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DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards incomplete procedures entitled, "Writers Guide for DC Cook Nuclear Plant Emergency Operating Procedures" & "Specific Tech Spec Guidelines for DC Cook Nuclear Plant Emergency Operating Procedures," per 840612 order.
SEE REPTS.

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September 28, 1984
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Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
JUNE 12, 1984 CONFIRMATORY ORDER - STATUS REPORT ON DETAILED CONTROL ROOM DESIGN REVIEW (DCRDR) AND UPGRADED EMERGENCY OPERATING PROCEDURES (EOPs)

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

Dear Mr. Denton:

This letter is submitted in compliance with your June 12, 1984 Licensing Order to the Donald C. Cook Nuclear Plant Unit Nos. 1 and 2. The order specifically obligated the American Electric Power Service Corporation to submit to the NRC by September 30, 1984 the following:

1. A Detailed Control Room Design Review (DCRDR) status report which will include the current project status and a completion date for the DCRDR Summary Report which will include a proposed schedule for implementation, and

2. The Upgrade Emergency Operating Procedures (EOPs) - Procedures Generation Package.

DETAILED CONTROL ROOM DESIGN REVIEW

The attached table shows the status of the DCRDR as of September 1, 1984. As the table indicates (Attachment 1), Phase I (Planning) of the DCRDR is essentially complete. This statement is predicated on the anticipated acceptance by your staff of the information provided in our August 6, 1984 submittal. Phase II tasks (Identification and Review) are progressing satisfactorily with several complete. See Attachment 1 for status of the various subtasks. Estimated start and completion dates are shown for those subtasks that are not yet completed. Please note that our previous estimated completion dates for the EOPs in the DCRDR validation task (6) have slipped from November 1984 to December 28, 1984 due to events and/or circumstances as noted below. The EOP delay will in turn affect the Phase III assessment task. Although we have started a preliminary assessment of the existing information, an estimated completion date cannot be accurately predicted.

In our February 10, 1984 AEP:NRC:0773E letter we established a target date of December 1985 for the DCRDR Summary Report and implementation schedule. Because of the previously referred to series of events and/or circumstances, we now estimate that a December 1986 date is more realistic for the DCRDR Summary Report and implementation schedule.

Due to these unanticipated events and to keep your staff apprised of our progress, we will provide you with an additional progress report during March 1985 and semi-annually thereafter until submission of the DCRDR Summary Report.

The series of events and/or circumstances which will cause this delay are as follows:

1. The D. C. Cook Control Room Instrumentation & Control Characteristics Identification & Justification Documentation Program outlined in Attachment 2A of our August 6, 1984 AEP:NRC:0773H letter is in the process of being contracted to a consultant. However, the additional work required by the April 5, 1984 NRC letter/memorandum (Attachment 2 of our August 6, 1984 letter) will cause delays in the DCRDR validation task as well as the Phase III assessment task. The Instrumentation & Control Characteristics Identification & Justification Documentation Program, which is now part of the DCRDR Summary Report in accordance with that April 5, 1984 letter, will delay our submittal of the DCRDR Report. The extent of the delay has not been fully evaluated as of this date.

2. The Appendix R commitments which require plant procedure changes, and which must be integrated with the DCRDR Program, were inadequately estimated previously. While the integration of the procedures is not anticipated to cause great difficulty, the Appendix R changes, including the procedures, is not scheduled for implementation until late 1985.

3. Recently, several D. C. Cook control room operators failed their annual requalification examinations. As a result, a more intensified training program has been established for these operators which reduces the staff of control room operators available to perform EOP verification and validation tasks. This additional training commitment was not anticipated and will also result in delaying the completion of our DCRDR planned schedule.

UPGRADED EMERGENCY OPERATING PROCEDURES

Attachment 2 of this letter contains the entire EOP's Procedures Generation Package (PGP). In summary, the PGP contains the Writers Guide, and the Plant Specific Technical Guidelines, that were used in developing the D. C. cook EOPs. The PGP also contains the D. C. Cook EOP's Verification/Validation and Training Program descriptions which we believe will enable us to successfully validate, train, and implement our Upgraded Emergency Operating Procedures.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

M. P. Alexich
Vice President

th

Attachment

cc: John E. Dolan
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
E. R. Swanson, NRC Resident Inspector - Bridgman

bc: J. G. Feinstein/
S. H. Horowitz/T. O. Argenta/R. C. Carruth
J. J. Markowsky/S. H. Steinhart/J. A. Kobyra
R. W. Jurgensen
R. F. Kroeger
T. P. Beilman - Bridgman
J. F. Stietzel - Bridgman
B. H. Bennett/F. S. VanPelt, Jr.
J. B. Shinnock
D. Wigginton, NRC - Washington, D.C.
AEP:NRC:0773I
DC-N-6015.1

ATTACHMENT 1 TO AEP:NRC:0773I

D. C. COOK PLANT

DCRDR STATUS REPORT

TASK DESCRIPTION	STATUS 09/01/84 *	ESTIMATED COMPLETION DATE
PHASE I		
Planning Phase	100	
Submit Program Plant Report to NRC	100	
PHASE II		
Review Phase	66	03/01/85
Operating Experience Review	100	
Control Room Operating Personnel Survey	100	
Cook LER Review	100	
W Plant's LER Review	100	
System Function & Task Analysis	50	03/01/85
SFTA of Selected Upgraded EOP's	70	11/01/84
I&C Required List	80	11/01/84
I&C Characteristics Required List	09/15/84	11/01/84
I&C Characteristics Justification Document	11/01/84	04/01/85
Control Room Inventory	100	
Control Room Survey	95	11/01/84
Workspace	95	11/01/84
Communications	95	11/01/84
Annunicators	95	11/01/84
Controls	95	11/01/84
Displays	95	11/01/84
Labels & Location Aids	95	11/01/84
Process Computers	95	11/01/84
Panel Layout	95	11/01/84
Control-Display Integration	95	11/01/84
Verification of Task Performance Capabilities	70	12/01/84
Validation of Control Room Functions	10/29/84	12/28/84
PHASE III		
Assessment & Implementation Phase	11/01/84	*
Assessment	11/01/84	06/01/86
Implementation	*	
Unit One Enhancements		
Unit Two Enhancements		
PHASE IV		
Submit Program Summary Report and Implementation Schedule to NRC		12/31/86

NOTE 1: The percentage presented here represent an estimate completion percentage; they do not reflect an exact mathematical counting.

2: Items shown as complete reflect a status which may change during assessment evaluations if it becomes apparent that further information is required for adequate assessment.

3: It is not possible to assess at this time.

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ATTACHMENT 2 TO AEP:NRC:0773I

PROCEDURES GENERATION PACKAGE

TABLE OF CONTENTS

ATTACHMENT 2 TO AEP:NRC:0773I

PROCEDURES GENERATION PACKAGE

PART I

WRITERS GUIDE

FOR

DONALD C. COOK NUCLEAR PLANT

EMERGENCY OPERATING PROCEDURES

WRITERS GUIDE
FOR
DONALD C. COOK NUCLEAR PLANT
EMERGENCY OPERATING PROCEDURES

July 1, 1984

TABLE OF CONTENTS

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TABLE OF CONTENTS (Cont)

1. PURPOSE AND SCOPE

The purpose of this document is to provide administrative and technical guidance on the preparation of Emergency Operating Procedures (EOPs) for the Donald C. Cook Nuclear Plant. This guide applies to Optimal Recovery Procedures, Function Restoration Procedures, and Critical Safety Function Status Trees.

2. EOP DESIGNATION AND NUMBERING

Emergency operating procedures (EOPs) specify operator actions to be taken during plant emergency situations to return the plant to a safe stable condition. Each procedure shall be uniquely identified to facilitate preparation, review, use, and subsequent revision.

2.1 Procedure Title

Every separate procedure shall have its own descriptive name which summarizes the scope of that procedure, or states the event(s) which it is intended to mitigate.

2.2 Procedure Designation

Every separate procedure shall have its own alpha-numeric designation to supplement the descriptive title. Each procedure will begin with the prefix 01-OHP 4023. The prefix will be followed by an alpha-numeric designator. Letter designators are to be assigned according to the definitions provided in Table 1.

Optimal Recovery Procedures shall be designated by the letters E, ES or ECA plus a number designator. Number designators are assigned sequentially. Each E procedure number designator shall consist of a single integer. Each ES procedure shall consist of the number designator of the reference E procedure, plus a decimal integer, again assigned sequentially.

ECA procedures shall each have a number designator consisting of an integer plus a decimal integer. Related procedures shall be assigned sequential decimal integers.

TABLE 1

DEFINITIONS OF LETTER DESIGNATORS FOR EOPs

E	-	a procedure for diagnosis and recovery from design basis events
ES	-	a procedure which supplements the recovery actions of an E procedure
ECA	-	a procedure which supplements both the E and ES procedures by providing recovery actions for low probability or unique event sequences which are not easily covered in the E or ES procedures or which may complicate or reduce the effectiveness of these procedures
F	-	a procedure for diagnosis of challenges to a Critical Safety Function - represented in tree format
FR	-	a procedure for restoration of a Critical Safety Function (CSF) to a satisfied condition
S	-	designator for SUBCRITICALITY CSF
C	-	designator for CORE COOLING CSF
H	-	designator for HEAT SINK CSF
P	-	designator for INTEGRITY CSF
Z	-	designator for CONTAINMENT CSF
I	-	designator for INVENTORY CSF

Letter and number designators shall be separated by a hyphen.

Examples: E-0
ES-0.1
ES-1.2
ES-1.3
ECA-0.0
ECA-1.1
ECA-2.1

Critical Safety Function Status Trees shall be designated by the letter F plus a number designator. Number designators shall consist of the number zero plus a decimal integer which shall be assigned sequentially

Letter and number designators shall be separated by a hyphen.

Example: F-0.1
F-0.2

Function Restoration Procedures shall be designated by the letters FR plus an additional letter which corresponds to the respective Critical Safety Function. All the separate procedures related to a particular Critical Safety Function are assigned decimal integers in increasing order.

The procedure letter and decimal integers are separated from the FR designator by a hyphen.

Examples: FR-S.1
FR-S.2

2.3 Revision Numbering

The procedure cover sheet and procedure pages shall be updated to reflect the next sequential revision number. Revision numbering as described here applies to both procedures and status trees. The revision number will appear in the lower right hand corner of the procedure pages below the page number.

2.4 Page Numbering and Identification

Each procedure page shall carry the procedure number in the upper right hand corner; the page number and revision number will be identified in the lower right hand corner of each page. Page numbering shall be sequential and each page will be specified as "___ of___". The last page of instructions will have the work "END" following the last instruction step.

3. FORMAT

This section describes the format that is to be applied consistently to all Emergency Operating Procedures.

3.1 Procedure Organization

All procedures in the EOP set are to employ a common structure consisting of five elements as shown in Table 2. Any individual procedure might contain only the three required elements, or additional elements as necessary to present the intent of the procedure.

The sequence of procedure elements is always in the order shown in Table 2. Page numbering is sequential through all the elements comprising any procedure.

3.2 Page Formats

All pages of the Emergency Operating Procedures will use the same page structure except the Foldout Page which is discussed below. This page structure employs a pre-printed border to assure all margins are correctly maintained, and pre-printed designator boxes and page cues to ensure completeness and consistency (see Figure 1).

