC/Q-2

PSTG Step Number(s): RC/Q-2

Deviation:

Phrase "and the MSIVs are open" was not included in the PSTG.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

At Perry, if the MSIVs are shut, the main turbine generator would not be considered to be on line.

Reviewer: Robert A Stratman Date: 9/6/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadgh Date: 5 Sept 85

Incorporated: Robert A Strat Date: 9/6/85

Deviation Sheet: Number 64

EPG Step Number(s): RC/Q-3

PSTG Step Number(s): RC/Q-3

Deviation:

Step RC/Q-3 was deleted and the direction to trip the recirculation pumps was included in step RC/Q-2.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Based on simulator exercises and review of the Perry power to flow map, little or no power reduction is seen between minimum flow and natural circulation flow; therefore, to simplify the procedure the flow is run-back and the pumps tripped in one step.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Date:

Approved: YES NO (circle one)

GSO: R.J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 65

EPG Step Number(s): RC/Q-4

PSTG Step Number(s): RC/Q-4

Deviation:

Perry specific curve for Boron Injection Initiation Temperature used in place of EPG curve.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-6, Rev. 1.

Reviewer: Marty Schwarz Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard C. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 66

EPG Step Number(s): RC/Q-4

PSTG Step Number(s): RC/Q-5

Deviation:

An alternate boron injection system is not specified.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

An operable alternate boron injection path is not available at the PNPP.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: E J Sabyh Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 67

EPG Step Number(s): RC/Q-5.1

PSTG Step Number(s): RC/Q-6.1

Deviation:

Perry specific fuse numbers in place of EFG fuse numbers.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference is PNPP drawing B-208-040, sh. A10, Rev. H.

Reviewer: Mark Schuresck Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 68

EPG Step Number(s): RC/Q-5.1

PSTG Step Number(s): RC/Q-6.1

Deviation:

Step requiring isolation and venting of scram air header deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design incorporates an Alternate Rod Insertion sub-system which provides a diverse and redundant mechanism to vent the scram air header, thus opening the scram inlet and outlet valves and closing the scram discharge volume vent and drain valves.

Reviewer: Mark Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 68a

EPG Step Number(s): RC/Q-5.2

PSTG Step Number(s): RC/Q-6.2

Deviation:

1) The phrase "Reset ARI" was added.

2) The phrase "or ARI" was added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The phrases were added to account for the Alternate Rod Insertion function which is a part of the Perrry ATWS system.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ________ Date: ________

Approved: (YES) NO (circle one)

GSO: R. J. Tabych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 69

EPG Step Number(s): RC/Q-5.2 and elsewhere

PSTG Step Number(s): RC/Q-6.2 and elsewhere

Deviation:

Actions to be taken in event scram could not be reset have been deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Several actions required by these steps require entry into the primary containment, which, for a Mark III containment may not be safe following an ATWS.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R.J. Salyer Date: 5 SEP 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 70

EPG Step Number(s): RC/Q-5.3

PSTG Step Number(s): RC/Q-6.3

Deviation:

Wording has been revised.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Revised wording directs attention to the importance of the scram discharge volume being drained rather than whether or not the vent and drain valves are open.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO N/R (circle one) [N/R circled]

NDAS Lead Engineer: Date:

Approved: YES NO (circle one) [YES circled]

GSO: R. J. Sadyk Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 70b

EPG Step Number(s): RC/Q-5.3.3.

PSTG Step Number(s): N/A

Deviation:

Step which directs opening the scram discharge volume vent and drain valves was deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This cannot be accomplished independently at Perry. It is controlled by the scram and ARI reset functions; thus, a separate step directing this action is unwarranted.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 70c

EPG Step Number(s): RC/Q-5.2

PSTG Step Number(s): Box following step RC/Q-6.4

Deviation:

Direction added which instructs the operator to again attempt to scram when the reactor scram and ARI can be reset.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Scram is the most efficacious method for rod insertion; thus, if the ability to scram again becomes available, it is desirable to utilize this method of rod insertion over other methods.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tabyda Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 71

EPG Step Number(s): Primary Containment Control Guidelines - Entry Conditions; and elsewhere

PSTG Step Number(s): Primary Containment Control Guidelines - Entry Conditions 1, 2, 3; and elsewhere

Deviation:

"Suppression pool temperature," "Drywell Temperature," and "Containment Temperature" were changed to "Suppression pool average temperature," "Drywell average temperature," and "Containment average temperature".

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Draft Perry Technical Specifications 3.6.1.7, 3.6.2.6, 3.6.3.1 LCOs are written specifying area average temperatures. EPG term is vague; operator could conservatively assume that any of the monitored points in excess of the limit would be sufficient to enter the PEI developed from this guideline and unnecessarily enter the PEI.

Reviewer: [signature] Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard C. Pender Date: 9 6 85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 72

EPG Step Number(s): Primary Containment Control Guidelines - Entry Condition; SP/T-2

PSTG Step Number(s): Primary Containment Control Guidelines - Entry Condition 1; SP/T-2

Deviation:

EPG value for most limiting suppression pool temperature LCO verified correct for Perry.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.6.3.1.

Reviewer: Marty Schumacher Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 73

EPG Step Number(s): Primary Containment Control Guidelines - Entry Condition; DW/T-1

PSTG Step Number(s): Primary Containment Control Guidelines - Entry Condition 2; DW/T-1

Deviation:

EPG value for drywell average temperature LCO verified correct for Perry.
Reference to maximum normal operating temperature deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.6.2.6 for drywell average temperature LCO. Reference to maximum normal operating temperature was deleted because it is inappropriate to use a single area temperature (even though in excess of the average temperature LCO) by itself to require entry into a PEI.

Reviewer: Mark Schurack Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-5-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 74

EPG Step Number(s): Primary Containment Control Guidelines - Entry Condition; CN/T-1

PSTG Step Number(s): Primary Containment Control Guidelines - Entry Condition 3; CN/T-1

Deviation:

EPG value for containment average temperature LCO verified correct for Perry.

Evaluator: R. A. Stratman   Date: 4/22/85

Justification:

Reference draft Technical Specification 3.6.1.7.

Reviewer: Marty Schumack   Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender   Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadyche   Date: 6 Sept 85

Incorporated: Robert A. Stratman   Date: 9/9/85

Deviation Sheet: Number 75

EPG Step Number(s): Primary Containment Control Guideline - Entry Condition and elsewhere

PSTG Step Number(s): Primary Containment Control Guideline - Entry Condition 5 amd elsewhere

Deviation:

Perry specific value for maximum suppression pool level LCO used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.6.3.1.

Reviewer: Mark Schumack Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadyon Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 76

EPG Step Number(s): Primary Containment Control Guideline - Entry Condition and elsewhere

PSTG Step Number(s): Primary Containment Control Guideline - Entry Condition 6 and elsewhere

Deviation:

Perry specific value for minimum suppression pool water LCO used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference draft Technical Specification 3.6.3.1.

Reviewer: Mark Schumacher Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Porter Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 77

EPG Step Number(s): "Box" preceding SP/T

PSTG Step Number(s): N/A

Deviation:

"Box" was deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Utility intent is to prepare separate instructions to be executed individually based on specific entry conditions rather than execute SP/T, DW/T, CN/T, PC/P, and SP/L concurrently based on any single entry condition.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Date:

Approved: YES NO (circle one)

GSO: R.J. Sadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 78

EPG Step Number(s): SP/T-1

PSTG Step Number(s): SP/T-1

Deviation:

Statement requiring a reactor scram if an SORV could not be closed within two minutes was deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Draft Perry Technical Specifications do not require this action.
Reference Technical Specification 3.4.2.1.b.

Reviewer: Mark Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 79

EPG Step Number(s): SP/T-3

PSTG Step Number(s): SP/T-3

Deviation:

The Technical Specification limiting suppression pool temperature is used in place of the Boron Injection Initiation Temperature.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Draft Technical Specification 3.6.3.1 requires the mode switch to be placed in SHUTDOWN at a suppression pool temperature of 110°F. Use of the Boron Injection Initiation Temperature would allow suppression pool temperature to exceed 110°F prior to requiring a reactor scram.

