

COMANCHE PEAK STEAM ELECTRIC STATION
OPERATIONS DEPARTMENT ADMINISTRATION MANUAL

CONTROLLED COPY NO. 010B

FOR INFORMATION ONLY

PREPARATION OF EMERGENCY RESPONSE GUIDELINES

PROCEDURE NO. ODA-204

REVISION NO. 4

SAFETY-RELATED

SUBMITTED BY

R. B. Seid
OPERATIONS SUPERINTENDENT

DATE

8/19/85

APPROVED BY

R. A. Jones
MANAGER, PLANT OPERATIONS

DATE

4/10/85

8512260091 851216
PDR ADOCK 05000445
F PDR

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 2 OF 72

1.0 Purpose

This procedure describes the method used to develop Emergency Response Guidelines from the Generic Guidelines provided by Westinghouse. This procedure also prescribes the format in which the CPSES Emergency Response Guidelines (ERG) shall be prepared and provides guidelines regarding the scope and content of and the level of detail to be incorporated into each procedure.

2.0 Applicability

This procedure applies to the procedural set which provides guidance for responding to plant emergency conditions. This procedure becomes effective when issued.

3.0 Definitions

3.1 Emergency Response Guidelines (ERGs). The over all procedural set which provides guidance for response to plant emergency conditions. The procedural set is comprised of the following subsets:

- Emergency Operating Procedures (EOP)
- Emergency Operating Sub-Procedures (EOS)
- Emergency Contingency Actions (ECA)
- Function Restoration Guideline (FRS, FRP, FRC, FRI, FRH, FRZ)

3.2 Emergency Operating Procedures. The EOPs provide the operator with procedural guidance sufficient to effectively diagnose an event and directs the operator to a subprocedure or contingency procedure to recover the plant from nominal emergency conditions and return it to a known safe state from which repair or return to power can be accomplished.

3.3 Emergency Operating Sub-Procedures. The Emergency Operating Sub-Procedures provide guidance for the operator to recover the plant from a known event, condition or state.

3.4 Emergency Contingency Action Procedures. The Emergency Contingency Action procedures provide contingency actions for equipment failures and transitions to Function Restoration Guidelines when required.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 3 OF 72

3.5 Critical Safety Function Status Trees. Critical Safety function Status trees (CSFST) provide the operator with a systematic and explicit means for determining the status of a limited number of plant parameters which are directly related to maintaining the integrity of the classical barriers to release of radioactivity, the fuel cladding, the reactor coolant system and the containment. Additionally, the CSFSTS prioritize and direct the operator to the appropriate Function Restoration Guideline.

3.6 Function Restoration Guidelines. Procedures designed to maintain the plant in a safe condition without regard to initiating events or failures subsequent to an event diagnosis. The function restoration procedures will restore critical safety functions to acceptable values and provide transitions to the appropriate EOP, EOS or ECA after the challenge to the safety function has been removed. The following six categories of Function Restoration Procedures are provided:

- Subcriticality (S-Series)
- RCS Integrity (P-Series)
- Core Cooling (C-Series)
- RCS Inventory (I-Series)
- Core Heat Sink (H-Series)
- Containment (Z-Series)

3.7 Issue Date - The issue date specifies when each CPSES Emergency Response Guideline becomes effective.

3.8 Validation - The demonstration that tasks specified in the technical guidelines are sufficient to accomplish the objective of the guideline.

3.9 Verification - The assurance that plant specific technical data is correctly transcribed into the WOG generic guidelines to provide accurate and usable CPSES Emergency Response Guidelines.

3.10 Plant Specific Technical Guidelines - The plant specific technical guidelines is a set of documentation that together will form the Validation, and verification that the approved plant specific procedures have been adequately transcribed from the Westinghouse generic procedures.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 4 OF 72

4.0 Instructions

4.1 Guidance on the use of Emergency Response Guidelines

4.1.1 General

A set of procedures shall be prepared which provide the operator with specific instructions to follow in the event of an unusual or abnormal condition. Collectively, this set of procedures will be sufficient to permit recovery for all transient conditions, whether or not the initiating event has been diagnosed. The set of procedures is composed of the following:

- Emergency Operating Procedures (EOP)
- Emergency Operating Sub-Procedures (EOS)
- Emergency Contingency Actions (ECA)
- Function Restoration (FRS, FRP, FRC, FRI, FRH, FRZ)

Figure 1 provides a pictorial representation of how these procedures are collectively used to restore the plant to safe conditions following an upset.