The pages for presentation of operator action steps will use a two-column format within the pre-printed border. The left-hand column is designated for expected operator action and response, and the right-hand column is designated for contingency actions when the expected response is not obtained. These pages will use pre-printed title blocks above the separate columns (including the "step" column) for uniformity (see Figure 2).

TABLE 2

PROCEDURE ELEMENTS

COVER SHEET	(all procedures) - summarizes procedure intent and either entry symptoms or transitions
INSTRUCTION STEPS	(all procedures) - presents the stepwise operator instructions
FIGURES	(as required) - presents usually graphical data to supplement action steps
ATTACHMENTS	(as required) - presents non-graphical information to supplement action steps
FOLDOUT PAGE	(as required) - presents information which is applicable throughout the procedure(s) that it follows

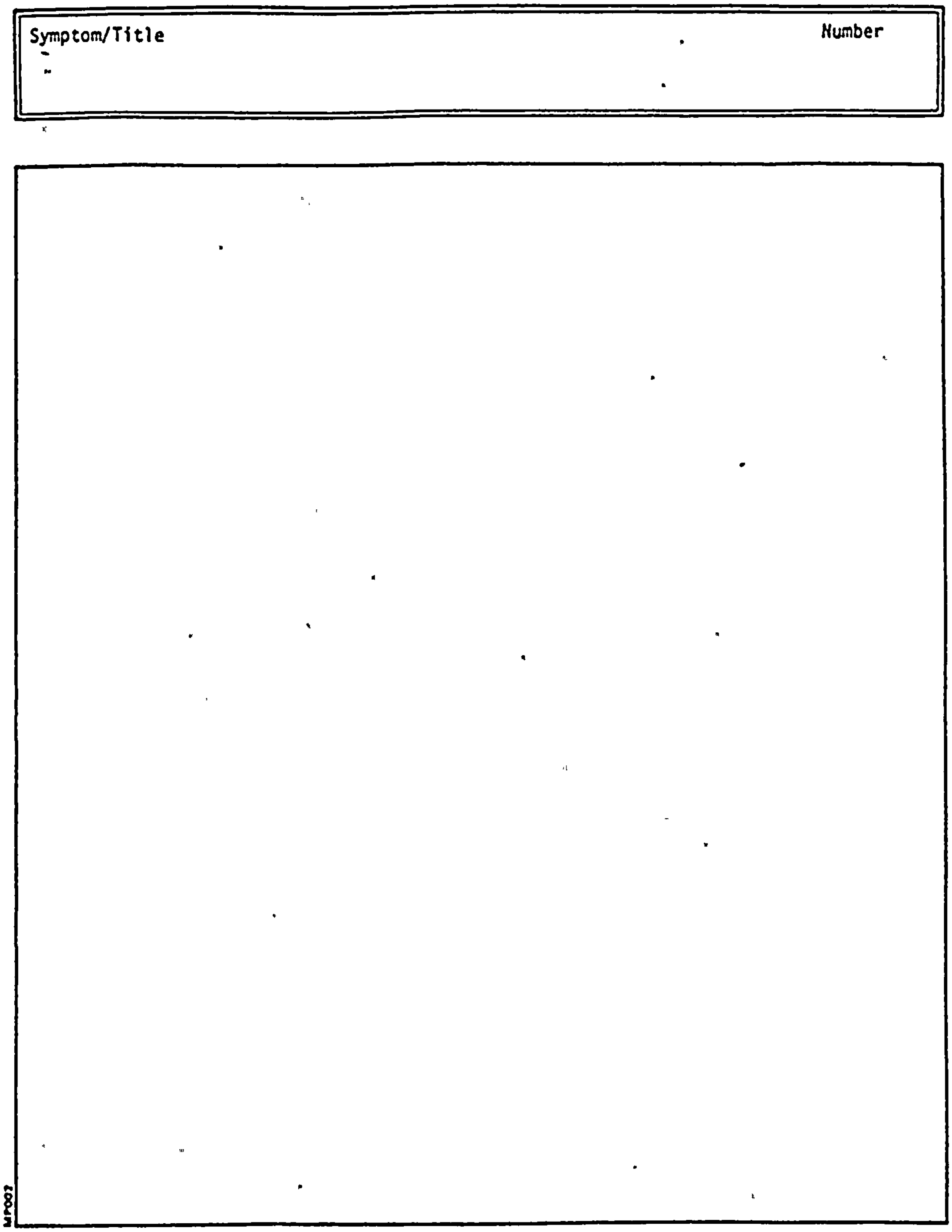

FIGURE 1. PRE-PRINTED PAGE FORMAT

Symptom/Title	Number

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

FIGURE 2. PRE-PRINTED PAGE (2-COLUMN) FORMAT

The Foldout Page does not use the bordered-page format. It is intended to summarize only the information which an operator should have continuously available, so page content will vary by procedure. Each Foldout Page shall be titled at the top in large bold type "FOLDOUT FOR E-X SERIES PROCEDURES".

3.3 Instructional Step Numbering

Procedures steps will be numbered as follows:

1 High-level step

  a. Substep (if necessary)

    1) Detailed instructions (if necessary)

Substeps are lettered sequentially according to expected order of performance. If the order of substep performance is not important, the substeps are designated by bullets (o). If the logical OR is used, both choices must be designated by bullets. This same numbering scheme is to be used in both the right-hand and left-hand columns of the procedures.

3.3.1 Immediate Action Steps

For those procedures which are the entry procedures into the EOP set, certain initial steps may be designated "immediate actions". This designation implies that those steps may be performed by the operator, based on his memory, without reference to the written procedure. These steps should be limited to verifications, if possible. Immediate action steps are identified by a NOTE (see Section 4.2.4) prior to the first action step.

Example:

NOTE: Steps 1 through 10 are IMMEDIATE ACTION steps.

3.3.2 Continuous Steps

Many of the operator actions provided in a procedure imply continuous performance throughout the remainder of the procedure. This intent is conveyed by the use of appropriate action verbs such as monitor, maintain, or control.

4. WRITING THE PROCEDURE

The following format is to be applied consistently when writing Emergency Operating Procedures.

4.1 Cover Sheet

Each cover sheet will contain two explanatory sections in addition to procedure and page designators. The first section will be titled PURPOSE and will briefly describe what the procedure is intended to do. The second section is a summary of those conditions which require entry into the procedure. This section will be titled SYMPTOMS OR ENTRY CONDITIONS. For procedures that are entry procedures into the EOP set, a symptom summary is sufficient (see Figure 3). For other procedures, which can only be entered by transition from previous procedures, a summary of the entry conditions (and procedure/step) should be provided (see Figure 4 for the preferred format). Figures 3 and 4 should be used as examples for wording on all cover sheets.

4.2 Operator Actions

Steps directing operator action should be written in short and precise language. The statement should present exactly the task which the operator is to perform. The equipment to be operated should be specifically identified, and only those plant parameters should be specified which are presented by instrumentation available in the control room. It is not necessary to state expected results of routine tasks.

All steps are assumed to be performed in sequence unless stated otherwise in a preceding NOTE (see Section 4.2.4). To keep the individual steps limited to a single action, or a small number of related actions, any complex evolution should be broken down into composite parts.

Symptom/Title	Number
REACTOR TRIP OR SAFETY INJECTION	01-OHP 4023. E-0

A. PURPOSE

This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a reactor trip or safety injection, to assess plant conditions, and to identify the appropriate recovery procedure.

B. SYMPTOMS OR ENTRY CONDITIONS

1) The following are symptoms that require a reactor trip, if one has not occurred:

a. Low flow or RCP breaker open (1/4 P-8) (2/4 P-7).
b. RCP bus low frequency (2/4) (P-7) - 57.5 Hz + 0.6 second time delay.
c. RCP bus undervoltage (2.4) (P-7) - 2750 volts.
d. Overtemperature ΔT (2/4).
e. Overpower ΔT (2/4).
f. Source range high flux (P-6 and P-10) - 10^5 cps.
g. Intermediate range high flux (P-10) - 25% power.
h. Power range, low level, high flux trip (P-10) - 25% power.
i. Power range high flux (2/4) (P-10) - 109% power.
j. Power range high flux positive rate (2/4) - 5% rate change in 2 sec.
k. Power range high flux negative rate (2/4) - 5% rate change in 2 sec.
l. High pressurizer pressure (2/4) - 2385 psig.
m. Low pressurizer pressure (2/4) (P-7) - 1865 psig.
n. High pressurizer level (2/3) (P-7) - 92%.
o. Low feedwater flow and low steam generator level - 26%.
p. Initiation of safety injection.
q. Turbine trip signal - 800 psig.

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FIGURE 3. COVER SHEET EXAMPLE FOR E-0

Symptom/Title	Number
RESPONSE TO LOSS OF SECONDARY HEAT SINK	01-OHP 4023. FR-H.1.

A. PURPOSE

This procedure provides actions to respond to a loss of secondary heat sink in all steam generators.

B. SYMPTOMS OR ENTRY CONDITIONS

This procedure is entered from:

1) E-0, REACTOR TRIP OR SAFETY INJECTION, Step 8, when minimum AFW flow is not verified.

2) F-0.3, HEAT SINK Critical Safety Function Status Tree on a RED condition.

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FIGURE 4. COVER SHEET EXAMPLE FOR FR-H.1

Actions required in a particular step should not be expected to be complete before the next step is begun. If assigned tasks are short, then the expected action will probably be completed prior to continuing. However, if an assigned task is very lengthy, additional steps may be performed prior to completion. If a particular task must be completed prior to continuation, this condition must be stated clearly in that step or substep.

Refer to Figure 5 as an example of the format for presenting operator actions in the following subsections.

4.2.1 Instruction Steps, Left-Hand Column

The left-hand column of the two-column format will be used for operator instruction steps and expected responses. The following rules of construction apply:

- High Level Action steps should begin with an appropriate verb, or verb with modifier.
- Expected responses to operator actions are shown in ALL CAPITAL LETTERS.
- If a step requires multiple substeps, then each substep will have its own expected response.

  Example:
  Verify AFW Pumps Running:
  a. MD pumps - RUNNING
  b. TDAFP - RUNNING IF NECESSARY

- If only a single task is required by the step, the high-level step contains its own expected response.

  Example: Check RCP Status - AT LEAST ONE RUNNING

Symptom/Title	Number
REACTOR TRIP OR SAFETY INJECTION	01-OHP 4023. E-0

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: • Steps 1 through 19 are IMMEDIATE ACTION steps. • Foldout page should be open.	
1.	Verify Reactor Trip:	Manually trip reactor. IF reactor will NOT trip, THEN go to FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, Step 1.
	• Rod bottom lights - LIT	
	• Reactor trip and bypass breakers - OPEN	
	• Rod position indicators - LESS THAN 25 STEPS	
	• Neutron flux - DECREASING	
	NOTE: Generator trip will be delayed for 30 seconds following turbine trip except for certain emergency conditions.	
2.	Verify Turbine/Generator Trip:	
	a. All turbine stop valve status lights - LIT	a. Manually trip turbine.
	b. Generator output breakers - OPEN	b. IF breakers remain closed after 30 seconds, THEN depress emergency unit TRIP pushbutton on generator panel.
	c. Generator field breakers - OPEN	c. Perform the following: 1) Decrease generator manual voltage control to its minimum. 2) Remove automatic voltage regulator from service.
	d. Unit auxiliary power - TRANSFERRED FROM NORMAL TO RESERVE SUPPLY	

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FIGURE 5. EXAMPLE INSTRUCTION STEPS

6439B

- Left-hand column tasks should be specified in sequence as if they could be performed in that manner. The user would normally move down the left hand column when the expected response to a particular step is obtained.