Reviewer: Robert A Stratman Date: 9/6/80

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Sadysh Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 80

EPG Step Number(s): SP/T-4

PSTG Step Number(s): SP/T-4

Deviation:

Order of phrases was changed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

If actions performed in steps SP/T-1, SP/T-2, and SP/T-3 are insufficient to maintain suppression pool temperature below the HCTL, control of RPV pressure is effected through entry into the RPV Control Guideline and execution of the RPV pressure control steps specified therein.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tedyon Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 81

EPG Step Number(s): "Box" preceding DW/T-2

PSTG Step Number(s): N/A

Deviation:

"Box" was deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Contained statement which required concurrent execution of steps DW/T-2 and DW/T-3. Deviation 82 deleted step DW/T-2, removing need for statement.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tafyoh Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 82

EPG Step Number(s): DW/T-2; CN/T-4

PSTG Step Number(s): N/A

Deviation:

EPG steps deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Steps have been incorporated into CAUTION 6.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. [illegible] Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 83

EPG Step Number(s): DW/T-3 and elsewhere

PSTG Step Number(s): DW/T-2 and elsewhere

Deviation:

First paragraph of EPG step DW/T-3 was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not incorporate a drywell spray system, hence, the paragraph is N/A. Similar to Deviation Sheet 22.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: ____________ Date: ________

Approved: YES NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 84

EPG Step Number(s): DW/T-3

PSTG Step Number(s): DW/T-2

Deviation:

Perry specific value of the lower of maximum temperature at which ADS qualified or drywell design temperature used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference FSAR Tables 6.2-1 and 6.2-2.

Reviewer: Marty Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Penker Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 85

EPG Step Number(s): N/A

PSTG Step Number(s): "Box" preceding CN/T-2

Deviation:

Statement was added instructing the operator to terminate containment spray if containment pressure drops below (later) psig.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Once containment spray has been initiated, convective cooling may depressurize the containment to below its design negative pressure. Terminating containment spray when containment pressure drops below (later) psig terminates the depressurization before the design negative pressure is exceeded without challenging the containment vacuum relief system. This value will be finalized before the Plant Emergency Instructions receive final approval.

Reviewer: Mark Schumpert Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Linder Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tatyd Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 86

EPG Step Number(s): CN/T-2; CN/T-3

PSTG Step Number(s): CN/T-2; CN/T-3

Deviation:

EPG value of containment design temperature verified correct for Perry.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference FSAR Table 6.2-2.

Reviewer: [signature] Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 87

EPG Step Number(s): CN/T-2; PC/P-2

PSTG Step Number(s): CN/T-2; PC/P-2

Deviation:

Perry specific value for Mark III Containment Spray Initiation Pressure Limit used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This value will be provided when the methodology for this calculation as it applies to Perry is finalized.

Reviewer: Mark Schwarz Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R.J. Tadyc Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 88

EPG Step Number(s): PC/P-1

PSTG Step Number(s): PC/P-1

Deviation:

Reference to standby gas treatment system was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not incorporate a standby gas treatment system.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 5 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 89

EPG Step Number(s): PC/P-1

PSTG Step Number(s): PC/P-1

Deviation:

EPG value for Maximum Non-Condensible Evacuation Temperature was verified correct for Perry.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

At 212°F or above steam would be removed from the drywell during purging. Subsequent drywell cooling could result in excess negative pressures in the drywell. In order to minimize drywell vacuum when the drywell is cooled, operator should purge only when drywell temperature is below 212°F.

Reviewer: Marty Schumacher Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R.J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 90

EPG Step Number(s): PC/P-2

PSTG Step Number(s): PC/P-2

Deviation:

Phrases not applicable to Mark III containments were deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

EPG was written to be applicable to all containment designs so that applicable statements could be incorporated and non-applicable statements would be deleted.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R.J. Jaeger Date: 5 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 90a

EPG Step Number(s): PC/P-2, CAUTION 8

PSTG Step Number(s): N/A

Deviation:

The use of CATUION 8 with respect to step PC/P-2 has been deleted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Neither of the Perry RHR pumps is NPSH limited at the point where containment sprays will be utilized.

Reviewer: Robert A Stratman Date: 4/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Apr 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 91

EPG Step Number(s): PC/P-4

PSTG Step Number(s): PC/P-3

Deviation:

Perry specific curve for Pressure Suppression Pressure used in place of EPG curve.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-12, Rev. 0.

Reviewer: Marty Schwartz Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 92

EPG Step Number(s): PC/P-5

PSTG Step Number(s): PC/P-4

Deviation:

Perry specific curve for Primary Containment Design Pressure used in place of EPG curve.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-13, Rev. 0.

Reviewer: Mark Schwarz Date:

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R.J. Tadyche Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 93

EPG Step Number(s): PC/P-6

PSTG Step Number(s): PC/P-5

Deviation:

Perry specific curve for Primary Containment Pressure Limit used in place of EPG curve.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-14, Rev. 0.

Reviewer: Mark Schumack Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. [illegible] Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 94

EPG Step Number(s): PC/P-6

PSTG Step Number(s): PC/P-5

Deviation:

Phrase concerning elevation of suppression pool spray nozzles was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry design does not incorporate a dedicated suppression pool spray system. The containment spray nozzles are located on the inner surface of the containment dome, hence it's not realistic to assume they could be covered by water.

Reviewer: Robert A. Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 95

EPG Step Number(s): PC/P-7

PSTG Step Number(s): PC/P-6

Deviation:

Phrase "irrespective of the offsite radioactivity release rate" was added

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Under these circumstances, venting is the only mechanism remaining which could prevent an uncontrolled, unpredictable and possibly irreparable breach of primary containment. Although venting will probably result in the release of some radioactivity to the environment, this is preferable to containment failure whereby adequate core cooling may also be lost and radioactivity is released with no control whatsoever.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R circled) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES circled) NO (circle one)

GSO: R. J. Jadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 96

EPG Step Number(s): PC/P-7

PSTG Step Number(s): PC/P-6

Deviation:

Containment venting instruction is not known at the present time.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Will be addressed when PEIs are written.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

CALCULATION METHODOLOGY

PRIMARY CONTAINMENT PRESSURE LIMIT

1.0 APPLICABLE GUIDELINE STEPS

PC/P-7 If containment pressure exceeds the Primary Containment Pressure Limit, then irrespective of the offsite radioactivity release rate, vent the primary containment in accordance with (procedure for containment venting) to reduce and maintain pressure below the Primary Containment Pressure Limit as follows...

2.0 INPUT PARAMETERS AND PHYSICAL CONSTANTS

P_i and E_i — Maximum pressure at which the suppression chamber is not expected to fail and corresponding primary containment elevation of the failure point. Enter enough points to characterize the structural limits.

i	P_i (psig)	E_i (ft)
1	______	______
2	______	______
3	______	______
4	______	______
5	______	______

E_{SCPI} — Elevation of the suppression chamber pressure instrument tap*

E_{SCPI} = ______ ft

E_{max} — Maximum Primary Containment Water Level*

E_{max} = ______ ft

E_{SRV} — Elevation of the lowest SRV*

E_{SRV} = ______ ft

E_{MSIV} — Elevation of the lowest inboard MSIV*

E_{MSIV} = ______ ft

$\dot{Q}_R$ — Rated reactor power

$\dot{Q}_R$ = ______ MW

*Elevation 0.0 is defined to be the bottom of the suppression pool.

DHF	Decay heat fraction 10 min. after reactor shutdown for evaluation of vent decay heat removal capability	DHF = .022115
k_a	Specific heat ratio for normal containment gas	k_a = ____ -
k_g	Specific heat ratio for steam	k_g = 1.329 -
R_a	Gas constant for normal containment gas	R_a = ____ $\frac{lbf\text{-}ft}{lbm\ {}^\circ R}$
T_{CST}	Maximum expected condensate storage tank temperature	T_{CST} = ____ °F
h_{in}	Specific enthalpy of saturated liquid at T_{CST}	h_{in} = ____ Btu/lbm
SC_V	Vent path information for all suppression chamber vent paths including: A_{vi} - Minimum vent path area P_{oi} - Maximum containment pressure the vent valve can open against P_{ci} - Maximum containment pressure the vent valve can close against	

E_{vi} - Elevation of the vent path containment penetration

Path i	A_{vi} (ft^2)	P_{oi} (psid)	P_{ci} (psid)	E_{fi} (ft)
1	____	____	____	____
2	____	____	____	____
3	____	____	____	____
4	____	____	____	____
5	____	____	____	____

DW_v

Same vent path information for all drywell vent paths

Path i	A_{vi} (ft^2)	P_{oi} (psid)	P_{ci} (psid)	E_{fi} (ft)
1	____	____	____	____
2	____	____	____	____
3	____	____	____	____
4	____	____	____	____
5	____	____	____	____

P_{SPS}

Minimum SRV pneumatic supply pressure

P_{SPS} = ____ psig

P_{MPS}

Minimum MSIV pneumatic supply pressure

P_{MPS} = ____ psig

ΔP_{SACT}

Minimum pneumatic supply-to-containment differential pressure to open and hold open SRVs with reactor pressure at the Minimum SRV Reopening Pressure.