Emergency Response Guideline Flowpath

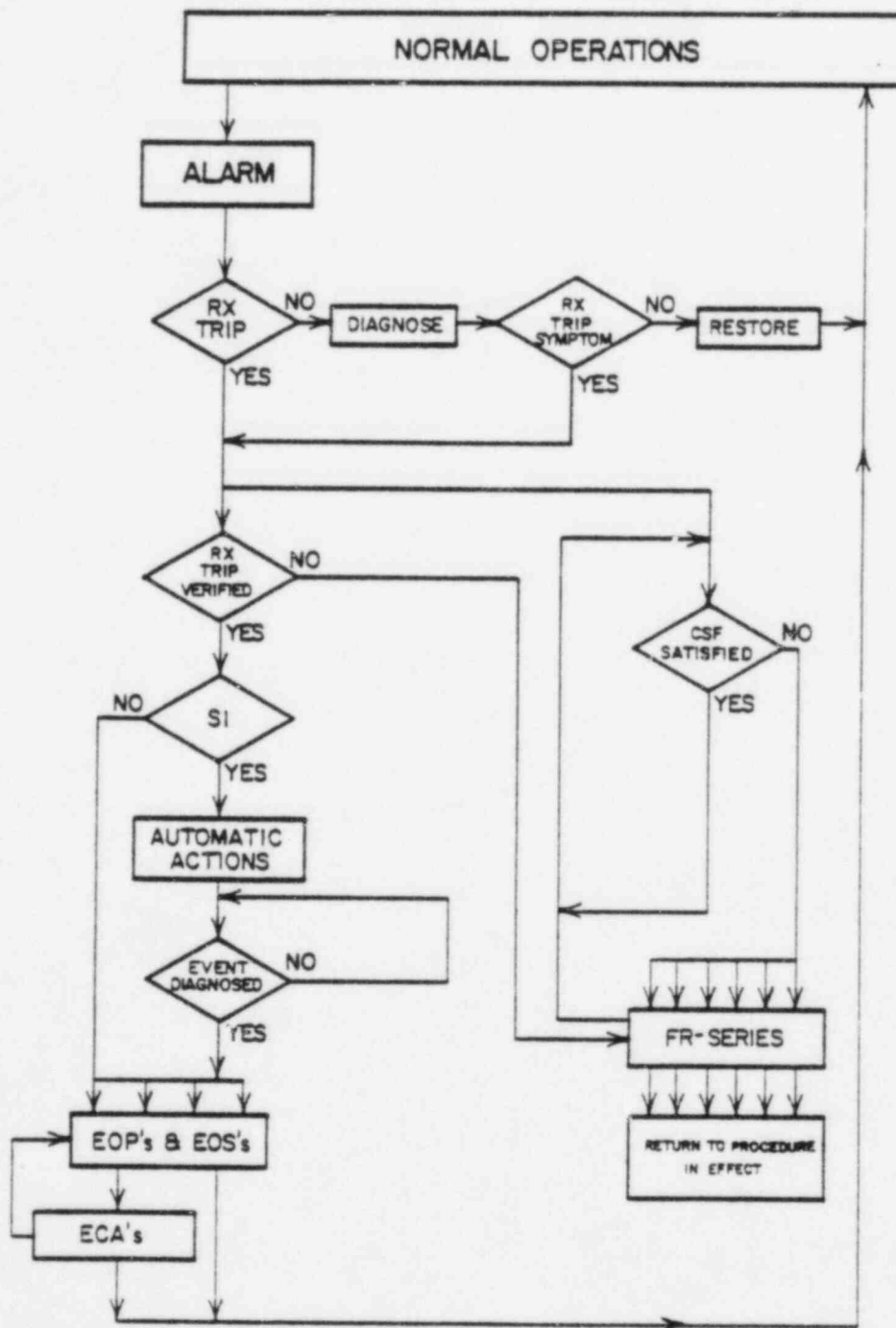


Figure 1

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 6 OF 72

4.1.2 Emergency Operating Procedures

The Emergency Operating Procedures provide the operator with sufficient procedural guidance to diagnose nominal emergency conditions and direct the operator to the appropriate Emergency Operations Sub-Procedure or Emergency Contingency Action Procedure. The EOPs are initially entered to diagnose the initiating event. Concurrently, the critical safety function status trees should be monitored to ensure that specified parameters are in acceptable ranges. If the initiating event can be diagnosed, the EOP will direct the operator to enter an EOS procedure for recovery. If the event is not immediately diagnosed, the operator returns to the diagnostic steps in the EOP and repeats specified actions. As before, he concurrently monitors the critical safety function status trees. The ECA procedures provide instructions for contingency actions and will be entered as directed by the EOPs.

4.1.3 Critical Safety Function Status Trees

These status trees provide the operator with a systematic means for determining the safety status of his plant for any emergency situation, irrespective of specific guidance intended for this purpose contained in other Emergency Response Guidelines. The status trees can be referenced by the operator at any time, and continuous use of these status trees provides independent verification of the attainment and maintenance of safe plant conditions throughout the recovery. This concurrent use of status trees and the appropriate Emergency Response Guidelines also provides a method for identifying the type of critical safety function challenge independent of specific event diagnoses and nominal prescribed recovery actions. Therefore, use of the status trees in conjunction with the Emergency Response Guidelines provides a systematic way of identifying and responding to subsequent/multiple failure situations.

The status trees are intended to serve two purposes:

- 1) General surveillance under all sets of unusual or abnormal conditions that can lead to or result from initiation of safety injection
- 2) Direct operator guidance in those rare events that go beyond the design basis of the Engineered Safeguards Systems and the Emergency Response Guidelines and Emergency Contingency Actions.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 7 OF 72

4.1.3.1 General Surveillance

- It is anticipated that the "general surveillance" aspect of Critical Safety Function monitoring with the Status Trees would be carried out routinely by control room personnel not intimately involved in plant operations (typically, a Senior Reactor Operator in a supervisory role or a Shift Technical Advisor) during the period following activation of the Engineered Safeguards System and continuing until the plant status is fully diagnosed and understood by the operating personnel. The status trees are displayed on the control room Safety Assessment System (SAS) and should be continuously available. In the unlikely event that SAS is inoperative during an accident a manual back-up system will be provided. This backup system consists of status tree cards mounted to a solid backboard structure to allow flipping through each critical safety function status tree in priority of use.
- After the status of each individual safety function is determined, a tear-off tablet status sheet (see example below) attached to the bottom of the solid backboard is marked and given to the operator implementing the ERG's.

Time: _____	RED	ORANGE	YELLOW	GREEN
SUBCRITICALITY	FRS-0.1	FRS-0.1	FRS-0.2	CSF SATISFIED
CORE COOLING	FRC-0.1	FRC-0.2	FRC-0.3	CSF SATISFIED
HEAT SINK	FRH-0.1		FRH-0.2 FRH-0.3 FRH-0.4 FRH-0.5	CSF SATISFIED
RCS INTEGRITY	FRP-0.1	FRP-0.1	FRP-0.2	CSF SATISFIED
CONTAINMENT	FRZ-0.1	FRZ-0.1 FRZ-0.2	FRZ-0.3	CSF SATISFIED
INVENTORY			FRI-0.1 FRI-0.2 FRI-0.3	CSF SATISFIED

- In applications of this type, use of the Status Trees would serve as a prudent safeguard against an unrecognized degradation of an already abnormal situation by random or common mode failures of safety equipment or by operator error. No recourse by the operators to the Function Restoration Guidelines and Emergency Contingency Actions would be necessary. Prioritization of operator actions would be directed by existing Emergency Response Guidelines and Emergency Contingency Actions. However, the non-operating user of the Critical Safety Function Status Trees might well use the Function Restoration Guidelines and the prioritization guides incorporated in the Status Trees to verify that the course of action being followed by the operator is consistent with the status of the plant.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 9 OF 72