- When the expected response is not obtained, the user is expected to move to the right-hand column for contingency instructions.

- All procedures should end with a transition to another procedure, a transition to a normal operating procedure or with direction to consult the plant engineering staff for guidance.

4.2.2 Instruction Steps, Right-Hand Column

The right-hand column is used to present contingency actions which are to be taken in the event that a stated condition, event, or task in the left-hand column does not represent or achieve the expected result. Contingency actions will be specified for steps or substeps for which useful alternatives are available. The following rules apply to the right-hand column:

- Contingency actions should identify directions to override automatic controls and to initiate manually what is normally initiated automatically.

- Contingency actions should be numbered consistently with the expected response/action for substeps only. A contingency for a single-task high-level step will not be separately numbered but will appear on the same line as its related step.

- Unlike the left-hand column, contingency instructions are to be written in sentence format.

- If the right-hand column contains multiple contingency actions for a single high-level action in the left-hand column, the phrase "Perform the following:" should be used as the introductory high-level statement.

- If the right-hand column contains multiple contingency actions which do not correspond to multiple substeps in the left-hand column, then different designators should be used in the two columns.

  Example:

Establish Letdown:	Establish excess letdown:
a.	1)
b.	2)
c.	3)

- The user is expected to proceed to the next step or substep in the left-hand column after taking contingency action in the right-hand column.

- As a general rule, all <u>contingent</u> transitions to other procedures take place out of the right-hand column. (Deliberate transitions may be made from the left-hand column.)

- If a contingency action <u>cannot be completed</u>, the user is expected to proceed to the next step or substep in the left-hand column <u>unless</u> specifically instructed otherwise. When writing the procedure, this rule of usage should be considered in wording subsequent left-hand column instructions.

- If a contingency action must be completed prior to continuing, that instruction must appear explicitly in the right-hand column step or substep.

- As a general rule, steps will be wholly contained on a page unless the step is more than one page long.

4.2.3 Use of Logic Terms

The logic terms AND, OR, NOT, IF NOT, WHEN, can NOT, and THEN, are to be used to describe precisely a set of conditions or a sequence of actions. Logic terms will be highlighted for emphasis by capitalizing and underlining (see Figure 6).

The two-column format equates to the following logic: "IF NOT the expected response in the left-hand column, THEN perform the contingency action in the right-hand column." The logic terms should not be repeated in the right-hand column contingency. However, the logic terms may be used to introduce a secondary contingency in the right-hand column.

When action steps are contingent upon certain conditions, the step shall begin with the words IF or WHEN followed by a description of those conditions, a comma, the word THEN, and the action to be taken.

IF is used for an unexpected, but possible condition.

WHEN is used for an expected condition.

AND calls attention to combinations of conditions and shall be placed between each condition. If more than two conditions are to be combined, a list format is preferred.

OR implies alternative combinations or conditions. OR means either one, or the other, or both (inclusive).

IF ... NOT or IF...can NOT should be used when an operator must respond to the second of two possible conditions. IF should always be used to specify the first condition. (The right-hand column of the two-column format contains an implicit IF NOT.)

4.2.4 Notes and Cautions

Because the present action step wording is reduced to the minimum essential, certain additional information is sometimes desired, or necessary, and cannot be merely included in a background document. This non-action information is presented as either a NOTE or a CAUTION.

To distinguish this information from action steps, it will extend across the entire page and it will appear on the same page as and immediately precede the step to which it applies. Each category (NOTE or CAUTION) will be preceded by its descriptor in large, bold, letters. Multiple statements included under a single heading shall be separately identified by noting them with bullets (o).

CAUTION denotes some potential hazard to personnel or equipment associated with the following instructional step. NOTE is used to present advisory or administrative information necessary to support the following action instruction. A CAUTION or NOTE may also be used to provide a contingent transition based on changes in plant conditions.

As a general rule, neither a CAUTION nor a NOTE will contain an instruction/operator action; however, reference may be made to expected actions in progress.

CAUTIONs precede NOTEs when they occur together unless the NOTE contains information which clarifies the CAUTION.

4.2.5 Transitions to Other Procedures or Steps

Certain conditions require the use of a different procedure or step sequence. Transitions are specified by using the words "go to" followed by the procedure designator, title (in ALL CAPITAL LETTERS) and step number.

Example: Go to ES-0.1, REACTOR TRIP RESPONSE, Step 1

Transitions shall <u>not</u> contain a "return" feature (e.g., perform steps X through Y in some other procedure and then return).

Transitions to a different step later in the same procedure are specified in a similar manner.

Example: Go to Step 20

Transitions to an earlier step in a procedure are specified by using the words "return to".

Example: Return to Step 2

Transitions to a step which is preceded by a CAUTION or NOTE may include special wording (in ALL CAPITAL LETTERS) to emphasize that the CAUTION or NOTE is to be observed.

Example: <u>IF</u> conditions are <u>NOT</u> satisfied, <u>THEN</u> go to Step 22. OBSERVE CAUTION PRIOR TO STEP 22.

4.2.6 <u>Component Identification</u>

Equipment, controls and displays will be identified in "operator language" terms. Standard abbreviations which may be used throughout the procedures are listed alphabetically in Table 3. Where similar components are used in both primary and secondary systems, it is always necessay to clarify the location, even if the wording appears redundant.

Example: PZR PORV vs. S/G PORV identifies the pressurizer power operated relief valve as distinct from a steam generator power operated relief valve.

TABLE 3

ABBREVIATIONS USED IN PROCEDURES

AC	-	Alternating Current (Electrical Power)
AFW	-	Auxiliary Feedwater
Alt	-	Alternate
Aux	-	Auxiliary
ATWS	-	Anticipated Transient Without Scram
BAST	-	Boric Acid Storage Tank
BIT	-	Boron Injection Tank
CB	-	Circuit Breaker
CCP	-	Centrifugal Charging Pump
CCW	-	Component Cooling Water
CEQ	-	Hydrogen Skimmer Fans (Press. equalization fans)
CRDM	-	Control Rod Drive Mechansim
CST	-	Condensate Storage Tank
CTS	-	Containment Spray System
CVCS	-	Chemical and Volume Control System
DC	-	Direct Current (electrical power and signals)
D/G	-	Diesel Generator
ECCS	-	Emergency Core Cooling System
ESF	-	Engineered Safety Features
ESW	-	Essential Service Water
FPT	-	Feed Pump Turbine
Hx	-	Heat Exchanger
LOCA	-	Loss of Coolant Accident

TABLE 3 (Con't)

ABBREVIATIONS USED IN PROCEDURES

MCC	-	Motor Control Center
MDAFP	-	Motor Drive Auxiliary Feedwater Pump
MFP	-	Main Feedwater Pump
MFW	-	Main Feedwater System
NESW	-	Non-Essential Service Water
NIS	-	Nuclear Instrumentation System
PD	-	Positive Displacement (in reference to pumps)
PORV	-	Power Operated Relief Valve
PRT	-	Pressurizer Relief Tank
PZR	-	Pressurizer
RCP	-	Reactor Coolant Pump
RCS	-	Reactor Coolant System
Reg	-	Regulating
RHR	-	Residual Heat Removal System
RMS	-	Radiation Monitoring System
RVLIS	-	Reactor Vessel Level Indication System
RWST	-	Refueling Water Storage Tank
S/G	-	Steam Generator
SGTR	-	Steam Generator Tube Rupture
SI	-	Safety Injection
SUR	-	Startup Rate
T/C	-	Thermocouple
TDAFP	-	Turbine Driven Auxiliary Feedwater Pump
VCT	-	Volume Control Tank

4.2.7 Level of Detail

To allow an operator to efficiently execute the action steps in a procedure, all unnecessary detail must be removed. Any information which an operator is required to know (based on his training and experience) should not be included. Many actuation devices (switches) in the control room are similar, even though the remotely performed functions are not, so certain action verbs listed here are recommended.

- Use "start/stop" for power-driven rotating equipment.
- Use "open/close/throttle" for valves.
- Use "control" to describe a manually maintained process variable (flow, level, temperature, pressure).
- Use "trip/close" for electrical breakers.
- Use "place in standby" to refer to equipment when actuation is to be controlled by available (e.g., not reset or blocked) automatic logic circuitry.

4.2.8 Figures

If needed to clarify operator action instructions, figures shall be added to a procedure. Any figure used will be constructed to fit within the pre-printed page format (see Figure 1). Certain rules of construction will apply:

- All wording on the figure shall be at least as legible (type size and spacing) as the instruction steps in the procedures.
- Each figure will occupy a complete page and will be uniquely identified by a figure number and title. The figure number will consist of the procedure designator, without punctuation, followed by a hyphen and an integer. Multiple figures will be assigned sequential integers.

Examples: Figure ES03-1
Figure FRI3-1

- o Figure titles will explain the intent or content of the figure.

- o The figure number and title will be placed at the bottom of the page just above the pre-printed border.

- o If the figure is a graph, all the numbers and wording will be horizontal. By convention, the independent variable is plotted on the horizontal (X) axis. Grid line density should be consistent with the resolution expected from the graph. Any labeling required on the graph will have a white (not graph) background. Figure 6 is an example figure showing presentation of a graph.

- o All figures for a procedure are numbered sequentially and are located immediately after the instruction step pages. Figure pages are numbered as pages of that procedure. Any figures required for an ATTACHMENT are numbered in sequence with the procedure figures.

- o References to a figure from an action step should use only the figure number and not the title.

4.2.9 Tables

Tables may be used within the text of a procedure to clearly present a large number of separate options. A table will immediately follow the step or substep which makes use of it. Therefore, it does not require a unique number and title. Any table will be completely enclosed by a distinct outline; if necessary, it may extend into the adjacent column because of this delineation.

All information presented in a table shall be at least as legible (type size and spacing) as the instruction steps in the procedure.

All columns and rows of information in a table will be defined by solid lines.