ΔP_{SACT} = ____ psig

$\boxed{\Delta P_{MACT}}$

Minimum pneumatic supply-to-containment differential pressure to open and hold open MSIVs with reactor pressure at the RHR shutdown cooling interlock

$\boxed{\Delta P_{MACT}}$ = _____ psig

3.0 TECHNICAL DESCRIPTION AND DERIVATION OF THE CALCULATIONAL PROCEDURE

The Primary Containment Pressure Limit assures that primary containment venting instructions are given at conditions such that:

1. The containment is not expected to fail,

2. The vent may be operated and is sufficiently sized to remove decay, and heat,

3. The SRVs remain operable.

The limiting primary containment pressure is developed for each one of these considerations. The PCPL is then the lowest pressure for each value of containment water level.

3.1 Structural Limit

This portion of the limit assures that containment pressure does not exceed the maximum pressure at which the containment would not be expected to fail. The limit is designed to hold a constant pressure at the elevation of the failure location which accounts for changes in containment water level. Required inputs are:

E_{SCPI} - elevation of the containment pressure tap

P_i and E_i - Failure pressure and failure elevation for several potential containment failure points (e.g. bottom of suppression pool, key penetrations, geometry changes)

Either step (a) or (b) is completed for each failure point defined.

(a) If $E_i < E_{SCPI}$, then when water level is below E_i the measured pressure to maintain P_i at E_i will be:

$$P_{SCPI} = P_i$$

When water level is between E_i and E_{SCPI} the measured pressure to maintain P_i at E_i must be derated by the head of water above E_i so that:

$$P_{SCPI} = P_i - .433 (E - E_i)$$

When water level is above E_{SCPI} the measured pressure to maintain P_i at E_i will reflect changes in water level above E_{SCPI} by requiring air space pressure reductions to compensate for head increases so that

$$P_{SCPI} = P_i - .433 (E_{SCPI} - E_i)$$

(b) If $E_i \geq E_{SCPI}$, then when water level is below E_{SCPI} the measured pressure to maintain P_i at E_i will be

$$P_{SCPI} = P_i$$

When water level is between E_{SCPI} and E_i, the measured pressure to maintain P_i at E_i will be

$$P_{SCPI} = P_i + .433 (E - E_{SCPI})$$

When water level is above E_i, the measured pressure to maintain P_i at E_i will reflect changes in water level above E_i by requiring air space pressure reductions to compensate for head increases so that

$$P_{SCPI} = P_i + .433 (E_i - E_{SCPI})$$

The procedures outlined in (a) and (b) are followed for each failure pressure and location defined in the plant input data. The straight

line curves are plotted and lowest value of primary containment pressure vs. primary containment water level represents the structural capability limit of the PCPL.

3.2 Vent Operability/Capability Limit

This portion of the limit determines the vent size necessary to remove decay heat and compares that to the actual vents that exist in the plant design.

Since the objective of venting is to prevent further pressure increases, if decay heat addition is raising pressure, then the vent capacity must be large enough to remove decay heat. The initial vent contents will be a mixture of air and water vapor. As air is vented off, the water vapor content will increase until ultimately the containment could be full of saturated steam at the venting pressure.

During the air purge, the constant pressure condition is the result of the volumetric air flow out the vent being equal to the volumetric addition of steam generated by decay heat.

During the steam vent, a steady-state condition exists where energy out the vent is equal to the energy generated by decay heat.

The required vent size to assure decay heat removal will be the larger of the vents based on air purge and steam venting.

I. Volumetric Flow Evaluation for Air

For constant pressure, volumetric flow of vapor being generated equals the volumetric flow of air out the vent.

$$\dot{V}_v = \dot{V}_{out} \quad (ft^3/sec) \tag{1}$$

The vapor flow is due to decay heat addition

$$\dot{V}_v = \frac{\dot{Q}_R \, DHF * 3.4121 * 10^6 \, (Btu/hr\text{-}MW) v_g}{3600 \, (sec/hr) \, h_{fg}} \tag{2}$$

Where

$\dot{Q}_R$ = rated reactor power in MW

DHF = the decay heat fraction

h_{fg} = enthalpy of evaporation in Btu/lbm

v_g = specific volume of steam being evaporated in ft^3/lbm

The volumetric flow of air out the vent is

$$\dot{V}_{out} = \dot{m}_{out} \, v_a \tag{3}$$

Where for an ideal gas, the specific volume is

$$v_a = \frac{R_a \, (T_o + 460)}{144 \, P_o} \tag{4}$$

Where T_o and P_o are the temperature and pressure in the space being vented.

The vent flow will be critical when

$$\frac{P_\infty}{P_o} \leq 0.528$$

With P_∞ at one atmosphere, the flow is critical whenever

$$P_o \geq 27.8 \text{ psia (or 13.1 psig)} \tag{5}$$

The critical flow equation is

$$\dot{m}_{out} = A_{va}\sqrt{k\ g\ 144\ P_o\ \rho_a\ \left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}} \tag{6}$$

where A_{va} is the vent area in ft² for air

k is the specific heat ratio

g is the gravitational constant 32.2 lbm-ft/lbf-sec²

Again for an ideal gas the density is

$$\rho_a = \frac{144\ P_o}{R_a\ (T_o + 460)} \tag{7}$$

Substituting into equation (3) and combining terms we have for critical air flow

when $P_o \geq 27.8$ psia

$$\dot{V}_{out} = A_{va}\sqrt{k\ g\ R_a\ (T_o + 460)\left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}} \tag{8}$$

Now equating equations (8) and (2) and solving for A_{va}

$$A_{va} = \frac{3.4121 * 10^6\ \dot{Q}_R\ DHF\ v_g}{3600\ h_{fg}\sqrt{k\ g\ R_a\ (T_o + 460)\ \left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}}} \tag{9}$$

Equation (9) is solved for a range of pressures to determine the necessary vent size so that an air vent will terminate the containment pressure increase.

II. Steady-State Energy Evaluation for Steam

In a steady state energy condition

$$\dot{E}_{in} = \dot{E}_{out} \qquad (10)$$

The energy rates in and out are

$$\dot{E}_{out} = \dot{m}_{out} \; h_g$$

$$\dot{E}_{in} = \frac{3.4121 * 10^6 \text{ (Btu/hr-MW) } \dot{Q}_R \text{ DHF}}{3600 \text{ (sec/hr)}} + \dot{m}_{in} \; h_{in}$$

Since this is also a steady state mass condition

$$\dot{m}_{in} = \dot{m}_{out}$$

Equation (10) then becomes

$$\frac{3.4121 * 10^6 \; \dot{Q}_R \text{ DHF}}{3600} = \dot{m}_{out} \; (h_g - h_{in}) \qquad (11)$$

As developed above for air flow, the critical steam flow

When $P_o \geq 27.8$ psia (or 13.1 psig)

$$\dot{m}_{out} = A_{vs} \sqrt{kg \; 144 \; P_o \; \rho_g \left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}} \qquad (12)$$

Combining equations (11) and (12) and solving for the steam vent area

$$A_{vs} = \frac{3.4121 * 10^6 \dot{Q}_R \text{ DHF}}{3600 (h_g - h_{in}) \sqrt{kg\ 144\ P_o\ \rho_g\ (\frac{2}{k+1})^{\frac{k+1}{k-1}}}} \tag{13}$$

Equation (13) is solved for a range of pressures to determine the necessary vent size so that a steam vent will remove decay heat.

The next step is to determine which vent paths are suitable to be used. That is they may be opened and closed at pressures which will allow them to be used to remove decay heat. Required input data is segregated for drywell and suppression chamber vents and consists of

A_{vi} - Minimum area in the vent path, ft^2

P_{oi} - Maximum containment pressure the valve can be opened against, psid

P_{ci} - Maximum containment pressure the valve can be closed against, psid

E_{vi} - Elevation of the vent containment penetration, ft

The available suppression chamber and drywell vent paths are plotted on the curve of vent area versus primary containment pressure to remove decay heat. Only those vent paths which have both opening and closing pressures above the curve will function to remove decay heat and serve as functional vent paths.

The lower of the opening and closing pressure becomes the vent pressure.

$$P_{vi} = \text{MIN } [P_{oi} \text{ and } P_{ci}] \tag{14}$$

The vent capability portion of the PCPL is a curve of primary containment pressure versus primary containment water level to

assure that P_{vi} is not exceeded at E_{vi}. Either step (a) or (b) is completed depending upon the relative elevations of E_{vi} and E_{SCPI}.