4.1.3.2 Direct Operator Guidance

- The "direct operator guidance" aspect of Critical Safety Function monitoring with the Status Tree is expected to be applicable only in those very rare situations in which, as a result of multiple or sequential failures of several plant systems, an ongoing transient has entered a domain in which the Emergency Response Guidelines and Emergency Contingency Actions may not be reliable guides and available plant systems may have to be used under direct operator control to maintain the Critical Safety Functions and to protect the surviving barriers. Under these conditions an initial evaluation of the plant status in terms of the Critical Safety Functions is made and the rules of prioritization of operator response are invoked to direct the operators to the appropriate Function Restoration Guidelines in order to stabilize and improve the plant status.
- The plant status would be reevaluated periodically and as the set of status indicators changes to reflect changing plant status, the operator would be directed to other Function Restoration Guidelines or Emergency Response Guidelines to treat less serious challenges to barrier integrity or to respond to new challenges. Concurrently with these Critical Safety Function oriented activities, it is expected that the operators would attempt by other methods to diagnose the plant status in terms of failed equipment and to initiate remedial measures.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 10 OF 72

4.1.4 Function Restoration Procedures

These procedures will provide operator actions which could be effective in responding to challenges to the plant critical safety functions. These guidelines are normally entered via the Critical Safety Function Status Trees, although in certain cases it is possible to enter them directly from the Emergency Response Guidelines via identified transitions that account for specific contingencies. These Function Restoration Guidelines provide guidance for maintaining the plant in a safe state without regard to initiating event or combinations of subsequent or consequential failures after event diagnosis. In most cases, the operator can expect to recover the plant using only the EOP, EOS or ECA procedures. However, the availability of the Function Restoration Guidelines provides additional guidance for situations where diagnosis cannot be made, or where subsequent/multiple failures make it impossible to recover the plant by use of the Emergency Operating Procedures.

4.2 Preparation of Plant Specific Technical Guidelines

4.2.1 General

Plant specific technical guidelines are prepared for each Emergency Procedure. These guidelines provide a complete and documented analytical basis for each procedure. The listed process is illustrated in figure 2 and is used to ensure the Generic Procedures are applicable to Comanche Peak. The following is a description of each document contained in the Plant Specific Technical Guidelines.

4.2.1.1 GENERIC COMPARISON PACKAGE

The generic plant design discussed in the ERG executive volume is reviewed and compared to the existing CPSES plant design. Every system is verified to have the same design and the same basic interlocks, automatic functions, and if applicable same setpoints. Any major differences discovered in the review process will be analyzed to determine if the difference will prohibit performing the overall objectives of the generic guidelines. All instruments and controls will also be reviewed to determine if the CPSES design contains all instruments and controls specified for the generic plant design.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 11 OF 72

4.2.1.2 WESTINGHOUSE GENERIC PROCEDURES

The Westinghouse Generic Procedures furnished to CPSES by the Westinghouse Owners Group (WOG), include a step by step sequence of functions that are to be performed for different events. These generic procedures are written based on a reference plant discussed in the Westinghouse Executive Volume.

4.2.1.3 WESTINGHOUSE BACKGROUND DOCUMENTATION

The Westinghouse Background Documentation is a set of volumes that includes a study of every step of every procedure found in the generic procedure set. This study includes explanations as to why a step is being performed and what is needed on a plant specific level to perform the step.

4.2.1.4 APPROVED EMERGENCY RESPONSE GUIDELINES

The approved Emergency Response Guidelines will be the set of draft procedures that have been reviewed and approved by the CPSES Station Operating Review Committee. The set of draft procedures will have undergone extensive review processes which include control room reviews, simulator reviews, and table top reviews. The review process will also include data verification, and performance of task analysis. The draft procedures are written using the finalized generic plant comparison package, the validated generic procedures, and the validated background documentation.

4.2.1.5 EMERGENCY RESPONSE GUIDELINE VERIFICATIONS

Each procedure shall be verified to ensure the procedure is accurate and useable. The verification process will include, as applicable, a control room walkthrough, a simulator exercise, and/or a table top review.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 12 OF 72

4.2.1.6 DATA PACKAGES

Each CPSES plant specific procedure is based on the Westinghouse Owners Group Generic Guidelines. These generic guidelines are reviewed on a step-by-step basis using the background documentation provided by the Westinghouse Owners Group. This package will contain that information provided by the background document as well as the parameters and/or calculations that will be inserted into the CPSES procedures. A listing will be provided that will contain the references where the necessary information was found. This review process will be the basis for the Comanche Peak data package. Section 4.2.4.2 describes specifically how this package is to be completed.

4.2.1.7 TASK ANALYSIS PACKAGES

To ensure that the Westinghouse Generic Guidelines have been adequately transcribed into plant specific procedures a Task Analysis is performed for every step in each plant specific procedure. This analysis will identify the instrument and control needs that is necessary to implement each procedure and the needed characteristics required for each instrument and control identified in the background documentation. The task analysis will look at the following characteristics of the required instruments/controls.

- 1) Units
- 2) Scale range
- 3) Increments
- 4) Tolerance
- 5) Post Accident Monitoring Qualification
- 6) Positions Available
- 7) Indications