Symptom/Title	Number
LOSS OF EMERGENCY COOLANT RECIRCULATION	01-OHP 4023. ECA-1.1

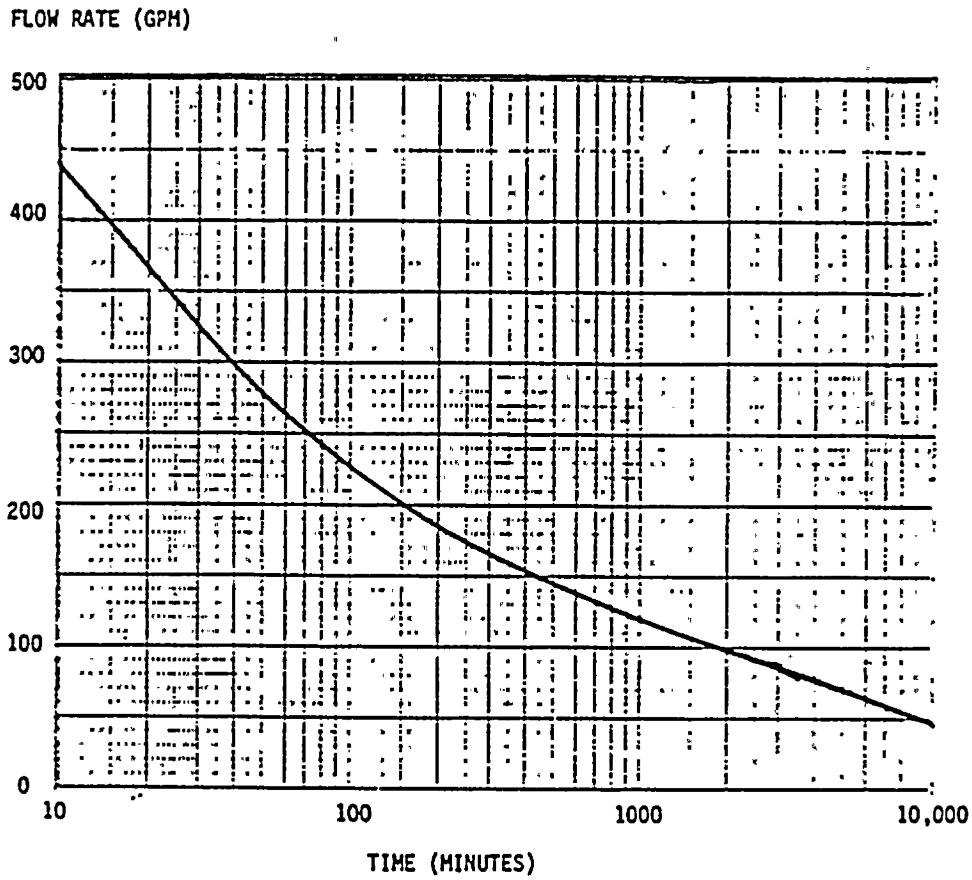

FIGURE ECA11-1, MINIMUM ECCS FLOW RATE VERSUS TIME AFTER TRIP

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FIGURE 6. EXAMPLE GRAPH

All column and row headings shall be presented in ALL CAPITAL LETTERS.

Absence of a table element will be indicated by a dash

Figure 7 presents an example of a table.

4.2.10 Attachments

Supplementary information or detailed instructions which would unnecessarily complicate the flow of a procedure may be placed in an attachment to that procedure.

Attachments are identified by the title "ATTACHMENT" followed by a single letter designator. This title is centered at the top of a standard format page. The pre-printed title blocks will be the same as for the procedure. Attachments will use a single-column, full-page-width format.

Physically, Attachments will be located after any Figures belonging to the procedure. Attachment pages are numbered in sequence with normal procedure pages. Figure 8 is an example ATTACHMENT page.

4.4 Foldout Page

Only a single foldout page will be supplied for each "E-series" and "ECA-series" of procedures. The sheet will be located at the end of the last procedure in a series. Its page number will reflect its position in that procedure. The foldout page will be titled "FOLDOUT FOR E-X SERIES PROCEDURES", (see Figure 9) and will use a single-column, full-page-width, format.

Each set of operator information will be numbered sequentially and have an explanatory title. The title will be capitalized and underlined for emphasis. This page contains those important actions which can be performed at any step in the applicable procedure or procedure series.

Symptom/Title	Number
STEAM GENERATOR TUBE RUPTURE	01-OHP 4023. E-3

STEP — ACTION/EXPECTED RESPONSE — RESPONSE NOT OBTAINED

CAUTION: RCS AND RUPTURED S/G(s) PRESSURES MUST BE MAINTAINED LESS THAN THE RUPTURED S/G(s) PORV SETPOINT.

29. Control RCS Pressure And Makeup Flow To Minimize RCS-To-Secondary Leakage:

    a. Perform appropriate action(s) from table:

RUPTURED S/G(s) LEVEL / PZR LEVEL	INCREASING	DECREASING	OFFSCALE HIGH
LESS THAN 26% (46% FOR ADVERSE CONTAINMENT)	• Increase RCS Makeup Flow • Depressurize RCS Using Step 29b	Increase RCS Makeup Flow	• Increase RCS Makeup Flow • Maintain RCS And Ruptured S/G(s) Pressures Equal
BETWEEN 26% (46% FOR ADVERSE CONTAINMENT) AND 50%	Depressurize RCS Using Step 29b	Turn On PZR Heaters	Maintain RCS And Ruptured S/G(s) Pressures Equal
BETWEEN 50% AND 71% (55% FOR ADVERSE CONTAINMENT)	• Depressurize RCS Using Step 29b • Decrease RCS Makeup Flow	Turn On PZR Heaters	Maintain RCS And Ruptured S/G(s) Pressures Equal
GREATER THAN 71% (55% FOR ADVERSE CONTAINMENT)	Decrease RCS Makeup Flow	Turn On PZR Heaters	Maintain RCS And Ruptured S/G(s) Pressures Equal

    b. Use normal PZR spray per Step 29a

    b. IF letdown is in service, THEN use auxiliary spray. IF NOT, THEN use one PZR PORV.

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FIGURE 7. EXAMPLE TABLE

Symptom/Title	Number
REACTOR TRIP RESPONSE	01-OHP 4023. ES-0.1

ATTACHMENT B

The following conditions support or indicate natural circulation flow:

- RCS subcooling base on core exit T/Cs - GREATER THAN 33°F
- S/G pressures - STABLE OR DECREASING
- RCS hot leg temperatures - STABLE OR DECREASING
- Core exit T/Cs - STABLE OR DECREASING
- RCS cold leg temperatures - AT SATURATION TEMPERATURE FOR S/G PRESSURE

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FIGURE 8. EXAMPLE ATTACHMENT

6439B

FOLDOUT FOR PROCEDURES E-0 THROUGH ES-0.4

1. RCP TRIP CRITERIA

   Trip all RCPs if BOTH conditions listed below occur:

   a. CCPs or SI pumps - AT LEAST ONE RUNNING

   b. RCS pressure - LESS THAN 1300 PSIG

2. SI ACTUATION CRITERIA

   Actuate SI and go to E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1, if EITHER condition listed below occurs:

   - RCS subcooling based on core exit T/Cs - LESS THAN 33°F (48°F FOR ADVERSE CONTAINMENT)

   - PZR level - CANNOT BE MAINTAINED GREATER THAN 10% (30% FOR ADVERSE CONTAINMENT)

3. RED PATH SUMMARY

   a. SUBCRITICALITY - Nuclear power greater than 5%

   b. CORE COOLING - core exit T/Cs greater than 1200°F

      -OR-

      Core exit T/Cs greater than 700°F AND RVLIS narrow range less than 39% with no RCPs running

   c. HEAT SINK - Narrow range level in all S/Gs less than 10% and total feedwater flow less than 450 gpm

   d. INTEGRITY - Cold leg temperature decrease greater than 100°F in last 60 minutes AND RCS cold leg temperature less than 222°F

   e. CONTAINMENT - Containment pressure greater than 12 PSIG

4. AFW SUPPLY SWITCHOVER CRITERION

   Switch to alternate AFW water supply if CST level decreases to less than 13%.

FIGURE 9. EXAMPLE FOLDOUT PAGE FORMAT

6439B

Title	Number
SUBCRITICALITY	01-OHP 4023. F-0.1

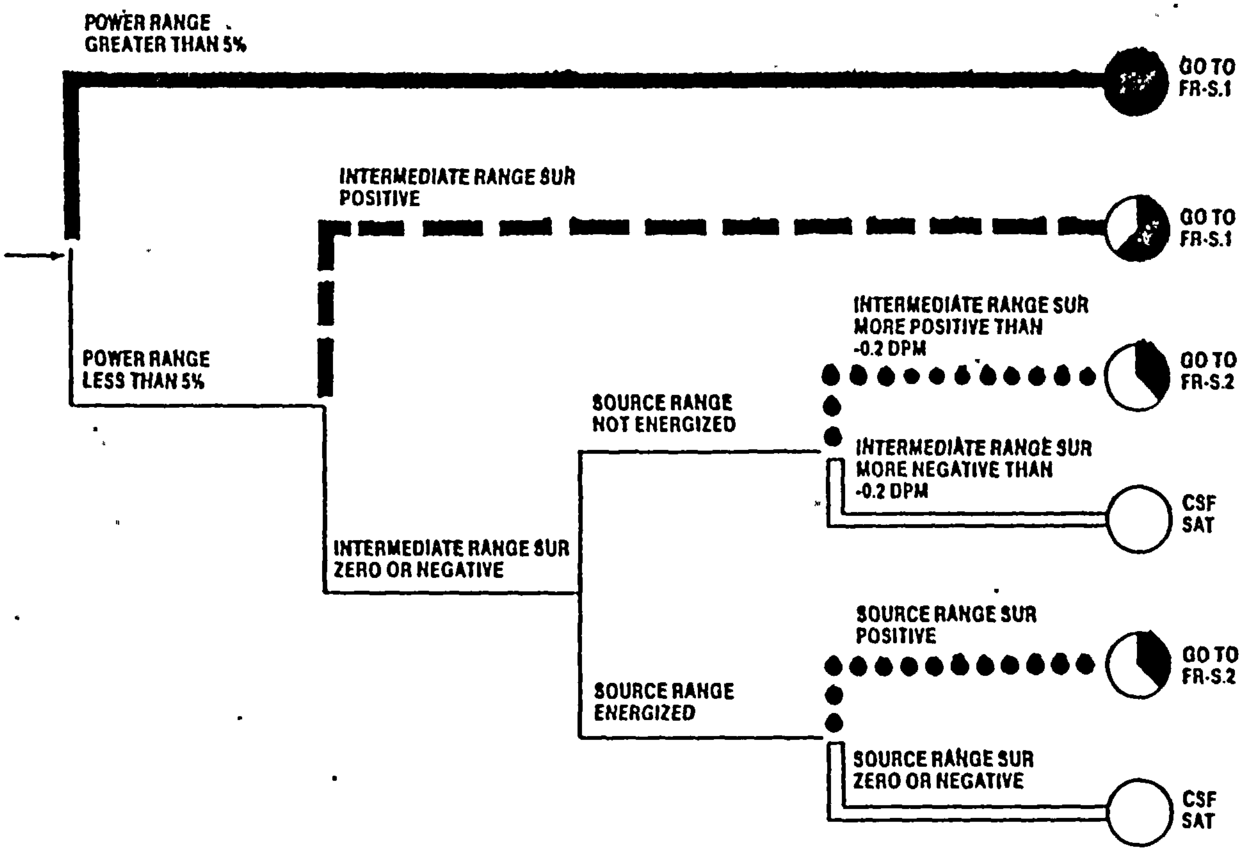


FIGURE 10. EXAMPLE FOR STATUS TREES

5. STATUS TREE FORMAT

Critical Safety Function Status Trees will be presented in the "branch" version (see Figure 10). The trees will be oriented horizontally on a page.

Color-coding and/or line-pattern-coding shall be used from each last branch point to its terminus (see Figure 11).

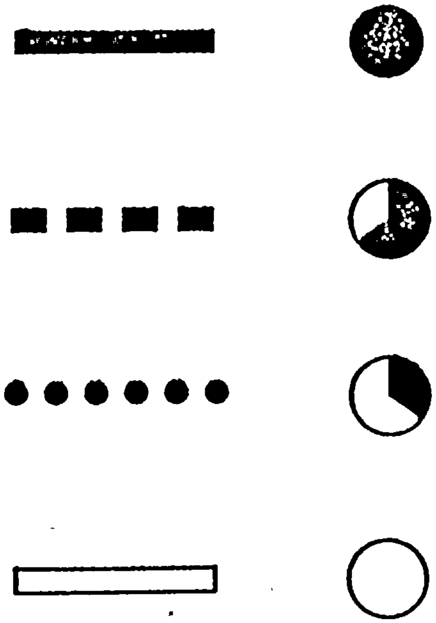
All text on the Status Trees shall be at least as legible (type size and spacing) as the instruction steps in the procedures.