(a) If $E_{vi} < E_{SCPI}$, then the measured pressure to maintain P_{vi} at E_{vi} is

$$P_{SCPI} = P_{vi}$$

(b) If $E_{vi} \geq E_{SCPI}$, then when water level is below E_{SCPI}, the measured pressure to maintain P_{vi} at E_{vi} is

$$P_{SCPI} = P_{vi}$$

When water level is between E_{SCPI} and E_{vi}, the measured pressure is

$$P_{SCPI} = P_{vi} + .433\ (E - E_{SCPI})$$

When water level exceeds E_{vi}, the measured pressure is

$$P_{SCPI} = P_{vi} + .433\ (E_{vi} - E_{SCPI})$$

The procedure to calculate primary containment pressure vs. primary containment water level is completed for each vent path which has been defined as being capable of venting to remove decay heat. It is completed separately for all the drywell and all the suppression chamber vent paths. The lowest value from each curve represents the vent operability limit of the PCPL.

3.3 SRV Operability

This portion of the limit assures that the pneumatic supply-to-containment differential pressure does not drop below the minimum required to open (and hold open) the SRVs. Input parameters are:

P_{SPS} - Minimum SRV pneumatic supply pressure

ΔP_{SACT} - Minimum pneumatic system-to-containment differential pressure to open and hold open SRVs with the reactor at the Minimum SRV Reopening Pressure defined in Appendix C Section 18

E_{SRV} - Elevation of the lowest SRV

The pressure to assure SRV operability is then

$$P_{SOP} = P_{SPS} - \Delta P_{SACT}$$

The limit is designed to hold a constant pressure at the elevation of the lowest SRV. Either step (a) or (b) is completed depending upon the relative elevations of E_{SCPI} and E_{SRV}.

(a) If $E_{SRV} < E_{SCPI}$, then when water level is below E_{SRV}, the measured pressure to maintain P_{SOP} at E_{SRV} is

$$P_{SCPI} = P_{SOP}$$

When water level is between E_{SRV} and E_{SCPI}, the measured pressure is

$$P_{SCPI} = P_{SOP} - .433\ (E - E_{SRV})$$

When water level is above E_{SCPI}, the measured pressure is

$$P_{SCPI} = P_{SOP} - .433\ (E_{SCPI} - E_{SRV})$$

(b) If $E_{SRV} \geq E_{SCPI}$, then when water level is below E_{SCPI}, the measured pressure to maintain P_{SOP} at E_{SRV} is

$$P_{SCPI} = P_{SOP}$$

When water level is between E_{SCPI} and E_{SRV}, the measured pressure is

$$P_{SCPI} = P_{SOP} + .433\ (E - E_{SCPI})$$

When water level is above E_{SCPI}, the measured pressure is

$$P_{SCPI} = P_{SOP} + .433\ (E_{SRV} - E_{SCPI})$$

This straight line curve is plotted and represents the SRV operability limit of the PCPL.

4.0 Calculational Worksheet

4.1 Structural Limit

1. Select a failure pressure and location for evaluation.

   If $E_i < E_{SCPI}$ complete worksheet C14-1a _____ (✓)

   If $E_i > E_{SCPI}$ complete worksheet C14-1b _____ (✓)

2. Plot the points defined on Figure C14-1 and draw a straight line between the points. Repeat steps 1 and 2 until all the failure points (pressures and elevations) have been evaluated.

   _____ (✓)

3. The lowest curve at each value of primary containment water level is the structural limit and is to be plotted on Figure C14-4

   _____ (✓)

Worksheet C14-1a
Structural Limit for $E_i < E_{SCPI}$

P_i	= _____ psig
E_i	= _____ ft

Point on Curve	Primary Containment Elevation (ft)	Primary Containment Pressure (psig)
I	$E = 0$ ft	$P = P_i =$ _____ psig
II	$E = E_i =$ _____ ft	$P = P_i =$ _____ psig
III	$E = E_{SCPI} =$ _____ ft	$P = P_i - .433\ (E_{SCPI} - E_i)$ = _____ psig
IV	$E = E_{MAX} =$ _____ ft	$P = P_i - .433\ (E_{SCPI} - E_i)$ = _____ psig

Worksheet C14-1b
Structural Limit for $E_i \geq E_{SCPI}$

P_i	= ____	psig
E_i	= ____	ft

Point on Curve	Primary Containment Elevation (ft)	Primary Containment Pressure (psig)
I	$E = 0$ ft	$P = P_i =$ ____ psig
II	$E = E_{SCPI} =$ ____ ft	$P = P_i =$ ____ psig
III	$E = E_i =$ ____ ft	$P = P_i + .433\ (E_i - E_{SCPI})$ = ____ psig
IV	$E = E_{MAX} =$ ____ ft	$P = P_i + .433\ (E_i - E_{SCPI})$ = ____ psig

4.2 Vent Operability/Capability Limit

1. Select a containment pressure for evaluation beginning with the lowest pressure at which the vent flow is critical and enter in Column 1 of Table C14-1.

P_o	= _____ psig

2. Determine from steam tables the saturation temperature, specific volume of saturated steam, specific enthalpy of formulation and the specific enthalpy of saturated steam at the pressure P_o + 14.7 psia and enter in columns 2 through 5 of Table C14-1.

T_o	= _____ °F

v_g	= _____ ft^3/lbm

h_{fg}	= _____ Btu/lbm

h_g	= _____ Btu/lbm

3. Calculate the constants in the air vent area equation

$$C_{va} = \frac{3.4121 * 10^6 \dot{Q}_R \, DHF}{3600\sqrt{k_a \; 32.2 \; R_a \left(\frac{2}{k_a+1}\right)^{\frac{k_a+1}{k_a-1}}}}$$

C_{va}	= _____ $\frac{Btu(°R)^{1/2}}{ft}$

4. Calculate the vent area for air to remove decay heat and enter in Column 6 of Table C14-1

$$A_{va} = \frac{C_{va}\, v_g}{h_{fg}\sqrt{T_o + 460}}$$

$\boxed{A_{va}}$ = —— ft^2

5. Calculate the constants in the steam vent area equation

$$C_{vs} = \frac{3.4121 * 10^6\ \dot{Q}_R\ DHF}{3600\sqrt{k_g\ 32.2 * 144\left(\frac{2}{k_g+1}\right)^{\frac{k_g+1}{k_g-1}}}}$$

$\boxed{C_{vs}}$ = —— Btu $\left(\frac{lbf\text{-}ft}{lbm\text{-}in^2}\right)^{1/2}$

6. Calculate the vent area for steam to remove decay heat and enter in Column 7 of Table C14-1

$$A_{vs} = \frac{C_{vs}}{(h_g - h_{in})\sqrt{(P_o + 14.7)/v_g}}$$

$\boxed{A_{vs}}$ = ____ ft^2

7. Repeat steps 1, 2, 4 and 6 for increasing pressures up to the point at which the vent size required is smaller than the smallest vent penetration area.

____ (✓)

8. Plot the largest of A_{va} and A_{vs} for each value of P_o on Figure C14-2.

____ (✓)

Table C14-1

Vent Size to Remove Decay Heat

1 P_o (psig)	2 T_o (°F)	3 v_g (ft^3/lbm)	4 h_{fg} (Btu/lbm)	5 h_g (Btu/lbm)	6 A_{va} (ft^2)	7 A_{vs} (ft^2)

9. For each vent with suction from the suppression chamber plot its (x,y) coordinates on Figure C14-2 at its minimum opening and closing pressure for the vent area.

$$"x" = P_{vi} = \text{MIN}\ [P_{oi} \text{ and } P_{ci}]$$

$$"y" = A_{vi}$$

_____ (✓)

10. Tabulate in Table C14-2 all those vent paths whose (x,y) coordinates lie above the curves plotted in Figures C14-2.

Table C14-2
Operable Suppression Chamber Vents
Sufficient to Remove Decay Heat

i	P_{vi} (psig)	E_{vi} (ft)
1	________	________
2	________	________
3	________	________

11. Select one of the operable vents

If $E_{vi} < E_{SCPI}$ complete Worksheet C14-2a ____ (✓)

If $E_{vi} \geq E_{SCPI}$ complete Worksheet C14-2b ____ (✓)

12. Plot the points defined on Figure C14-3 and draw a straight line between the points. For elevations below E_{vi} the plot should be a solid line. For elevations above E_{vi} the plot should be a dashed line. Repeat steps 10 and 11 until all the operable vents have been plotted.