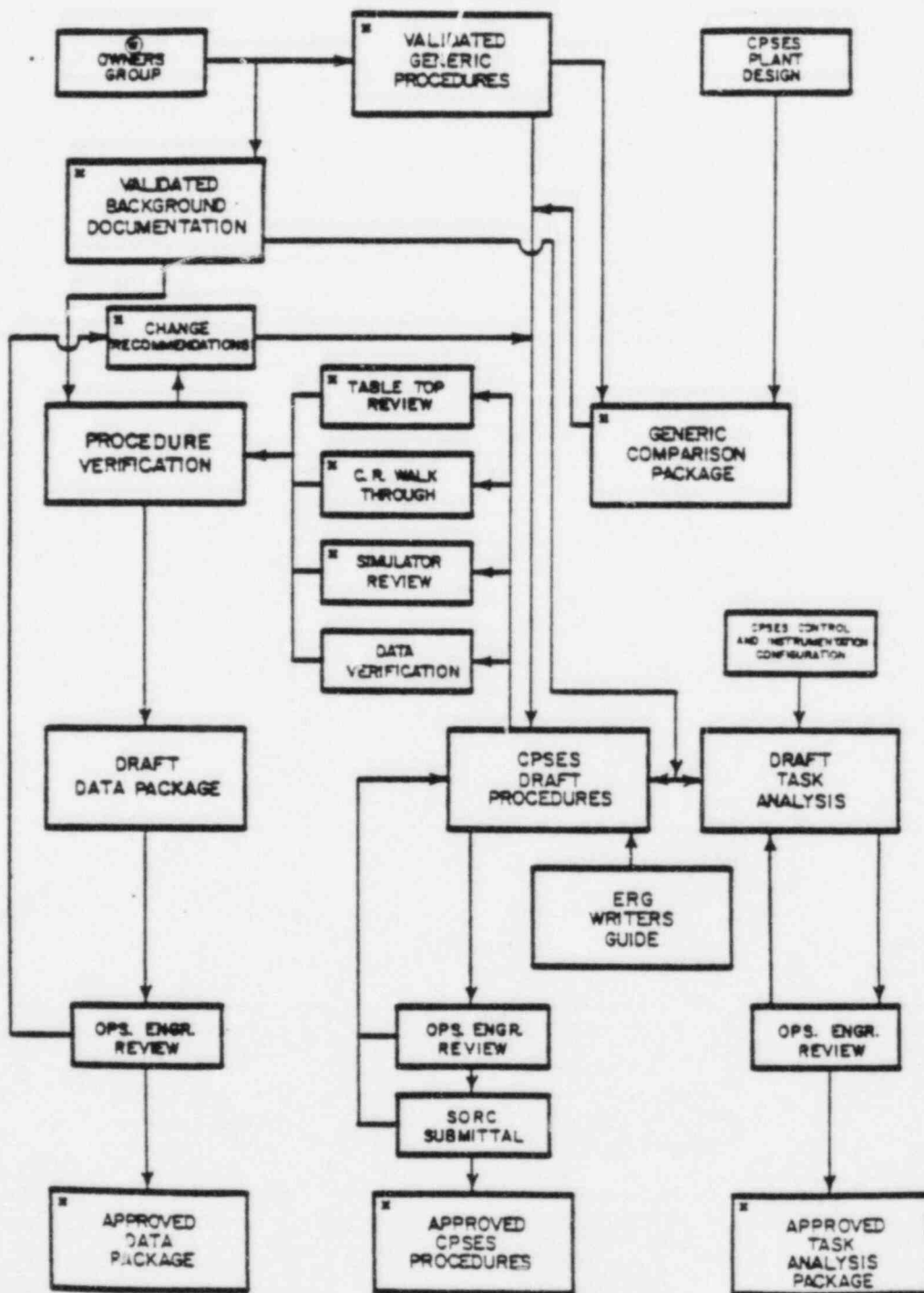
Utilizing the above information, CPSES Instrumentation and Controls will be reviewed and a determination made if these instrumentation/controls perform the needed features and/or results as specified in the background documentation. This study will be the basis for the task analysis package. Section 4.2.4.3 specifically states what steps must be performed to accurately complete the task analysis.

4.2.1.8 Guideline Improvement Recommendations

When a change is needed to an existing Plant Specific Guideline that does not change the intent of the procedure or does not need to be made immediately, Attachment 6 should be completed and sent to the Operations Department for review and evaluation. If approved, the change will be incorporated, in accordance with section 4.2.5 of this procedure, in the next revision.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 14 OF 72

FIGURE 2



* These documents combined form the Plant Specific Technical Guidelines.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 15 OF 72

4.2.2 Validation of the Technical Guidelines

4.2.2.1 The generic technical guidelines are validated by the Westinghouse Owner's Group. This validation applies to the Comanche Peak Technical Guidelines if only plant specific data is inserted and no substantial changes are made to the basic guideline.

4.2.2.2 To ensure the validation process is not compromised, all plant specific procedures are evaluated to determine the effect, if any on the validation by:

A) Performing an engineering evaluation of the CPSES Plant design as compared to the Generic plant design described in the WOG Background documents. The evaluation should consider:

- 1) CPSES FSAR
- 2) Technical Specifications
- 3) System Technical Descriptions
- 4) Elementary Wiring Diagram
- 5) Flow diagrams
- 6) Instrument and Control diagrams.

Any design differences identified during this process are evaluated to determine if the technical basis and/or overall objective of the Generic Guidelines is compromised.

B) Inserting plant specific data where applicable per the WOG background documentation. This data will be researched and evaluated to meet the following requirements:

- 1) All plant specific data does not compromise the generic technical basis for this guideline.
- 2) All data has been verified to be plant specific with some justification, source and/or calculations provided.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 16 OF 72

3) All data is within the range specified in the generic technical guideline.

C) Performing a Task Analysis on each Plant Specific Procedure. This Analysis will include every step of each procedure. The analysis will provide the following results:

- 1) Every function required for each specific step.
- 2) A listing of every control and/or indication needed to perform the required function.
- 3) An evaluation that all plant specific control/instrumentation meet the analyzed ranges specified in the generic guidelines.

The above mentioned processes will provide adequate assurance that the WOG validation of the Generic Guidelines has not been compromised when making them Plant Specific.

4.2.3 Documentation

The Plant Specific Technical Guidelines documentation shall be maintained and filed per STA-302. This documentation will include the following:

- Generic Technical Guidelines
- Generic Background documentation
- Approved Plant Specific Procedure
- CPSES Data Package
- CPSES Task Analysis Package
- CPSES Generic Comparison Package
- CPSES Guideline Verification checklist
- Change Recommendations.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 17 OF 72

4.2.4 Instructions for completing documents contained in the Plant Specific Technical Guidelines.

4.2.4.1 Generic Comparison Package (Attachment 1)

A) Cover Page

- 1) Revision Date - Enter the Comanche Peak Revision date for the Comparison package.
- 2) Submitted by - Signature of submitter and submittal date.
- 3) Reviewed by - An engineer shall review and verify every page of the package has been properly filled out and signed. The engineer shall review all justifications and if in concurrence with all the package then he shall sign and date.
- 4) Approved by - Operations Engineer or designee shall sign and date.

B) Second Page

- 1) System - List the system which the difference being evaluated is part of.
- 2) CPSES Differences - Give a brief description of the difference found between CPSES and the Generic Plant.
- 3) Justification completed - List the page number where the difference is evaluated and give the source and/or justification used in the evaluation.