Each Status Tree shall have at the top of the page, a designator block identical to that used in the standard procedure format, and containing the same information.

Statements shall be worded so that the favorable response is the downward branch (branch version) or yes exit (block version). Termini shall be ordered so that REDs are uniformly at the top and GREENs at the bottom. Termini order should be RED - ORANGE - YELLOW - GREEN if possible.

6439B

STATUS TREE PRIORITY INDENTIFICATION



Color	Line Code	Symbol Code	Status/Response
Red			The critical safety function is under extreme challenge; immediate operator action is required.
Orange			The critical safety function is under severe challenge; prompt operator action is required.
Yellow			The critical safety function conditon is off - normal. Operator action may be taken.
Green			The critical safety function is satisfied. No operator action is needed.

FIGURE 11. STATUS TREE PRIORITY IDENTIFICATION

6. MECHANICS OF STYLE

6.1 Spelling

All spelling should be consistent with modern usage as specified in the Webster's Third New International Dictionary and Webster's New Collegiate Dictionary.

6.2 Punctuation

Punctuation should be used only as necessary to aid reading and prevent misunderstanding. Word order should be selected to require a minimum of punctuation. The following rules apply:

- Use a colon to indicate that an item or a list of items is to follow.

  Example: Stop the following equipment:

- Use a comma after conditional phrases for ease of reading.

  Example: IF level exceeds 50%, THEN . . .

- Use parenthesis to indicate footnotes.

- Use a period to indicate the end of complete sentences in right-hand column actions statements and in NOTEs and CAUTIONs and for indicating the decimal place in numbers. No periods are to be used in left-hand column action steps.

- Use a dash to separate a required action and its expected response and also to indicate a null table element.

  Example: Verify ECCS Pumps - RUNNING

6.3 Capitalization

Capitalization shall be used in the procedures for emphasis in the following cases:

- o Logic terms will be capitalized and underlined.
- o Expected responses (left-hand column of instructions) are capitalized.
- o Titles of procedures will be completely capitalized whenever referenced within any procedure.
- o Operator action steps may be capitalized <u>for emphasis</u>
- o Abbreviations (see Table 3) are capitalized.
- o Section headings on foldout pages are capitalized and underlined.

6.4 Vocabulary

Words used in the procedures should convey precise meaning to the trained operator. Simple words having few syllables are preferred. These are typical of words in common usage.

Verbs with specific meaning should be used. The verb should exactly define the task expected to be performed by the operator. A list of frequently used verbs is included as Appendix A (located at the end of this document).

Some words have unique meanings as listed below:

manual (manually) - an action performed by the operator in the control room. (The word is used in contrast to an automatic action, which takes place without operator intervention.)

local (locally) - an action performed by an operator outside the control room.

Example: "Locally close valve" means directly turning a handwheel to close a valve.

Certain other words are to be avoided simply because they are not adequately defined when used without modificaion. These include: approximately, rapidly and slowly. The same words become acceptable when some clarification is provided; clarification normally is part of a lower-level substep.

Example: Rapidly (up to 200°F/HR) cool down the RCS.

Inequalities are to be expressed in words rather than symbols: i.e., "greater than, less than". These words are always appropriate for comparing pressures, temperatures, levels and flowrates. The words "above" and "below" should not be used in this context.

6.5 Numerical Values

All numerical values presented in the procedures should be consistent with what can be read on instruments in the control room (i.e., consistent with instrument scale and range).

The number of significant digits presented should be equal to the reading precision of the operator.

Acceptance values should be stated in such a way that any addition and subtraction operations are avoided, if possible. This is done by stating acceptance values as limits.

Examples: 2500 psig maximum
350°F minimum
between 450°F and 500°F

Tolerances can be expressed by stating the normal value followed by the acceptable range in parenthesis.

Example:	550°F (540°F to 560°F)	- Correct
	550°F ± 10°F	- Incorrect

Engineering units should always be specified when presenting numerical values for process parameters. They should be the same as those used on the control room displays.

6.6 Abbreviations and Acronyms

Abbreviations and acronyms should be limited to those commonly used by operators. Table 3 lists the common ones to be used for the procedures. Abbreviations and acronyms should be used whenever possible to simplify the procedures.

Abbreviations and acronyms from Table 3 will be uniformly capitalized whenever they are used.

7. REPRODUCTION

Procedure reproduction may be done on a standard copier. Reproduced copies shall be checked to ensure that they are legible and useable. Page checks should be performed to ensure there are no missing pages.

APPENDIX TO WRITERS GUIDE FOR EMERGENCY OPERATING PROCEDURES

ACTION VERBS

actuate	to put into action or motion; commonly used to refer to automated, multi-faceted operations Examples: Actuate SI, Actuate Phase A
align	to arrange components into a desired configuration Examples: Align the system for normal charging, Align valves as appropriate
block	to inhibit an automatic actuation Example: Block SI actuation
check	to note a condition and compare with some procedure requirement Example: Check PRZR level - GREATER THAN 20%
close	to change the physical position of a mechanical device. Closing a valve prevents fluid flow. Closing a breaker allows electrical current flow.
complete	to accomplish specified procedure requirements

APPENDIX (Cont)

ACTION VERBS

continue	to go on with a particular process Example: Continue with this procedure
control	to manually operate equipment as necessary to satisfy procedure requirements on process parameters: pressure, temperature, level, flow, etc. Example: Control PRZR level
determine	to calculate or evaluate using formulae or graphs Example: Determine maximum venting time
energize	to supply electrical energy to (something); commonly used to describe an electrical bus or other dedicated electrical path Examples: Energize AC emergency buses
establish	to make arrangements for a stated condition Example: Establish normal PRZR pressure and level control

APPENDIX (Cont)

ACTION VERBS

evaluate	to examine and decide; commonly used in reference to plant conditions and operations Example: Evaluate plant conditions
equalize	to make the value of a given parameter equal to the value of another parameter Example: Equalize charging and letdown flow
initiate	to begin a process Example: Initiate flow to all S/Gs
load	to connect an electrical component or unit to a source of electrical energy, may involve a "start" in certain cases Example: Load the SI pump on the ac emergency bus
maintain	to control a given plant parameter to some procedure requirement continuously Example: Maintain S/G level in the narrow range
minimize	to make as small as possible Example: Minimize secondary system contamination

APPENDIX (Cont)

ACTION VERBS

monitor	similar to "check", except implies a continuous activity
open	to change the physical position of a mechanical device to the unobstructed position. Opening a valve permits fluid flow. Opening an electrical breaker prevents current flow.
operate	to turn on or turn off as necessary to achieve the stated objective Example: Operate PRZR heaters to increase pressure
place	to move a control to a stated position Example: Place controls in MANUAL
place in standby	to return a piece of equipment to an inactive status but ready for start on demand; commonly used to refer to a mid-position on a switch labeled AUTO or NEUT Example: Stop the SI pumps and place in standby

APPENDIX (Cont)

ACTION VERBS

reset	to remove an active output signal from a retentive logic device even with the input signal still present; commonly used in reference to protection/safeguards logics in which the actuating signal is "locked-in". The reset allows equipment energized by the initial signal to be deenergized. Examples: Reset SI, Reset Phase A
record	to document specified characteristics Example: Record RCS average temperature
sample	to take a representative portion for the purpose of examination; commonly used to refer to chemical or radiological examination Examples: Sample for RCS boron concentration, Sample for secondary side radioactivity
shut down	to deenergize equipment and place in standby Example: Shut down unnecessary equipment

APPENDIX (Cont)

ACTION VERBS

start	to originate motion of an electrical or mechanical device, either directly or by remote control Example: Start one RCP
stop	to terminate motion of an electrical or mechanical device Example: Stop both D/Gs
throttle	to operate a valve in an intermediate position to obtain a certain flow rate Example: Throttle charging flow control valve to establish desired flow
trip	to manually actuate a semiautomatic feature. Commonly, "trip" is used to refer to component deactuation. Examples: Trip the reactor, trip the turbine, trip a breaker
try	to make a continued effort when success may not be immediately obtainable Example: Try to restore offsite power

APPENDIX (Cont)

ACTION VERBS

turn on	to supply electrical energy to a non-mechanical component Example: Turn on PZR heaters
verify	to observe that an expected characteristic or condition exists. Typically the expectation comes from some previous automatic or operator action. The appropriate contingency, either stated or implied, is to establish the expected condition. Examples: Verify Reactor Trip, Verify ECCS Pumps - RUNNING

ATTACHMENT 2 TO AEP:NRC:0773I

PROCEDURES GENERATION PACKAGE

PART II

SPECIFIC TECHNICAL GUIDELINES

FOR

DONALD C. COOK NUCLEAR PLANT

EMERGENCY OPERATING PROCEDURES

D. C. COOK PLANT SPECIFIC TECHNICAL GUIDELINES

JUNE 1984

D. C. COOK PLANT SPECIFIC TECHNICAL GUIDELINES

TABLE OF CONTENTS

1. INTRODUCTION

The development of plant-specific technical guidelines is one of the four elements of the Procedures Generation Package, which is required by NUREG-0899 and Supplement 1 to NUREG-0737. For the D. C. Cook Nuclear Plant Unit 1, the generic Westinghouse Emergency Response Guidelines (ERGs), Revision 1 will be used as the basis for writing the plant specific Emergency Operating Procedures (EOPs).

This document describes the method of developing plant specific EOPs from the generic Westinghouse ERGs for the D. C. Cook Nuclear Plant Unit 1. Also, plant specific information for the D. C. Cook plant, which highlights differences from the generic Westinghouse ERGs, is included in this document.

2. COMPARISON OF SYSTEM DESIGNS

During the development of the generic Westinghouse Emergency Response Guidelines (ERGs), a generic reference plant design configuration was assumed, and the technical content included in the ERGs is based upon the reference plant design. The following systems are included in the reference plant:

- Reactor Trip Actuation System
- ESF Actuation System
- Nuclear Instrumentation System
- Control Rod Instrumentation System
- Containment Instrumentation System
- Reactor Coolant System
- Chemical & Volume Control System
- Safety Injection System
- Residual Heat Removal System
- Radiation Monitoring System
- Containment Spray System
- Containment Atmosphere Control System
- Component Cooling Water System
- Service Water System
- Main Feedwater and Condensate System
- Main Steam System
- Auxiliary Feedwater System
- Steam Generator Blowdown System
- Sampling System
- Spent Fuel Storage and Cooling System
- Control Rod Drive Mechanism Cooling System
- Control Rod Control System
- Turbine Control System
- Electric Power System
- Pneumatic Power System

2. <u>COMPARISON OF SYSTEM DESIGNS</u> (Cont.)

To aid in the development of the plant specific EOPs for the D. C. Cook plant, a comparison of the above systems from an emergency operations perspective for the D. C. Cook and reference plant will be made. This comparison will be done in a systematic and complete manner by reviewing all of the above systems. The purpose of the comparison is to identify areas of the D. C. Cook plant which are different from the reference plant from the standpoint of emergency system operations, and thus these areas will be explicitly considered and included as appropriate during the development of the D. C. Cook EOPs. The comparison for each system follows. Appendix A was developed to provide a detailed comparison of each system based upon its use in the ERGs. Appendix A should be referred to during the following comparison of each system.