____ (✓)

13. The lowest <u>solid line</u> curve at each value of primary containment water level is the vent operability limit and is to be plotted on Figure C14-4 When all vents are covered, the lowest dashed line is the vent operability limit.

____ (✓)

Worksheet C14-2a
Vent Operability Limit for $E_{vi} < E_{SCPI}$

$\boxed{P_{vi}}$ = _____ psig

$\boxed{E_{vi}}$ = _____ ft

Point on Curve	Primary Containment Elevation (ft)	Primary Containment Pressure (psig)
I	$E = 0$ ft	$P = P_{vi} =$ _____ psig
II	$E = E_{vi} =$ _____ ft	$P = P_{vi} =$ _____ psig
III	$E = E_{SCPI} =$ _____ ft	$P = P_{vi} - .433\ (E_{SCPI} - E_{vi})$ = _____ psig
IV	$E = E_{MAX} =$ _____ ft	$P = P_{vi} - .433\ (E_{SCPI} - E_{vi})$ = _____ psig

Worksheet C14-2b
Vent Operability Limit for $E_{vi} \geq E_{SCPI}$

P_{vi}	= _____ psig
E_{vi}	= _____ ft

Point on Curve	Primary Containment Elevation (ft)	Primary Containment Pressure (psig)
I	E = 0 ft	$P = P_{vi}$ = _____ psig
II	$E = E_{SCPI}$ = _____ ft	$P = P_{vi}$ = _____ psig
III	$E = E_{vi}$ = _____ ft	$P = P_{vi} + .433\ (E_{vi} - E_{SCPI})$ = _____ psig
IV	$E = E_{MAX}$ = _____ ft	$P = P_{vi} + .433\ (E_{vi} - E_{SCPI})$ = _____ psig

4.3 SRV Operability Limit

1. Calculate the pressure to assure SRV operability

$$P_{SOP} = P_{SPS} - \Delta P_{SACT}$$

P_{SOP}	= ____ psig

2. Determine SRV operability pressure versus primary containment water level.

If $E_{SRV} < E_{SCPI}$ complete Worksheet C14-3a ____ (✓)

If $E_{SRV} \geq E_{SCPI}$ complete Worksheet C14-3b ____ (✓)

3. Plot the points defined on Figure C14-4 and draw a straight line between the points. ____ (✓)

Worksheet C14-3a
SRV Operability Limit for $E_{SRV} < E_{SCPI}$

P_{SOP}	= _____ psig
E_{SRV}	= _____ ft

Point on Curve	Primary Containment Elevation (ft)	Primary Containment Pressure (psig)
I	E = 0 ft	$P = P_{SOP}$ = _____ psig
II	$E = E_{SRV}$ = _____ ft	$P = P_{SOP}$ = _____ psig
III	$E = E_{SCPI}$ = _____ ft	$P = P_{SOP} - .433\ (E_{SCPI} - E_{SRV})$ = _____ psig
IV	$E = E_{MAX}$ = _____ ft	$P = P_{SOP} - .433\ (E_{SCPI} - E_{SRV})$ = _____ psig

Worksheet C14-3b
SRV Operability Limit for $E_{SRV} \geq E_{SCPI}$

P_{SOP}	= ____ psig
E_{SRV}	= ____ ft

Point on Curve	Primary Containment Elevation (ft)	Primary Containment Pressure (psig)
I	$E = 0$ ft	$P = P_{SOP}$ = ____ psig
II	$E = E_{SCPI}$ = ____ ft	$P = P_{SOP}$ = ____ psig
III	$E = E_{SRV}$ = ____ ft	$P = P_{SOP} + .433\ (E_{SRV} - E_{SCPI})$ = ____ psig
IV	$E = E_{MAX}$ = ____ ft	$P = P_{SOP} + .433\ (E_{SRV} - E_{SCPI})$ = ____ psig

4.4 PCPL

1. Figure C14-5 contains

- Structural limit from Section 14.4.1 ____ (✓)

- Vent operability limit from Section 14.4.2 ____ (✓)

- SRV Operability limit from Section 14.4.3 ____ (✓)

The lowest value of primary containment pressure for each value of primary containment water level is the Primary Containment Pressure Limit.