C) Third Page

- 1) Difference Description - Describe specifically the difference between the Generic Plant and CPSES.
- 2) Justification - An explanation of how the difference mentioned above does not affect the overall objective of the generic guideline.
- 3) Completed by - should be signed and dated by person completing work.

- 4) An Engineer shall sign the next two slots after reviewing the justification and agreeing with the statements.
- 5) Generic Procedure Reference - List all procedures that are affected by this difference.

4.2.4.2 Data Package (Attachment 2)

A) Cover Page

- 1) Title - Emergency Procedure name.
- 2) Procedure No. - Enter the CPSES Plant Specific Procedure Number.
- 3) Revisor No. - Enter the CPSES Plant Specific Data Package revision.
- 4) Submitted By - Signature of submitter and submittal date.
- 5) Reviewed by - The engineer shall review and verify that every page of the package has been properly completed and signed.
- 6) Approval by - Signature of approver and date.

B) Second Page

- 1) Guideline Name - Enter Plant Specific Procedure name.
- 2) Plant Specific Revision No. - Enter revision number of the CPSES data package.
- 3) Guideline No. - Enter CPSES plant specific procedure number.
- 4) Page No. - Enter data package page number as part of entire data package.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 19 OF 72

- 5) Step 1 - Enter the total number of pages of data entered and provide information that will adequately satisfy the reviewer that all data is plant specific and any differences in the procedure as compared to the generic are not in violation of the background document specifications. The following information should be discussed in the comment section.
 - a) Has the generic procedure sequence not been violated.
 - b) If any step is reworded or changed from the generic form, then provide the changes and if applicable explain why the change has been made.
 - c) Has all data been made plant specific and has the data not compromised the generic technical basis.
- 6) Step 2 - Enter the total number of pages of data verified and provide a brief description of the verification process. The verification process shall be performed by an engineer, and should include the following:
 - a) The proper documents have been used as justification. A listing of proper documents is:
 - 1) PLS
 - 2) FSAR
 - 3) Tech Specs
 - 4) Tech Manual
 - 5) Controlled Copy Mechanical Drawing, Electrical Drawing, I & C Schematics.
 - 6) Scaling Manual
 - 7) Engineering Evaluations when calculations are provided
 - 8) Any other reference where a copy is controlled and/or calculations are provided or deemed necessary.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 20 OF 72

b) All pertinent calculations are included, and have been verified correct.

c) All plant specific data has been incorporated as required by the Background document.

The signature block shall contain the signature of the responsible engineer verifying the data. A space has been provided for the engineer's printed name.

C) Data Pages

- 1) Header data - Same as section 4.2.4.2B.
- 2) Guideline Step No. - Enter the plant specific procedure step number requiring data.
- 3) Plant Specific Data Required - Enter a brief description of parameter required.
- 4) Source/Justification/Calculation - Enter the source of the data (FSAR, component technical manual, Technical Specification, etc.) along with any necessary justification or calculations.

4.2.4.3 Task Analysis package (Attachment 3)

A) Cover Page

- 1) Title - Enter the plant specific procedure name
- 2) Procedure No. - Enter the plant specific procedure number
- 3) Revision No. - Enter the task analysis package revision number
- 4) Submitted by - Enter signature of submitter and date of submittal

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 21 OF 72

5) Reviewed by - An engineer shall review and verify every page of the package has been properly filled out and signed. The engineer shall, if in concurrence, sign and date the package.

6) Approved by - Signature of approver and date.

B) Second Page - This page is designed to provide a listing of all indications and controls required and the associated characteristics needed to meet the generic procedure requirements.

1) Heading - Same as 4.2.4.3 A1 and 2.

2) Step - Enter Plant Specific step number. If a substep exists, then the step number followed by a letter designator will be inserted. For the Response Not Obtained column, the step number followed by an apostrophe will be inserted.

3) Requirement - Enter the specific requirement from the above step. The procedural step may be inserted exactly so as to avoid any mistakes in not listing all requirements.

4) Control - List any controls that need to be manipulated in order to meet the above mentioned requirement.

5) Board Location - Specifically state on which portion of the CPSES control board the specified control exists. If the control does not exist on the control board, specify where the control is located.

6) Indication - List specifically any indications that shall be required to meet the above mentioned requirement.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 22 OF 72

- 7) Board Location - Specifically state on which portion of the CPSES control board the specified indicator exists. If the control does not exist on the control board, specify where the control is located.
- 8) Task Analysis Worksheet Completed - When the indicator or control worksheet has been completed and all signatures are placed, then a "Yes" shall be inserted in this slot.
- 9) Step Justification - A determination must be made whether the step has been justified by the WOG or if it must be justified by CPSES. If the step follows the generic pattern, then the step can be classified under generic. If a plant specific step is included or if the step is changed in some form where it could cause some compromise in the generic, then the step in question shall be evaluated, either in the Generic Comparison Package or the Data Package. This evaluation will include the following determinations:
 - a) Does this change cause the generic procedure sequence to be altered?
 - b) Does this change compromise the overall objective of the generic procedure?
 - c) Does this change cause a violation of any specifications found in the background document?
- 10) Comments - List any applicable comments which pertain to this step.
- 11) Completed By - Signature of person completing worksheet.

12) Reviewed by - The engineer that performs the review must evaluate the following:

- a) Does the worksheet include all steps of the plant specific procedure.
- b) Has an indicator/control worksheet been completed for each required.
- c) Is the step justification been properly categorized based on the criteria stated in section 4.2.4.3.B9.
- d) Has the completed slot been signed.

13) Page - Place page number as part of entire package.