REACTOR TRIP ACTUATION SYSTEM

The function of the Reactor Trip Actuation System (RTAS) is to monitor specified process parameters and equipment status and to actuate reactor trip if conditions exceed specified limits. From the standpoint of emergency operations, the RTAS is the same for the D. C. Cook and reference plant.

ESF ACTUATION SYSTEM

The function of the ESF Actuation System (ESFAS) is to monitor specified process parameters and to actuate engineered safety features (ESF) operation if conditions exceed specified limits. From the standpoint of emergency operations, the ESFAS is the same for the D. C. Cook and reference plant.

NUCLEAR INSTRUMENTATION SYSTEM

The function of the Nuclear Instrumentation System (NIS) is to monitor and display the reactivity state of the reactor core. From the standpoint of emergency operations, the NIS is the same for the D. C. Cook and reference plant.

2. COMPARISON OF SYSTEM DESIGNS (Cont.)

CONTROL ROD INSTRUMENTATION SYSTEM

The function of the Control Rod Instrumentation System (CRIS) is to monitor and display the position of the reactor core control rods. From the standpoint of emergency operations, the CRIS is the same for the D. C. Cook and reference plant.

CONTAINMENT INSTRUMENTATION SYSTEM

The function of the Containment Instrumentation System (CIS) is to monitor the environmental condition and isolation status of the containment. From the standpoint of emergency operations, the CIS is the same for the D. C. Cook and reference plant.

REACTOR COOLANT SYSTEM

The function of the Reactor Coolant System (RCS) is to transfer heat from the reactor core to the main steam system or residual heat removal system to provide a barrier against the release of reactor coolant or radioactive material to the containment environment. From the standpoint of emergency operations, the RCS is the same for the D. C. Cook and reference plant.

CHEMICAL AND VOLUME CONTROL SYSTEM

The function of the Chemical and Volume Control System (CVCS) system is to provide coolant to the reactor coolant system and to provide reactivity control for normal operations and any event that does not require engineered safety features operation. From the standpoint of emergency operations, the CVCS is the same for the D. C. Cook and reference plant.

2. COMPARISON OF SYSTEM DESIGNS (Cont.)

SAFETY INJECTION SYSTEM

The function of the Safety Injection System (SIS) is to provide coolant to the reactor coolant system and to introduce negative reactivity or restrict the addition of positive reactivity for events that require engineered safety features operation. From the standpoint of emergency operations, the SIS is the same for the D. C. Cook and reference plant except for Subsystem C as shown in Appendix A.

RESIDUAL HEAT REMOVAL SYSTEM

The function of the Residual Heat Removal System (RHRS) is to remove residual heat from the reactor coolant system during plant shutdown operations at low reactor coolant system pressures. From the standpoint of emergency operations, the RHRS is the same for the D. C. Cook and reference plant.

RADIATION MONITORING SYSTEM

The function of the Radiation Monitoring System (RMS) is to monitor the radiation levels in specified process systems and specified areas internal and external to the plant. From the standpoint of emergency operations, the RMS is the same for the D. C. Cook and reference plant.

CONTAINMENT SPRAY SYSTEM

The function of the Containment Spray System (CSS) is to provide containment pressure suppression and airborne fission product removal for events that require engineered safety features actuation. The D. C. Cook design is different from the reference plant as shown in Appendix A and these differences should be incorporated during the writing of the EOPs.

2. <u>COMPARISON OF SYSTEM DESIGNS</u> (Cont.)

CONTAINMENT ATMOSPHERE CONTROL SYSTEM

The function of the Containment Atmosphere Control System (CACS) is to provide containment heat removal and combustible gas mixture control. The D. C. Cook design is significantly different from the reference plant as shown in Appendix A and these differences should be incorporated during the writing of the EOPs.

COMPONENT COOLING WATER SYSTEM

The function of the Component Cooling Water System (CCWS) is to provide heat removal from system process and equipment via an intermediate closed-loop system. From the standpoint of emergency operations, the CCWS is the same for the D. C. Cook and reference plant.

SERVICE WATER SYSTEM

The function of the Service Water System (SWS) is to provide heat removal from system processes and equipment to the ultimate heat sink via an open-loop system. From the standpoint of emergency operations, the SWS is the same for the D. C. Cook and reference plant.

MAIN FEEDWATER AND CONDENSATE SYSTEM

The function of the Main Feedwater and Condensate System (MFCS) is to provide water to the secondary side of the steam generators during plant power operations. From the standpoint of emergency operations, the MFCS is the same for the D. C. Cook and reference plant with the exception of the feedwater flow control bypass valves as shown by Appendix A.

2. COMPARISON OF SYSTEM DESIGNS (Cont.)

AUXILIARY FEEDWATER SYSTEM

The function of the Auxiliary Feedwater System (AFS) is to provide coolant to the secondary side of the steam generators during plant shutdown operations and for events that require engineered safety features operations. From the standpoint of emergency operations, the AFS is the same for the D. C. Cook and reference plant.

MAIN STEAM SYSTEM

The function of the Main Steam System (MSS) is to provide controlled heat removal from the reactor coolant system via the steam generators. From the standpoint of emergency operations, the MSS is the same for the D. C. Cook and reference plant with the exception of the bypass valves as shown by the comparison given in Appendix A.

STEAM GENERATOR BLOWDOWN SYSTEM

The function of the Steam Generator Blowdown System (SGBS) is to provide letdown from the secondary side of the steam generators. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

SAMPLING SYSTEM

The function of the Sampling System (SS) is to provide a means for sampling process systems. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

2. COMPARISON OF SYSTEM DESIGNS (Cont.)

SPENT FUEL STORAGE AND COOLING SYSTEM

The function of the Spent Fuel Storage and Cooling System (SFSCS) is to control fuel storage positions to ensure a subcritical geometric configuration and to provide heat removal to maintain stored fuel within specified temperature limits. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

CONTROL ROD DRIVE MECHANISM COOLING SYSTEM

The function of the Control Rod Drive Mechanism Cooling System (CRDMCS) is to provide heat removal from the control rod drive mechanisms. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

CONTROL ROD CONTROL SYSTEM

The function of the Control Rod Control System (CRCS) is to control the position of the control rods in the reactor core. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

TURBINE CONTROL SYSTEM

The function of the Turbine Control System (TCS) is to control the turbine-generator. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

ELECTRICAL POWER SYSTEM

The function of the Electrical Power System (EPS) is to provide ac and dc electrical power to equipment that require electrical power to accomplish their functions. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

2. COMPARISON OF SYSTEM DESIGNS (Cont.)

PNEUMATIC POWER SYSTEM

The function of the Pneumatic Power System (PPS) is to supply pneumatic power (typically control air) to equipment that require pneumatic power to accomplish their functions. From the standpoint of emergency operations, the D. C. Cook design is the same as the reference plant.

3. DISCUSSION OF ANALYSIS

The D. C. Cook Plant design has been reviewed with respect to the reference plant analyses which were performed to support the development of the generic ERGs. This review has confirmed that the reference analyses are applicable to the D. C. Cook Plant and that no additional analysis is required to support the use of the ERGs in developing plant specific procedures for the D. C. Cook Plant. The reference plant for many of the analyses is a standard 4-loop non-UHI plant, but the analyses are intended to be generic and applicable to all Westinghouse-designed commercial PWR plants to the maximum extent practicable. Since the D. C. Cook Plant is similar to the reference plant, many of the analyses are directly applicable to D. C. Cook. Although the D. C. Cook Plant has an ice condenser containment system compared to the dry containment system for the reference plant, this difference does not affect the applicability of the analyses for D. C. Cook. At the same time, note that these ice condenser design features have been incorporated into the D. C. Cook EOPs. For those cases where the analysis is not directly applicable to the D. C. Cook Plant, a comparison of the system design and plant parameters demonstrates that the reference analyses are bounding for the D. C. Cook Plant, and that the conclusions are applicable to the D. C. Cook Plant.

4. BASIS FOR USING THE GENERIC WESTINGHOUSE ERGs

To the greatest practicable extent, the Westinghouse Emergency Response Guidelines (ERGs) have been constructed to be generic and applicable to all Westinghouse-designed commercial PWR plants. It can be seen from the comparison made in Section 2 that the D. C. Cook plant is very similar to the reference plant, which was used as the basis for developing the ERGs. Also, as noted in the analysis discussion provided in Section 3, the analysis performed to support the generic ERGs is also applicable to the D. C. Cook plant, and no additional analysis is required. Therefore, the D. C. Cook EOPs will be based upon the generic Westinghouse ERGs, HP-Revision 1. When writing the EOPs, modifications to ERG steps must be made to account for the D. C. Cook plant design differences which are delineated in Section 2.

5.3 Method (Cont.)

ERG step and the D. C. Cook step will be explained. This form along with the calculation for mathematical values used in the EOPs will be kept in the Background Information Manual for the D. C. Cook EOPs.

The following additional instructions for writing the EOPs and completing the EOP Documentation Form are provided.

1. If the generic step is compatible with the D. C. Cook plant design, then the step should be copied into the D. C. Cook EOP. Since the technical basis for the step is explained in the ERG Background Document, there is no need to repeat this on the background documentation form.

2. When an ERG step specifies a numerical value to be calculated, the value will be determined and put into the D. C. Cook EOP. The documentation form should indicate where the method of derivation is located.

3. When an ERG step requests plant specific details or actions to be added to the procedure, add the information to the procedure. However, if the operator actions are highly routine or well within the knowledge of the operator, the specific information should not be included. The reason for this should be explained on the documentation form.

4. If the ERG guideline fails to identify or address systems or actions that are unique to D. C. Cook (Refer to Appendix A), then steps should be included to encompass the necessary actions. These should be explained on the documentation form.

5. If an ERG step specifies an action that cannot be performed at D. C. Cook, the step will be deleted or modified and the reason explained on the documentation form.

5. METHOD FOR DEVELOPING EOPs FROM ERGs

5.1 General

The generic Westinghouse Emergency Response Guidelines (ERGs), Revision 1 will be used as the basis for writing the EOPs for the D. C. Cook Nuclear Plant Unit 1. A final list of the Revision 1 ERGs is included as Appendix B.

This section describes the method that will be used to convert the generic guidelines into EOPs.

5.2 Preparation

The EOP writing team will obtain and review the following source documents for D. C. Cook Unit 1:

- Westinghouse generic ERGs, Rev. 1 and background documents
- D. C. Cook Plant Specific Technical Guidelines
- D. C. Cook Writers Guide for EOPs
- Technical Specifications
- Setpoints
- Engineering Flow Diagrams
- System Descriptions
- Existing EOPs (See letter AEP-82-604, 12/14/82)
- Calculated Mathematical Values used in EOPs (included in Background Information Manual)

5.3 Method

The EOP writers will follow the ERGs step by step. The writer will research the source documents and then construct the EOP and an associated EOP Documentation Form (Appendix C). This D. C. Cook Background Documentation Form will list how each generic guideline step is used in the EOP and also list any additional steps added to the EOP with its basis, if applicable. Any difference between the

5.3 Method (Cont.)

6. If an ERG step is modified such that the intent of the step is changed, then the basis will be explained on the documentation form.

7. Minor modifications to ERGs steps are acceptable without extensive justification provided that the change does not alter the intent of the guideline. Examples of these types of changes are as follows:

   a. Deletions of level of detail (see item #3).

   b. Rewording of ERG steps to conform to standard D. C. Cook terminology, abbreviations and acronyms.

   c. Rearranging ERG steps to streamline the procedure due to D. C. Cook control room design and for operator convenience.