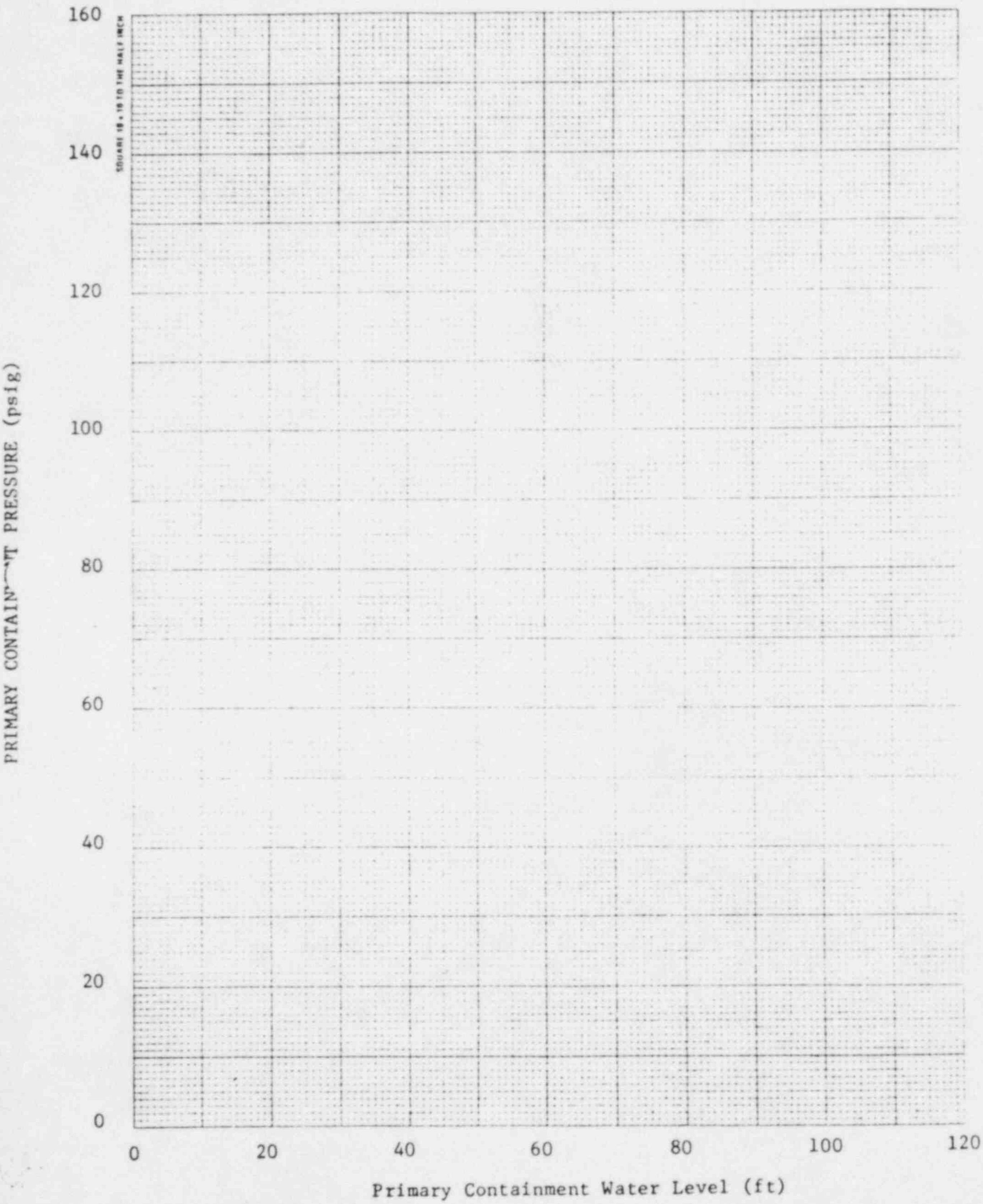


Figure C14-1. Components of Structural Limit

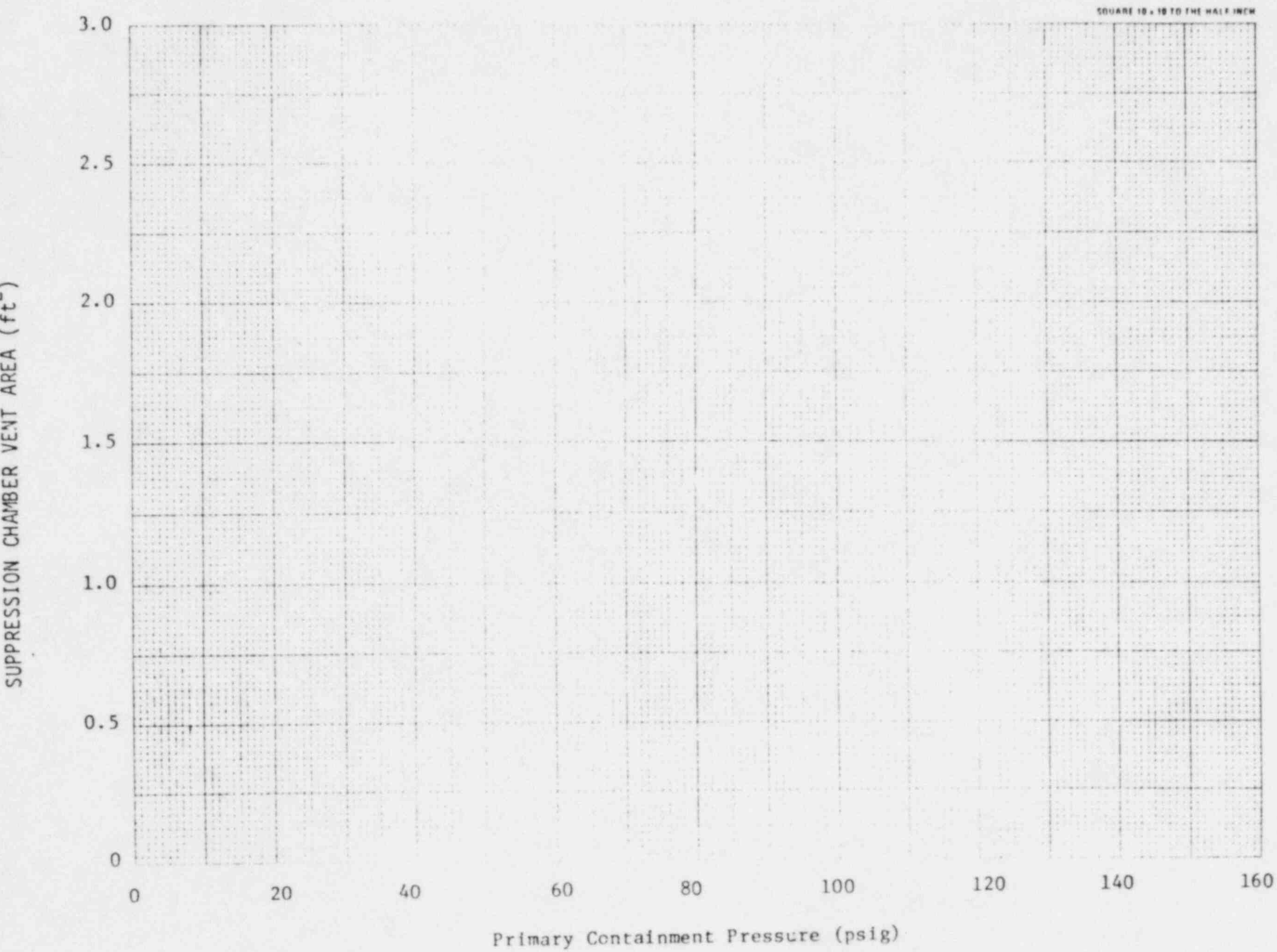


Figure C14-2. Vent Area to Remove Decay Heat With Suppression Chamber Vents

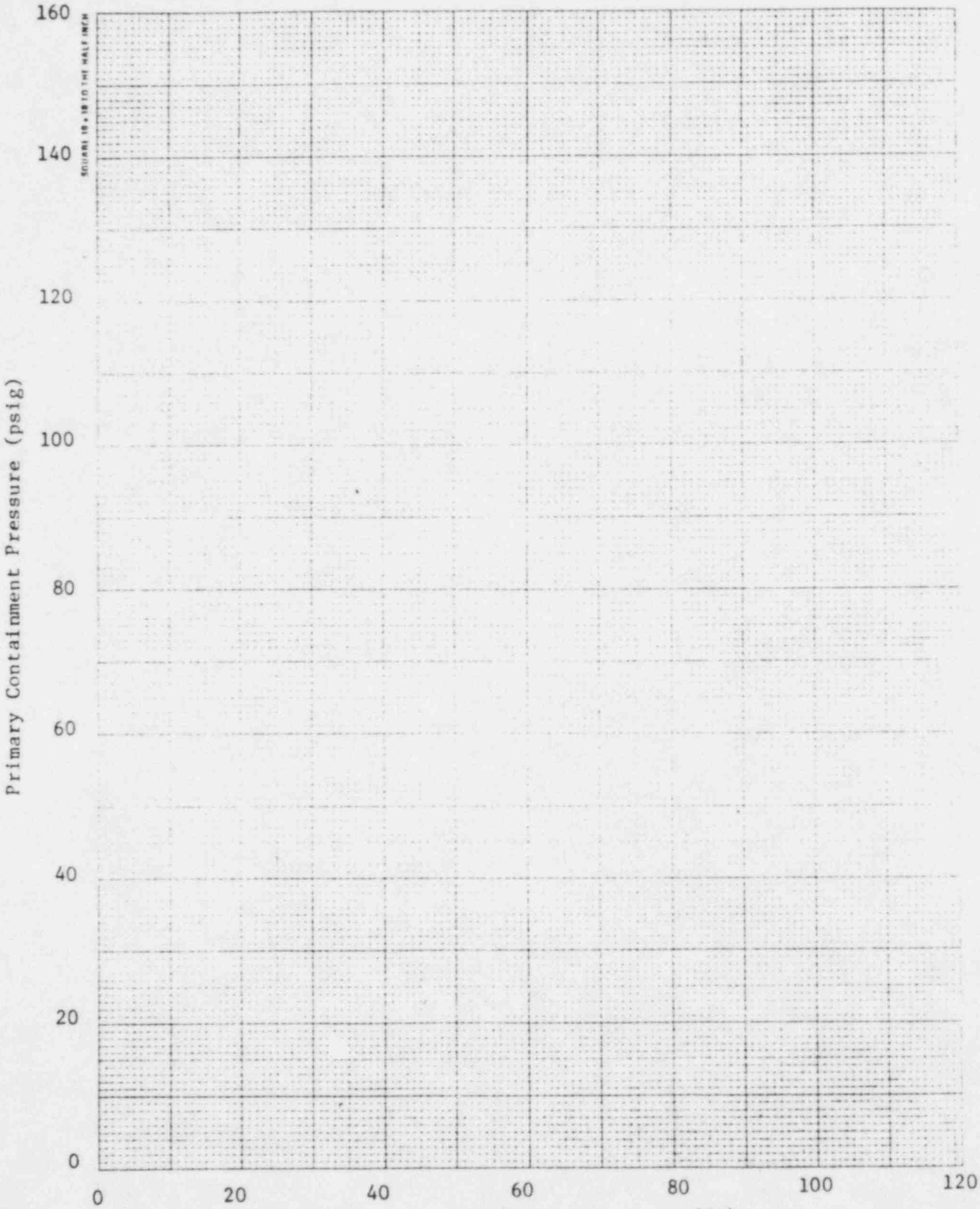


Figure C14-3 Components of Vent Operability

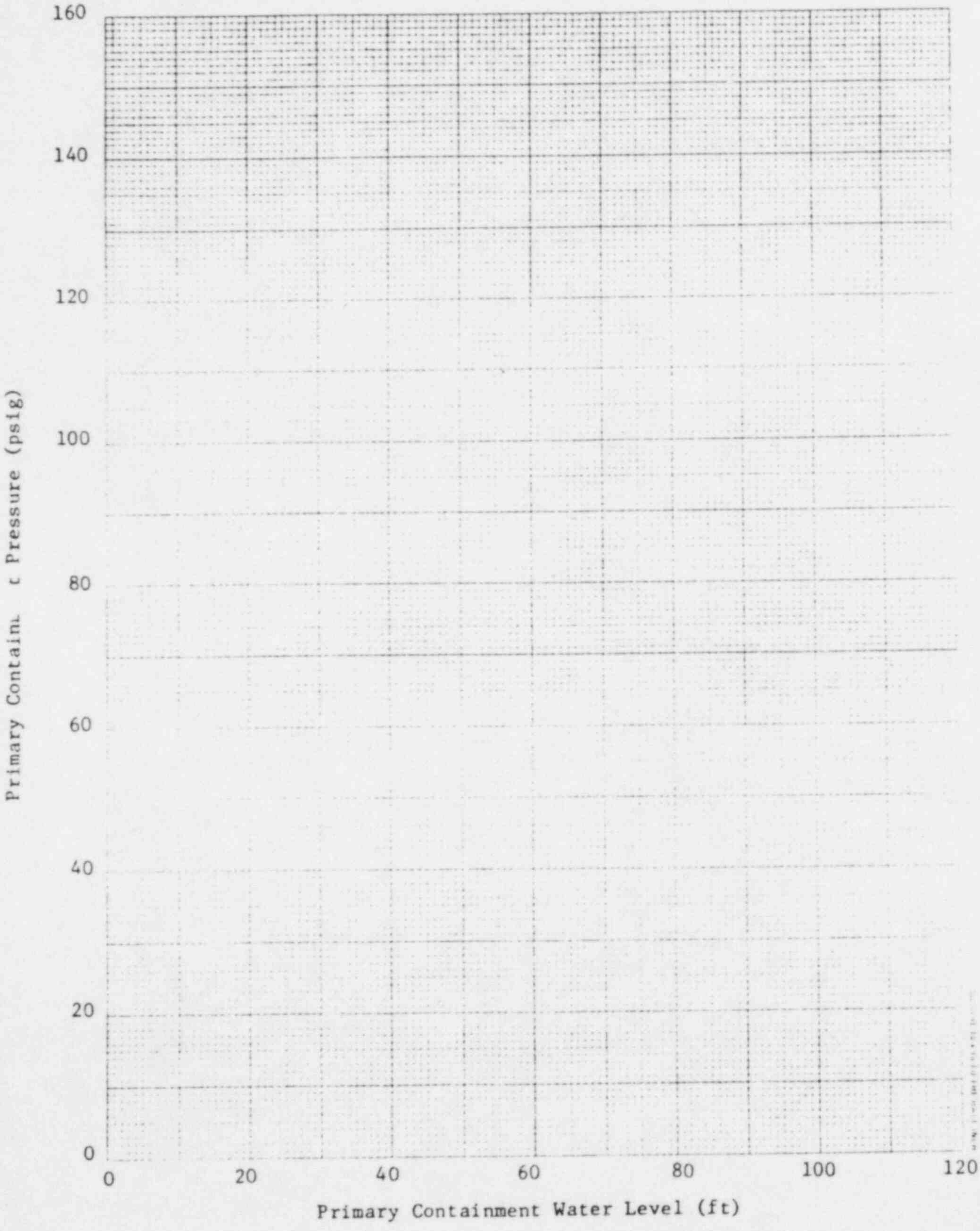


Figure C14-4 Components of Primary Containment Pressure Limit

Deviation Sheet: Number 111a

EPG Step Number(s): C2-1

PSTG Step Number(s): C2-1

Deviation:

The phrase "Born injection is required" has been deleted, and the phrase "Any control rod is not inserted to or beyond position 02 (Maximum Sub-critical Banked Withdrawal Position) has been added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This insures that the actions directed by Contingency 7, to prevent all injection except CRD and boron injection systems, have been taken prior to depressurization to prevent a large reactivity excursion.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 112

EPG Step Number(s): C2-1.3 and elsewhere

PSTG Step Number(s): C2-1.2; C6-1.2; C6-2; C6-3.1; C6-3.2; C6-3.3; C6-3.4

Deviation:

EPG value for Minimum Number of SRVs required for Emergency Depressurization verified correct for Perry.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Perry specific calculation performed by NSSS vendor.

Reviewer: [signature] Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 113

EPG Step Number(s): C2-1.3

PSTG Step Number(s): C2-1.2

Deviation:

Phrase "and RPV pressure is at least ... above suppression chamber pressure" was not included.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The minimum SRV re-opening pressure is zero psig for SRVs used at Perry. Reference GE document 22A4622 AR, Rev. 5, Section 3.1.18.2.2.

Reviewer: Mark Schumack Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 114

EPG Step Number(s): C2-2

PSTG Step Number(s): C2-2

Deviation:

Reference to step RC/P-4 changed to RC/P-3.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This was done to better control the exit from the guidelines. As it was previously written, the reactor shutdown checks would not be made.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 115

EPG Step Number(s): C3-1

PSTG Step Number(s): C3-1

Deviation:

Perry specific value for Minimum Zero Injection RPV Water Level used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-19, Rev. 0.

Reviewer: Mark Schmock Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 116

EPG Step Number(s): C3-1

PSTG Step Number(s): C3-1

Deviation:

EPG value for Minimum Single SRV Steam Cooling Pressure verified correct for Perry.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-19, Rev. 0.

Reviewer: [signature] Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: [signature] Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tabyoh Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 116a

EPG Step Number(s): C4-1

PSTG Step Number(s): Box preceding C4-1

Deviation:

Direction inserted to direct the operator to Contingency 7 if all control rods are not inserted to or beyond position 02.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

To provide consistency with Contingency 1 and direct that for any ATWS event RPV water level be controlled as outlined in Contingency 7.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 117

EPG Step Number(s): C4-2

PSTG Step Number(s): C4-2

Deviation:

The step now specifies both a Minimum Spray Flow and a corresponding Maximum Rpv Spray Pressure.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

In order to adequately define the region of adequate core cooling using core sprays in the absence of RPV water level indication, acceptable core spray flow as well as minimum RPV pressure needs to be specified. The bases for these valves are still under development and will be incorporated into the PEIs.

Reviewer: Robert A Stratman Date: 9/6/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tailyn Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/9/85

Deviation Sheet: Number 118

EPG Step Number(s): Contingency 5

PSTG Step Number(s): N/A