C) Third Page

- 1) Header Data - Same as section 4.2.4.3 A1 and 2.
- 2) Instrument - List instrument needed to be evaluated per Task Analysis worksheet.
- 3) Required Characteristics - Per the task analysis worksheet requirement, summarize the step and denote specifically what is required from the above mentioned indicator. e.g., 20%, Level dropping, indicate flow, 50 gpm, etc.
- 4) Completed by - Person performing the worksheet should place his name. Signature is not a requirement.
- 5) Instrument Number - List the designator(s) for the instrument listed in Part 2 above. Designator should be exact to that found on the control board.
- 6) Units - List the units, if applicable, as found on the CPSES control board.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 24 OF 72

- 7) Scale Range - List the maximum to minimum range indicated on the CPSES control board.
- 8) Increments - Give range found between the markings.
- 9) Tolerance - Specify if applicable the maximum error the indication may have. Under reference section, list specifically where this number was found.
- 10) Post Accident Monitoring - Check whether the indicator in question is qualified for accident conditions.
- 11) References Used - Should specify any reference used while obtaining the above information. If Part 9 above is completed, then a reference shall be stated.
- 12) To determine if the instrument meets the requirements specified in the Generic Background documentation, the following criteria must be met:
 - a) The Indicator can display the indication specified in the Required Characteristics slot.
 - b) The indication can be read without the operator having to estimate between markings on the indicator.
 - c) The indicator meets all requirements listed in the background document.

If the above criteria is met, then the reviewing engineer shall sign and indicate a "yes" in the space provided.

If the above criteria is not met, then the reviewing engineer shall indicate a "No" and in the comments section specify why it is not and how it will be resolved. This section should also state if a design change needs to be done or if an adequate replacement can be used.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 25 OF 72

- 13) Procedures Referenced - All procedures that use the above indication will be listed in this portion. A master copy may be produced which could list the information in Parts 2, 5, 6, 7, 8, 9, 10 and also all procedures that use the information. If this is done, then on all individual procedures "Refer to Master Copy" may be inserted.

D) Fourth Page

- 1) Header Data - same as section 4.2.4.3 A1 and 2.
- 2) Control - List control needed to be evaluated per section 4.2.4.3B4 of the task analysis worksheet.
- 3) Required Characteristic - Per the task analysis worksheet requirement, summarize the step and denote specifically what is required from the above mentioned control. e.g., start or stop the pump, close, open or throttle the valve. If more than one characteristic is required, they may be listed on the same page.
- 4) Completed by - Person performing the worksheet should place his name. Signature is not a requirement.
- 5) Control Number - List the designator(s) for the control listed in Part 2 above. Designator should be exact to that found on the control board.
- 6) Positions - List all positions the control listed above can be placed in.
- 7) Indication - List indications available for this control. This portion is not required to be completed for the engineer's evaluation.
- 8) Comments - List any specific comments pertaining to the control.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 26 OF 72

9) References Used - Should specify any reference used while obtaining the above information.

10) To determine if the control meets the requirements specified in the Generic Background documentation, the following criteria must be met:

- a) The control can perform the required characteristic specified in Part 3 above.
- b) The control meets all requirements specified in the background documentation.

If the above criteria is met, then the reviewing engineer shall sign and indicate a "Yes" in the space provided.

If the above criteria is not met, then the reviewing engineer shall indicate a "No" and in the comments section specify why it is not and how it can be resolved. This section should also state if a design change needs to be done or if an adequate replacement can be used.

11) Procedures Referenced - All procedures that use the above indication will be listed in this portion. A master copy may be produced which could list the information in part 2, 5, 6, 7, 8 and also all procedures that use the information. If this is done then on all individual procedures, "Refer to Master Copy" may be inserted.

4.2.4.4 Emergency Response Guideline Verifications

- A) Each procedure shall be verified to ensure the procedure is accurate and useable. The verification process will include, as applicable, the following and will be documented on Attachment 5 when completed. An Attachment 5 check list for each procedure will be filed with the Comanche Peak Data Package.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 27 OF 72

- Simulator Exercising - If simulator time is available prior to the initial operation of CPSES, the simulator exercising box on Attachment 5 should be checked to verify the procedure utilized accomplished the objective of the ERG. When the CPSES plant specific simulator becomes available, each revision of the ERG procedures shall be verified on the simulator to ensure it accomplishes the objective of the ERG and maintains the plant in a safe and stable condition.
- Control Room Walkthrough - Each ERG shall be walked through the control room and/or plant specific simulator. The walkthrough is to ensure nomenclature on handswitches, annunciators, monitor light boxes, and/or any verbage used in the main control room is identical to that of the ERG procedure. The Control Room Walkthrough box should be checked on Attachment 5 when completed.
- Desk Top Review - Each ERG shall be reviewed as a group to determine if all steps can be performed accurately and easily. Each procedure will be reviewed for technical content and readability. The desk top review box should be checked on Attachment 5 when completed.

B) Verification Criteria

- 1) Attachment 5, No. 1 - The reviewer is to sign and date confirming the ERG has been written in accordance with the generic procedure and procedure data package. This verification is a step-by-step review of the generic WOG guideline background basis document versus the plant specific ERG procedure to ensure the intent of the step was not compromised when made plant specific.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 28 OF 72

- 2) Attachment 5, No. 2 - The reviewer is to sign and date confirming the plant specific ERG has been written as depicted in the ERG Writers Guide, Attachment 4 of this procedure. This review is to ensure all ERG's are written consistently, with good human factors principles.
- 3) Attachment 5, No. 3 - The reviewer is to sign and date confirming the plant specific procedure has been walked through the control room verifying that the procedure can be followed by a newly licensed operator without confusion, delays or errors. This verification should be completed by a licensed Reactor Operator or a licensed Senior Reactor Operator.
- 4) Attachment 5, No. 4 - The reviewer is to sign and date confirming the plant specific design has been verified that it is not different from that which was used in the generic plant design. The plant specific design will be compared to the generic plant design delineated in the WOG comparison package. Any difference will be recorded in the comments section and evaluated to insure that the differences do not compromise the intent of the procedure.
- 5) Attachment 5, No. 5 - The reviewer is to sign and date confirming the ERG is sufficient to allow the least qualified (newly licensed) operator to use it effectively. This verification should be completed by a licensed Reactor Operator or a licensed Senior Reactor Operator and is based upon the reviewer's past experience.
- 6) Attachment 5, No. 6 - The reviewer is to sign and date confirming the plant specific procedure has been verified by a control room walkthrough and/or simulator exercise and that the minimum shift crew complement, as delineated in ODA-102 Attachment 1, can successfully complete all steps within the plant specific ERG.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 29 OF 72

- 7) Attachment 5, No. 7 - The reviewer is to sign and date confirming the plant specific procedure has been verified against the ERG transition flow chart provided by the WOG. This process is to verify that transition from one procedure to another can be done accurately and in a timely manner.