6. CONCLUSION

For the D. C. Cook Nuclear Power Station Unit 1, the generic Westinghouse Emergency Response Guidelines (ERGs), Revision 1 will be used as the basis for writing the plant specific Emergency Operating Procedures. This document provides a description of the planned method for developing the D. C. Cook EOPs from the generic Westinghouse guidelines. Also, deviations from the generic guidelines from an emergency operations perspective resulting from differences between the reference plant and D. C. Cook designs have been identified. It is intended that this document along with D. C. Cook Writers Guide for EOPs will be used to aid in the preparation of the D. C. Cook EOPs.

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

REACTOR TRIP ACTUATION SYSTEM

Reference Plant	D. C. Cook
• Reactor Trip Signal	Same
• Turbine Trip Signal	Same

ESF ACTUATION SYSTEM

Reference Plant	D. C. Cook
• SI Actuation and Reset Signals	Same
• Containment Spray Signal (Hi-3) and Reset	Hi-2[(1)]
• Feedwater Isolation Signal Reset	Same
• Main Steamline Isolation Signal	Same
• Cont. Isolation Phase A Signal Reset	Same
• Cont. Isolation Phase B Signal Reset	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

NUCLEAR INSTRUMENTATION SYSTEM

Reference Plant	D. C. Cook
• Source Range Startup Rate	Same
• Neutron Flux Recorder	Same

CONTROL ROD INSTRUMENTATION SYSTEM

Reference Plant	D. C. Cook
• Control Rod Position	Same
• Control Rod Bottom Lights	Same

CONTAINMENT INSTRUMENTATION SYSTEM

Reference Plant	D. C. Cook
• Containment Pressure	Same
• Containment Temperature	Same
• Containment Recirculation Sump Level	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

REACTOR COOLANT SYSTEM

Reference Plant	D. C. Cook
• 4-Loop	Same
• Hot & Cold Leg RTD Bypass	Same
• Two PORVs & Associated Block Valves	Three PORVs and Associated(1) Block Valves
• Three Code Safety Valves	Same
• RV Head Vent to Containment	Same
• RVLIS	Same

CHEMICAL & VOLUME CONTROL SYSTEM

Reference Plant	D. C. Cook
• Two Centrifugal Charging Pumps which are also used for SI	Same
• One PD Pump	Same
• Charging & RCP Seal Injection using one Charging Pump	Same
• Letdown-Regenerative HX, Letdown HX to VCT	Same
• 4% Boric Acid System	12%(1)
• Boric Acid Pumps Supply Charging pumps through either normal make-up or Emergency Boration Path	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

SAFETY INJECTION SYSTEM

Subsystem A

Reference Plant	D. C. Cook
• Two Charging/SI Pumps take suction from RWST or Low-Head SI Pumps	Same
• Charging/SI Pumps Shutoff Head > RCS Design Pressure	Same
• 12% BIT is injected by Charging/SI Pumps to all 4 Cold Legs	Same
• BIT Contents are circulated by 2 Boron Injection Recirculation Pumps	B.A, Transfer Pumps(1)

Subsystem B

Reference Plant	D. C. Cook
• Two High-Head SI Pumps with Shutoff Head of ~ 1600 psig	Same
• High-Head SI Pumps take suction from RWST or Low-Head SI Pumps	Same
• Suctions of Charging/SI and High-Head SI Pumps connected	Same
• High-Head SI Pumps delivery to 4 Cold Legs (thru accumulator lines) and all 4 Hot Legs	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

Subsystem C

Reference Plant	D. C. Cook
• Two Low-Head SI Pumps	Same
• Low-Head SI Pumps take suction from RWST or Containment Sump	Same
• Low-Head SI Pumps deliver to 4 Cold Legs and concurrently feed Charging SI and High-Head SI Pumps (Cold Leg Recirculation Mode)	Same
• Low-Head SI Pumps deliver to 2 Hot Legs and concurrently feed Charging/SI and High-Head SI Pumps (Hot Leg Recirculation Mode)	Low-Head SI Pumps deliver to 4 Hot Legs(2)
• Switchover Initiation-Automatic Sump Valve Opening	Switchover Initiation(2) - Manually Stopping Low Head SI Pumps

Subsystem D

Reference Plant	D. C. Cook
• 4 Accumulator Tanks with Nitrogen Cover Gas	Same

RESIDUAL HEAT REMOVAL SYSTEM

Reference Plant	D. C. Cook
• Two Low-Head Pumps	Same
• Low-Head Pumps take suction from Two Hot Legs and return Flow to Four Cold Legs	One Hot Leg(1) Suction Connection

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

RADIATION MONITORING SYSTEM

Reference Plant	D. C. Cook
• Condenser Air Injector Monitor	Same
• SG Blowdown Monitor	Same
• Containment Atmosphere Monitor	Same
• Auxiliary Building Monitor	Same

CONTAINMENT SPRAY SYSTEM

Reference Plant	D. C. Cook
• Two Low-Head Containment Spray Pumps	Same
• N/A	Containment Spray Heat Exchangers[3]
• N/A	RHR Spray to Containment[4]

CONTAINMENT ATMOSPHERE CONTROL SYSTEM

Reference Plant	D. C. Cook
• Four Emergency Fan Coolers	N/A[5]
• N/A	Air Recirculation Fans[6] (Actuated on Hi-2 + 10 min.)
• Two Hydrogen Recombiners - Manual Actuation	Same
• N/A	Hydrogen Ignitors[7]

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

AUXILIARY FEEDWATER SYSTEM

Reference Plant	D. C. Cook
• Two Motor Driven Pumps	Same
• One Steam Driven Pump	Same
• Condensate Storage Tank	Same
• Alternate Water Supply	Same
• AFW Control Valves	Same

MAIN STEAM SYSTEM

Reference Plant	D. C. Cook
• Steam Generator PORVs	Same
• Steam Generator Safety Valves	Same
• Condenser Steam Dump Valves	Same
• Main Steamline Isolation Valves	Same
• Main Steamline Bypass Valves	Locally Operated(8) Manual Valves

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

COMPONENT COOLING WATER SYSTEM

Reference Plant	D. C. Cook
• CCW Pumps	Same
• RCP Thermal Barrier Valves	Same

SERVICE WATER SYSTEM

Reference Plant	D. C. Cook
• Service Water Pumps	Same

MAIN FEEDWATER AND CONDENSATE SYSTEM

Reference Plant	D. C. Cook
• Feedwater Flow Control Valves	Same
• Feedwater Flow Control Bypass Valves	N/A(9)
• Feedwater Isolation Valves	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

STEAM GENERATOR BLOWDOWN SYSTEM

Reference Plant	D. C. Cook
• SG Blowdown Isolation Valves	Same

SAMPLING SYSTEM

Reference Plant	D. C. Cook
• SG Blowdown Sample Isolation Valves	Same

SPENT FUEL STORAGE AND COOLING SYSTEM

Reference Plant	D. C. Cook
• Spent Fuel Pit level	Same

CONTROL ROD DRIVE MECHANISM COOLING SYSTEM

Reference Plant	D. C. Cook
• Control Rod Drive Mechanism Fans	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

CONTROL ROD CONTROL SYSTEM

Reference Plant	D. C. Cook
• Control Rods	Same

TURBINE CONTROL SYSTEM

Reference Plant	D. C. Cook
• Turbine Runback	Same

ELECTRIC POWER SYSTEM

Reference Plant	D. C. Cook
• Diesel-generators	Same

PNEUMATIC POWER SYSTEM

Reference Plant	D. C. Cook
• Instrument Air Compressor	Same
• Instrument Air Valves	Same

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

FOOTNOTES:

(1) No impact on the structure of D. C. Cook EOPs.

(2) ES-1.3 and ES-1.4 should be written to include the plant specific transfer to cold and hot leg recirculation procedure, which is included in the D. C. Cook SIS System Description.

(3) The containment spray heat exchangers are utilized, if needed, during the recirculation phase. Therefore, cooling water to the containment spray heat exchangers is required during the recirculation phase of a LOCA when containment spray is required. ES-1.3, ECA-1.1 and FR-Z.1 should be written to include this design feature.

(4) The D. C. Cook design has spray capability using the RHR pumps. RHR spray should be initiated if the containment pressure exceeds 8 psig following the initial blowdown. Also, RHR spray should not be used until the accident has progressed to the point when the ECCS is in the recirculation phase, or at least 30 minutes after the accident. RHR spray is in addition to the spray supplied by the containment spray pumps. The addition of RHR spray capability should be included into E-1 and FR-Z.1.

(5) The D. C. Cook plant design does <u>not</u> include safety related containment fan coolers that automatically start on an SI actuation signal. Therefore, steps in E-0, ECA-0.2, ECA-1.1 and FR-Z.1 should be modified to delete the emergency fan coolers.

APPENDIX A

COMPARISON OF SYSTEM DESIGNS

FOOTNOTES: (Cont.)

(6) The primary function of the air recirculation/hydrogen skimmer system is to assure containment pressure reduction after blowdown. This is accomplished by continuously circulating air from the upper to the lower compartment immediately after blowdown. The secondary function of this system is to prevent the unlikely accumulation of hydrogen in pocketed areas within the containment resulting from a LOCA. The air recirculation fans are automatically started by a Phase B signal after a 10 minute delay. The air recirculation/hydrogen skimmer system should be included in E-0, FR-Z.1 and ECA-0.2.

(7) The Distributed Ignition System ("hydrogen ignitors") is designed to provide additional hydrogen control capability in the unlikely event of a severe degraded core cooling event involving the generation of substantive amounts of hydrogen. The Distributed Ignition System should be considered for inclusion in E-1, FR-C.1, FR-C.2, FR-Z.1, FR-H.1, FR-I.3, ECA-0.0 and ECA-0.2.

(8) Main steamline bypass valve operation outside the control room may be an impact and should be evaluated.

(9) Feedwater flow control bypass valves are not included in the D. C. Cook plant design. Therefore, steps in E-0, FR-H.2 and FR-H.3 should be modified to delete the feedwater flow control bypass valves.