Deviation:

Contingency 5 is not incorporated in the PSTGs.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Alternate Shutdown Cooling was only entered after it had been determined that Normal Shutdown Cooling was unavailable. In actual practice the equipment lineup that is utilized to depressurize and cool down the reactor system to below the Shutdown Cooling interlocks is continued until normal operation of the Shutdown Cooling System is reestablished. Cooldown to cold shutdown can be achieved as long as the main condenser can receive discharges from either the main steam lines or the Reactor Water Cleanup System . Virtually the only emergency condition for which Alternate Shutdown Cooling will be needed is that in which the main condenser is out of service and there is an unisolable break. In this situation raising RPV water level and pressure above the Safety Relief Valve reopening pressure in the procedure for Alternate Shutdown Cooling makes the situation worse. For this reason it was decided that Alternate Shutdown Cooling is not the appropriate action to take for this emergency and should not be included in the emergency procedures.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 119

EPG Step Number(s): C6-2

PSTG Step Number(s): C6-1; C6-3

Deviation:

Phrase "... flood the RPV as follows:" was added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Provides clarification as to the overall intent of the step.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 120

EPG Step Number(s): C6-2.1

PSTG Step Number(s): "Box" preceding C6-1.1

Deviation:

Phrase "... and RPV flooding is not required." was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

With the inclusion of item 2, both plant conditions which require RPV flooding are specified, therefore the phrase is superfluous.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R J Jadyck Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 121

EPG Step Number(s): C6-2.1

PSTG Step Number(s): "Box" preceding C6-1.1

Deviation:

"Containment pressure can be maintained below the Primary Containment Design Pressure" was added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

This is the other plant condition which can require RPV Flooding. Hence, its inclusion removes the need to stipulate that RPV Flooding is not required.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: / Date:

Approved: (YES) NO (circle one)

GSO: R. J. Sadyk Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 121a

EPG Step Number(s): C6-2.1

PSTG Step Number(s): "Box" preceding C6-1.1

Deviation:

The phrase "If boron has been injected into the RPV" has been deleted from the first submittal of the PSTG, and the phrase "If any control rod is not inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position)" has been inserted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The guidelines are now structured such that for any ATWS RPV water level should be controlled as directed in Contingency 7.

Reviewer: Robert A Stratman Date: 9/4/85

Approved. YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 121b

EPG Step Number(s): C6-2.1

PSTG Step Number(s): "Box" preceding C6-1.1

Deviation:

The phrase "If no boron has been injected into the RPV" has been deleted from the first submittal of the PSTG, and the phrase "If all control rods are inserted to or beyond position 02 (Maximum Subcritical Banked Withdrawal Position)" has been inserted.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The decision point for determining whether to enter Contingency 7 is rod insertion vice boron injection.

Reviewer: Robert A Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 9 Sept 85

Incorporated: Date:

Deviation Sheet: Number 122

EPG Step Number(s): C6-4

PSTG Step Number(s): "Box" preceding C6-3.1

Deviation:

Decision point added

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Depending on whether RPV Flooding was required because RPV water level was unknown or because primary containment pressure was greater than design, the operator is directed to one of two instructions, rather than both.