4.2.4.5 Preparation of Emergency Operating, Emergency Operating Sub-Procedures, Emergency Contingency Action and Function Restoration Procedures

The Emergency Operating, Emergency Operating Sub-Procedures, Emergency Contingency Action and Function Restoration procedures are written using the guidance provided in the CPSES writers guide (Attachment 4). The writers guide provides instructions for translating technical information into a procedure acceptable for use in the control room.

4.2.5 Incorporation of changes

When a revision is made to the plant specific ERG procedures due to either submittal of Guideline Improvement Recommendation sheets or through Temporary Changes, the documentation process for all changes to existing procedures are treated in accordance with steps 4.2.1 through 4.2.4 of this procedure. The same applies if new or revised WOG Generic Technical Guidelines are issued.

4.3 Operator Training Criteria

The plant operators (RO and SRO) will receive training on the Emergency Response Program and on each procedure. The training will provide a mechanism to ensure that each operator understands the fundamental concepts with symptom based procedures. Additionally, the training will be structural to ensure that the operators become familiar with each of the procedures and will provide a mechanism for feedback to incorporate procedure improvements. The training will be a combination of classroom lectures, self study and control room walk-throughs of the actual procedures. Attachment 6 is the form used for incorporating procedural improvements identified through the training program.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 30 OF 72

5.0 References

- 5.1 CPSES Operations Administrative Control and Quality Assurance Plan
- 5.2 ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"
- 5.3 STA-202, "Preparation, Review, Approval and Revision of Station Procedures"
- 5.4 ODA-201, "Preparation of Integrated Plant Operation Procedures"
- 5.5 ODA-202, "Preparation of System Operating Procedures"
- 5.6 NUREG - 0899, Guidelines for the preparation of Emergency Operating Procedures
- 5.7 STA-302, "Station Records"

6.0 Attachments

- 6.1 Attachment 1, Generic Plant Comparison
- 6.2 Attachment 2, Comanche Peak Data Package
- 6.3 Attachment 3, Task Analysis Package
- 6.4 Attachment 4, Writer's Guide
- 6.5 Attachment 5, Procedure Verification Checklist
- 6.6 Attachment 6, Procedure Improvement Recommendations

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 31 OF 72

ATTACHMENT 1
PAGE 1 OF 3

COMANCHE PEAK STEAM ELECTRIC STATION
EMERGENCY RESPONSE GUIDELINE GENERIC PLANT COMPARISON

GENERIC PLANT COMPARISON

REVISION DATE _____

SUBMITTED BY _____ TITLE _____ DATE _____
 REVIEWED BY _____ ENGINEER _____ DATE _____
 APPROVED BY _____ OPERATIONS ENGINEER _____ DATE _____

ODA-204-5
R-1
Page 1 of 3

ATTACHMENT 1
PAGE 2 OF 3

Generic Plant Comparison to CPSES

System	CPSES differences	Justification Completed

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 33 OF 72

ATTACHMENT 1
PAGE 3 OF 3

1. Difference Description _____

2. Justification _____

3. Completed by _____ DATE _____

The difference mentioned above does not compromise the generic technical basis for the guidelines.

ENGINEER / DATE

The difference mentioned above does not affect the overall objective of the Plant Specific ERG's

ENGINEER / DATE

Generic Procedure Reference: _____

Comments:

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 34 OF 72

ATTACHMENT 2
PAGE 1 OF 3

COMANCHE PEAK STEAM ELECTRIC STATION
EMERGENCY RESPONSE GUIDELINE DATA PACKAGE

TITLE: _____

PROCEDURE NO.: _____

DATA PACKAGE

REVISION NO.

SUBMITTED BY _____ DATE _____

REVIEWED BY _____ DATE _____
ENGINEER

APPROVED BY _____ DATE _____
OPERATIONS ENGINEER

ODA-204-3
R-1
Page 1 of 3

ATTACHMENT 2
PAGE 2 OF 3

CPSES EMERGENCY RESPONSE GUIDELINE DATA PACKAGE	PLANT SPECIFIC REVISION NO.	GUIDELINE NO.
GUIDELINE NAME:		PAGE OF
<p>1. Data on pages 3 through _____ of this data package has been made specific to the Comanche Peak design and does not compromise the generic technical basis for this guideline.</p> <p>Comments:</p> <p>_____ Signature date</p> <p>_____ Print name of Engineer entering data</p> <p>2. Data on pages 3 through _____ of this data package has been verified as specific to the Comanche Peak design and does not compromise the generic technical basis for this guideline.</p> <p>Comments/brief description of verification process:</p> <p>_____ Signature date</p> <p>_____ Print name of Engineer verifying data</p> <p>ODA-204-3 R-1 Page 2 of 3</p>		

ATTACHMENT 2
PAGE 3 OF 3

CPSES EMERGENCY RESPONSE GUIDELINE DATA PACKAGE	PLANT SPECIFIC REVISION NO.	GUIDELINE NO.
GUIDELINE NAME:		PAGE OF
Guideline Step No.	Plant Specific Data Required	Source/ Justification/ Calculations
<div>ODA-204-3 R-1 Page 3 of 3</div>		

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 37 OF 72

ATTACHMENT 3
PAGE 1 OF 4

COMANCHE PEAK STEAM ELECTRIC STATION
EMERGENCY RESPONSE GUIDELINE TASK ANALYSIS PACKAGE

TITLE: _____

PROCEDURE NO.: _____

TASK ANALYSIS PACKAGE

REVISION NO.

SUBMITTED BY _____ DATE _____

REVIEWED BY _____ DATE _____
ENGINEER

APPROVED BY _____ DATE _____
OPERATIONS ENGINEER

ODA-204-4
R-1
Page 1 of 4

TASK ANALYSIS WORKSHEET

ERG NO.