APPENDIX B

EMERGENCY RESPONSE GUIDELINES, REVISION 1 LISTING

APPENDIX B

EMERGENCY RESPONSE GUIDELINES

OPTIMAL RECOVERY GUIDELINES

E-0	Reactor Trip or Safety Injection
ES-0.0	Rediagnosis
ES-0.1	Reactor Trip Response
ES-0.2	Natural Circulation Cooldown
ES-0.3	Natural Circulation Cooldown for Steam Void in Vessel (with RVLIS)
ES-0.4	Natural Circulation Cooldown for Steam Void in Vessel (without RVLIS)
E-1	Loss of Reactor or Secondary Coolant
ES-1.1	SI Termination
ES-1.2	Post-LOCA Cooldown and Depressurization
ES-1.3	Transfer to Cold Leg Recirculation
ES-1.4	Transfer to Hot Leg Recirculation
E-2	Faulted Steam Generator Isolation
E-3	Steam Generator Tube Rupture
ES-3.1	Post-SGTR Cooldown Using Backfill
ES-3.2	Post-SGTR Cooldown Using Blowdown
ES-3.3	Post-SGTR Cooldown Using Steam Dump
ECA-0.0	Loss of All A.C. Power
ECA-0.1	Loss of All A.C. Power Recovery Without S.I. Required
ECA-0.2	Loss of All A.C. Power Recovery With S.I. Required
ECA-1.1	Loss of Emergency Coolant Recirculation
ECA-1.2	LOCA Outside Containment
ECA-2.1	Uncontrolled Depressurization of All Steam Generators
ECA-3.1	SGTR With Loss of Reactor Coolant - Subcooled Recovery Desired
ECA-3.2	SGTR With Loss of Reactor Coolant - Saturated Recovery Desired
ECA-3.3	SGTR Without Pressurizer Pressure Control

APPENDIX B

EMERGENCY RESPONSE GUIDELINES

FUNCTION RESTORATION GUIDELINES

F-0	The Critical Safety Function Status Trees
F-0.1	Subcriticality
F-0.2	Core Cooling
F-0.3	Heat Sink
F-0.4	Integrity
F-0.5	Containment
F-0.6	Inventory
FR-S.1	Response to Nuclear Power Generation/ATWS
FR-S.2	Response to Loss of Core Shutdown
FR-C.1	Response to Inadequate Core Cooling
FR-C.2	Response to Degraded Core Cooling
FR-C.3	Response to Saturated Core Cooling Conditions
FR-H.1	Response to Loss of Secondary Heat Sink
FR-H.2	Response to Steam Generator Overpressure
FR-H.3	Response to Steam Generator High level
FR-H.4	Response to Loss of Normal Steam Release Capabilities
FR-H.5	Response to Steam Generator Low level
FR-P.1	Response to Imminent Pressurized Thermal Shock Conditions
FR-P.2	Response to Anticipated Pressurized Thermal Shock Conditions
FR-Z.1	Response to High Containment Pressure
FR-Z.2	Response to Containment Flooding
FR-Z.3	Response to High Containment Radiation Level
FR-I.1	Response to High Pressurizer Level
FR-I.2	Response to Low Pressurizer Level
FR-I.3	Response to Voids in Reactor Vessel

APPENDIX C

D. C. COOK EOP DOCUMENTATION FORM

APPENDIX C

D. C. COOK EOP DOCUMENTATION FORM

EOP No. ______________________ Rev. ______________________

Title ____

Prepared by: ______________________ Date ____________

D. C. COOK STEP NO.	ERG STEP NO.	EXPLANATION OR BASIS FOR DIFFERENCE

ATTACHMENT 2 TO AEP:NRC:0773I

PROCEDURES GENERATION PACKAGE

PART III

VERIFICATION/VALIDATION

FOR

DONALD C. COOK NUCLEAR PLANT

EMERGENCY OPERATING PROCEDURES

EOP VERIFICATION/VALIDATION PROGRAM

1. OVERVIEW

Verification/Validation (V&V) of EOP's is the evaluation performed to determine that the actions specified in the procedure can be carried out by the operator to manage emergency conditions effectively.

This evaluation will be carried out in two phases. The first phase, Table Top Review, will address objectives that are geared toward verifying the technical adequacy of the EOP's. The second phase, Control Room Walk Through, will address objectives focused on the human engineering aspects of the written document's usability. Problem areas (hereafter referred to as discrepancies) identified by the V&V process will be documented, investigated, and resolved. It is our intention to perform V&V of all significant modification to the EOP's after initial implementation.

A portion of the Detailed Control Room Review effort will be performed concurrently with the V&V process to address the human engineering aspects of the EOP operator hardware interface.

2. OBJECTIVES

The scope of the evaluation accomplished by V&V will be defined by addressing several criteria. These criteria or objectives are presented as follows, listed under the program phase during which they are addressed:

Table Top Review (Verification)

- That the EOP's are technically correct, i.e., they accurately reflect the Technical Guidelines (including source documents and EOP Documentation Form).

- That the EOP's are written correctly, i.e., they accurately reflect the writers guide.

- That the language and level of information presentation in the EOP's is compatible with the minimum number, qualification, training, and experience of the operating staff.

Control Room Walk Through (Validation)

- That the EOP's are usable, i.e., they can be understood and followed without confusion, delays, errors, etc.

- That there is a correspondence between the EOP's and the control room/plant hardware, i.e., control/equipment/indications that are referenced are available (inside and outside of the control room), use the same designation, use the same units of measure, and operate as specified in the EOP's.

- That there is a high level of assurance that the EOP's will work, i.e., the procedure guides the operator in mitigating transients and accidents. NOTE: Since the D. C. Cook EOP's will be based on the generic Westinghouse Owners Group Emergency Response Guidelines (ERG's) and a generic validation has been performed on the ERG's, this criteria will not be specifically addressed. However, a selected set of plant specific EOP's will be used in D. C. Cook licensed operator training at the SNUPPS simulator in Zion, Illinois during the 1984-85 Requalification Program. In this way, a check of the generic program can be made to insure the plant specific conversion did not detract from the overall workability of the EOP's.

3. <u>PROGRAM DESCRIPTION</u>

Each EOP will be examined and evaluated step by step for compliance with the objectives presented above. The objectives are broken down into specific items to create a systematic checklist. In order for an objective to be satisfied, each specific item must be a characteristic of the EOP. Each objective is broken down as follows:

- That the EOP's are technically correct, i.e., they accurately reflect the Technical Guidelines (including source documents and EOP Documentation Form).

  - o Are entry conditions or symptoms correctly stated?
  - o Is the arrangement and content of steps, cautions, and notes supported by information from source documents?
  - o Are calculated or translated quantitative values correct?
  - o Is the plant hardware identified by the EOP available for the operator to use?

- That the EOP's are written correctly, i.e., accurately reflect the writers guide.

  - o Are the EOP's legible, i.e., are graphs and tables clearly readable, is printed material visible within the borders on all pages?
  - o Is the format consistent throughout the procedure set?
  - o Is EOP identification complete and correct?
  - o Are steps, cautions, and notes clearly and consistently presented, understandable, and distinguishable from each other?
  - o Are transitions within the EOP's consistent and in compliance with the rules of referencing and branching contained in the writers guide?

- That the language and level of information presentation in the EOP/s is compatible with the minimum number, qualification, training, and experience of the operating staff.

    o Are the EOP's incompatible with shift manning levels and policies?

- That the EOP's are usable, i.e., they can be understood and followed without confusion, delays, errors, etc.

    o Do the EOP's contain sufficient information, consistent with training, to enable the operator to properly execute the EOP instructions?

    o Does the operator comprehend the information presented in the EOP's?

- That there is a correspondence between the procedures and the control room/plant hardware, i.e., control/equipment/indications that are referenced available (inside and outside of the control room), use the same designation, use the same units of measure, and operate as specific in the EOP's.

    o Are the EOP's compatible with plant hardware and plant response?

- That there is a high level of assurance that the EOP's will work, i.e., the procedures guide the operator in mitigating transients and accidents.

    o Again, since the D. C. Cook Plant EOP's are based on the Westinghouse Group ERG's, credit is taken for validation/verification of this objective based on the generic ERG validation. We will check this objective by using a selected set of plant specific procedures at the SNUPPS simulator in Zion, Illinois.

4. RESPONSIBILITIES

The Operations Department Superintendent (O.S.) will have the responsibility for implementing the V&V program at D. C. Cook. The Operations Department Administrative Compliance Coordinator (A.C.C.) will have the responsibility for conducting the V&V program. The review teams (comprised of licensed operators) will be responsible for verifying objectives are met and discrepancies are documented. The Plant Nuclear Safety Review Committee (PNSRC) is responsible for final approval of the EOP's. Task responsibilities are as follows:

- The A.C.C. will train the review teams in the use of the V&V procedure.

- The A.C.C. will interface with the Detailed Control Room Design Review Coordinator.

- The O.S. and A.C.C. will resolve all discrepancies. (The A.C.C. will ensure that all resolutions are incorporated as necessary into the EOP's.)

5. DISCREPANCY IDENTIFICATION

The ultimate goal of the V&V program is to identify areas where the plant specific EOP's may deviate from the generic procedures, criteria in the writer guide, and technical guidelines, and/or plant characteristics or policies.

It is the responsibility of the review teams, through the use of the V&V procedure, to ensure that objectives are met and/or discrepancies documented. The review teams should also make recommendations to resolve discrepancies when appropriate.

6. DISCREPANCY RESOLUTION

Once a discrepancy is identified and documented, a resolution must be developed. The solution which resolves the discrepancy may take any of various forms, e.g., procedure change, increased operator training, hardware modification, etc. In all cases, the resolution will be documented. The V&V on any given EOP will not be considered complete until all discrepancies applicable to it are resolved. Proposed changes will be evaluated for their impact on other emergency response capabilities.

7. RECORD RETENTION

All documentation forms generated during the V&V program will be considered part of the Emergency Procedures and retained in accordance with Plant Managers Instruction - 2130, Plant Records.

ATTACHMENT 2 TO AEP:NRC:0773I

PROCEDURES GENERATION PACKAGE

PART IV

TRAINING

FOR

DONALD C. COOK NUCLEAR PLANT

EMERGENCY OPERATING PROCEDURES

EMERGENCY OPERATING PROCEDURES TRAINING

1. PROGRAM DESCRIPTION

Prior to implementation of the upgraded Emergency Operating Procedures, operators will receive a two-phase training program on the background, structure, and use of these procedures. After implementation, a third phase of the program will begin which will include continuing training, review, and simulator use of the EOP's.

As a minimum, the training program will include:

1. Background and Procedure Development.

   - Why and how the procedure was developed.

   - Background document(s) used in writing the procedures.

   - Development and purpose of the Critical Safety Function Trees.

2. Use of the Upgraded Emergency Operating Procedures.

   - How and when each EOP will be used.

   - The interrelationship of the EOP's.

   - Description of the flow path through the EOP including an in-depth study of procedure steps, contingency actions and use of the critical safety functions status trees with the functional restoration guideline.

Phase I of the training program will provide a solid understanding of the background and scope of the EOP's. This phase will include the forementioned minimum requirements. Training will be conducted in a classroom environment. Following the completion of Phase I, Phase II of the training program will begin. The minimum requirements for Phase II training will be the same as Phase I with the following exception; Phase II training will place more emphasis on Emergency Procedure objectives and use than on the scope and background. Participants of both Phase I and Phase II training will be all operators who are responsible for the use of the EOP's and Shift Technical Advisors.

Phase II training will be, for the most part, classroom instruction, and control room walk through for specific procedures.

Following completion of Phase II training the upgraded EOP's will be implemented. This will begin Phase III of the training program.

Phase III will be the continuing training on the EOP's. This training will be rolled into the current Requalification Program at D. C. Cook and will include as a minimum:

1. Classroom discussion and review of the EOP's.

2. Industry events and plant equipment changes that would lead to reassessment of specific guidelines in the EOP's.

3. Use of the EOP's during scenarios developed in simulator sessions at the SNUPPS simulator in Zion, IL.

4. Periodic review of selected portions of the Phase II training program.

2. SUMMARY

The D. C. Cook training program for the upgraded Emergency Operating Procedures will begin during the 1984-85 Requalification period with all licensed operators and Shift Technical Advisors being fully versed in the structure and use of these procedures before they are implemented. Training will then continue as part of the Requalification Program. The scope of all phases of the training program will be:

Provide all individuals responsible for the use of the EOP's with a comprehensive working knowledge of the development, writing, and use of those Emergency Procedures.

This will ensure that operators will have the knowledge to better cope with situations that deviated from the initial assumptions for which the procedures were written.