Reviewer: RA Stratman Date: 9/4/85

Approved: YES NO N/R (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R J Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 123

EPG Step Number(s): C6-2.1; C7-2.1

PSTG Step Number(s): C6-1.1

Deviation:

Perry specific values for Minimum Alternate RPV Flooding Pressure used in place of EPG valves.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-21, Rev. 0.

Reviewer: Mark Schwarz Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 124

EPG Step Number(s): C6-2.1 and elsewhere

PSTG Step Number(s): C6-1.1; C6-1.3; C6-1.4; C7-2.1

Deviation:

Perry specific value for minimum number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure used in place of the EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-21, Rev. 0.

Reviewer: [signature] Date: 9/6/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Sadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 125

EPG Step Number(s): C6-1

PSTG Step Number(s): C6-1.2

Deviation:

Phrase "... or if HPCS or motor driven feedwater pumps are available for injection." was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The condition for a HPCS or feedwater pump available does not necessarily apply to the ATWS situation since it cannot be determined if either or both pumps will provide sufficient RPV injection flow to handle makeup for a given ATWS power level. For this reason, these words are deleted from C6-1.2. As long as the minimum number of SRVs required for emergency depressurization can be opened it is assumed that low pressure ECCS can provide adequate core cooling and therefore need for a high pressure, high capacity pump is removed.

Reviewer: RA Stratman Date: 9/9/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 126

EPG Step Number(s): C6-2.2; C7-2.2

PSTG Step Number(s): C6-1.3; C7-2.2

Deviation:

LPCI not included in first list of systems. It was, however, added to second list of systems.

Evaluator: R. A. Stratman   Date: 4/22/85

Justification:

Criteria for first list was the ability of the system to inject outside the shroud, which LPCI does not. Reference FSAR Section 6.3.2.2.4. No such restriction exists for second list.

Reviewer: Mark Schumack   Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder   Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych   Date: 6 Sept 85

Incorporated: Robert A Stratman   Date: 9/9/85

Deviation Sheet: Number 127

EPG Step Number(s): C6-2.3 and elsewhere

PSTG Step Number(s): C6-1.4; C6-3.2; C6-4.2

Deviation:

The phrase "Control injection to ..." and; "... but as low as practicable." were added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The addition of these phases provides better direction for the control of RPV injection sources

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ____ Date: ____

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 128

EPG Step Number(s): C6-2.4

PSTG Step Number(s): C6-1.5

Deviation:

Phrase "... the reactor is shutdown and no boron has been injected into the RPV." was removed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The operator may not be capable of making this decision unless all rods are inserted. In succeeding steps, cooldown of the reactor will add positive reactivity and the operator can not know whether this will cause the reactor to go critical again.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 129

EPG Step Number(s): N/A

PSTG Step Number(s): "Box" preceding C6-3.1

Deviation:

"Box" was added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Provides direction to operator on what to do if water level can subsequently be determined.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Sadyck Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 130

EPG Step Number(s): C6-3.1

PSTG Step Number(s): C6-3.1; C6-3.2

Deviation:

Perry specific value for Minimum RPV Flooding Pressure used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-22, Rev. 0.

Reviewer: Marty Schumack Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard C. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 131

EPG Step Number(s): N/A

PSTG Step Number(s): C6-3.5

Deviation:

The concept of Minimum Core Flooding Interval has been developed and a Perry specific table will be developed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The Minimum Core Flooding Interval assures that the RPV water level is at least above the top of the active fuel prior to terminating injection to see if RPV water level indication will come on scale. The basis for the Minimum Core Flooding Interval is attached.

Reviewer: [signature] Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard B. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

The MCFI is based on correlating steam flow through the open SRVs at the Minimum RPV Flooding Pressure and time to a RPV makeup addition that is sufficient to flood the RPV. This makeup must remove decay heat generated during the MCFI, quench the fuel, cladding and channels to saturation temperature, and replace steam in the empty portion of the RPV below TAF with liquid.

The calculation assumes the following conditions:

(1) Decay heat power at 10 minutes after shutdown when flooding is initiated.

(2) Decay heat is linearly approximated to time at 100 minutes to calculate decay heat reduction during MCFI.

(3) Number of SRVs open varies from Minimum Number SRVs for Emergency RPV Depressurization to the number dedicated to ADS.

(4) SRV flow rate is at its expected value (i.e. 110% of minimum ASME rated flow at 103% of nameplate pressure) and is ratioed by absolute pressure to determine the flow rate at the Minimum RPV Flooding Pressure.

(5) During the MCFI the sensible heat change of the vessel and internals is assumed to be zero except for the fuel, cladding and channels which are assumed to have a uniform temperature change from 1500°F to saturation temperature at the Minimum RPV Flooding Pressure.

(6) The steam displaced by liquid during MCFI is the entire vessel below TAF (core, bypass, recirculation loops, outside shroud and lower plenum).

Deviation Sheet: Number 132

EPG Step Number(s): C6-5.4

PSTG Step Number(s): C6-3.6

Deviation:

Bounding curve for Maximum Core Uncovery Time Limit has been used instead of the EPG curve.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Bounding calculation performed by NSSS vendor.

Reviewer: Mark [signature] Date: 9/5/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pinder [signature] Date: 9-6-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych [signature] Date: 6 Sept 85

Incorporated: Robert A. Stratman [signature] Date: 9/9/85

Deviation Sheet: Number 133

EPG Step Number(s): "Box" preceding C7-1

PSTG Step Number(s): "Box" preceding C7-1

Deviation:

Rewritten, deleting reference to Flow Stagnation Power Level.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Since Stagnation Power was only being used as backup indication for reactor water level in the event normal water level indication systems are lost, it was decided to remove all reliance on it from the guideline.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R J Sadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 133a

EPG Step Number(s): "Box" preceding C7-1

PSTG Step Number(s): "Box" preceding C7-1

Deviation:

Step 3 added to this box which directs control of RPV water level in accordance with RPV Control if all control rods are inserted to or beyond position 02.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

If the reactor becomes shutdown due to control rod insertion, it is appropriate to control RPV water level as directed by section RC/L of RPV Control.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: ______ Date: ______

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 134

EPG Step Number(s): C7-1

PSTG Step Number(s): C7-1

Deviation:

Actions to be taken in the event an MSIV was open were added.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Water level will be deliberately lowered to near the RPV water level which will cause the MSIVs to isolate. Closure of the MSIVs is to be avoided because it is desirable to retain the main condenser as a heat sink rather than use the suppression pool.

Reviewer: Robert A Stratman Date: 9/4/85

Approved: YES NO N/R (circle one) [N/R circled]

NDAS Lead Engineer: Date:

Approved: YES NO (circle one) [YES circled]

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A Stratman Date: 9/6/85

Deviation Sheet: Number 135

EPG Step Number(s): C7-1

PSTG Step Number(s): C7-1

Deviation:

Setpoint referenced to top of active fuel is now referred to as the Flow Stagnation Water Level.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

The Flow Stagnation Water Level is that RPV water level at which natural circulation flow in the RPV stagnates. Hence, reducing RPV water level below this point will not further reduce core flow (and core power) to any significant degree.

Reviewer: Robert A. Stratman Date: 9/4/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/6/85

Deviation Sheet: Number 136

EPG Step Number(s): N/A

PSTG Step Number(s): C7-1

Deviation:

Perry specific value for Flow Stagnation Water Level has been calculated.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-25, Rev. 0.

Reviewer: [signature] Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: [signature] Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 137

EPG Step Number(s): C7-3

PSTG Step Number(s): C7-3

Deviation:

Perry specific value for Hot Boron Shutdown Weight used in place of EPG value.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Reference Perry specific calculation 11016-24, Rev. 0.

Reviewer: Mark Schumacher Date: 9/9/85

Approved: (YES) NO N/R (circle one)

NDAS Lead Engineer: Richard A. Pender Date: 9-9-85

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 9 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85

Deviation Sheet: Number 138 - LAST

EPG Step Number(s): C7-4

PSTG Step Number(s): C7-4

Deviation:

Wording was changed.

Evaluator: R. A. Stratman Date: 4/22/85

Justification:

Exit to cold shutdown is through the scram procedure ONI-C71.

Reviewer: Robert A. Stratman Date: 9/5/85

Approved: YES NO (N/R) (circle one)

NDAS Lead Engineer: Date:

Approved: (YES) NO (circle one)

GSO: R. J. Tadych Date: 6 Sept 85

Incorporated: Robert A. Stratman Date: 9/9/85