ERC TITLE:

[illegible]

PAGE
OF
ODA-204-4
R-1
Page 2 of 4

COMPLETED BY: _____ REVIEWED BY: _____ DATE: _____
ENGINEER

ATTACHMENT 3
PAGE 3 OF 4

CPSES EMERGENCY RESPONSE GUIDELINE TASK ANALYSIS	PLANT SPECIFIC REVISION NO.	GUIDELINE NO.
GUIDELINE NAME:	REVISION DATE	PAGE OF

CONTROL WORKSHEET

CONTROL: _____

REQUIRED CHARACTERISTICS: _____

COMPLETED BY: _____ DATE: _____

CHARACTERISTIC
JUSTIFICATION

CONTROL NUMBER	POSITIONS	INDICATIONS	COMMENTS	REF. USED

Control meets the requirements specified in the Rev. 1 Generic

Background Documentation: YES NO Engineer: _____

Comments: _____

PROCEDURES REFERENCED: _____

ATTACHMENT 3
PAGE 4 OF 4

CPSES EMERGENCY RESPONSE GUIDELINE TASK ANALYSIS	PLANT SPECIFIC REVISION NO.	GUIDELINE NO.
GUIDELINE NAME:	REVISION DATE	PAGE OF

INDICATOR WORKSHEET

INSTRUMENT: _____

REQUIRED CHARACTERISTICS: _____

COMPLETED BY: _____ DATE: _____

CHARACTERISTIC
JUSTIFICATION

INSTRUMENT NUMBER	UNITS	SCALE RANGE	INCREMENTS	TOLERANCES	POST ACC. MONITORING	REFERENCES USED

Instrumentation meets the requirements specified in the Rev. 1 Generic

Background Documentation: YES NO Engineer: _____

Comments: _____

PROCEDURES REFERENCED: _____

CPSES
OPERATIONS DEPARTMENT ADMINISTRATION MANUAL

ISSUE DATE
APR 12 1985

PROCEDURE NO.
ODA-204

PREPARATION OF EMERGENCY RESPONSE GUIDELINES

REVISION NO. 4

PAGE 41 OF 72

ATTACHMENT 4
PAGE 1 OF 29

COMANCHE PEAK STEAM ELECTRIC STATION
EMERGENCY RESPONSE GUIDELINES
WRITER'S GUIDE

ATTACHMENT 4
PAGE 2 OF 29

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	<u>INTRODUCTION</u>	
	1.1 Purpose	4
	1.2 Scope	4
2.0	<u>ERG DESIGNATION AND NUMBERING</u>	
	2.1 Procedure Designation	5
	2.2 Procedure Numbering	5
	2.3 Revision Numbering and Designation	5
3.0	<u>FORMAT</u>	
	3.1 Title Page	5
	3.2 Administrative Note Page	6
	3.3 First Procedure Page	8
	3.4 Remaining Procedure Pages	8
	3.5 Attachments	12
	3.6 Procedure Organization	14
	3.7 Section Numbering	14
4.0	<u>WRITING INSTRUCTIONAL STEPS</u>	
	4.1 Instruction Step Length and Content	14
	4.2 Action/Expected Response Column	15
	4.3 Response Not Obtained Column	16
	4.4 Use of Logic Terms	16
	4.5 Use of Cautions and Notes	17
	4.6 Calculations	18
	4.7 Underlining	18
	4.8 Referencing among and between procedures	18
	4.9 Component Identifications	19
	4.10 Level of Detail	19
	4.11 Operator Aids	20

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 43 OF 72

ATTACHMENT 4
PAGE 3 OF 29

TABLE OF CONTENTS (continued)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
5.0	<u>MECHANICS OF STYLE</u>	
	5.1 Spelling	21
	5.2 Hyphenation	21
	5.3 Punctuation	22
	5.4 Vocabulary	23
	5.5 Numerical Values	25
	5.6 Abbreviations, Letter Symbols, Acronyms	26
6.0	<u>TYPING INSTRUCTIONS</u>	
	6.1 General Typing Instructions	27
	6.2 Page Arrangement	27
	6.3 Breaking of Words	27
	6.4 Printed Operator Aids	28
	6.5 Use of Foldout Pages	29
	6.6 Use of Oversized Pages	29
	6.7 Use of Reduced Pages	29
7.0	REPRODUCTION	29

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 44 OF 72

ATTACHMENT 4
PAGE 4 OF 29

1.0 INTRODUCTION

Emergency Response Guidelines (ERGs) are plant procedures that direct actions necessary to mitigate the consequences of transients and accidents that cause plant parameters to exceed reactor protection system set points or engineered safety feature set points. The ERGs will provide the operator guidance on how to verify the adequacy of critical safety functions and restore and maintain those functions when degraded. The ERGs will be written so that the operator need not diagnose an event, such as a small break LOCA, in order to maintain the plant in a safe configuration. Generic Technical guidelines supplied by the Westinghouse Owner's Group have been made plant specific for Comanche Peak and will provide the technical basis for the development of the Comanche Peak ERGs.

Technical guidelines represent the translation of engineering data derived from calculations, computer modeling, and plant-specific information (i.e. FSAR, Technical Specification, etc.) into information presented as guidance for development of detailed, plant-specific ERGs. These technical guidelines will provide plant specific information such as inventory control and containment integrity, delineating the entry conditions to be used in the ERGs. The technical guidelines will provide step-by-step information for transition from emergency conditions to a safe, stable condition, such as cold shutdown. ERGs must be written to provide detailed, plant specific instructions to implement each step in the technical guidelines.

1.1 Purpose

This document provides administrative and technical guidance to be followed when writing ERGs.

1.2 Scope

This writers guide applies to the writing of all emergency response guidelines (ERGs).

2.0 ERG DESIGNATION AND NUMBERING

ERGs are procedures that govern plant operation during emergency conditions and specify operator actions to be taken to return the plant to a known, stable condition.

Each procedure shall be uniquely identified. This identification permits easy administration of the process of procedure preparation, review, revision and distribution. Unique identification also facilitates ease of use by operations personnel.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 46 OF 72

ATTACHMENT 4
PAGE 6 OF 29

The title page shall contain the following information:

- 3.1.1 A title descriptive of the emergency condition to which the procedure applies
- 3.1.2 The procedure designation and number
- 3.1.3 The procedure revision number
- 3.1.4 The procedure issue date
- 3.1.5 The submitter's signature and the date of submittal
- 3.1.6 The approver's signature and the date of approval.

3.2 Administrative Note Page

This page is used to identify those administrative tasks that must be performed prior to issuing the procedure (Figure 2). Examples of Administrative Notes are as follows:

- 3.2.1 "Identification numbers for steps 1, 2 and 3 shall be circled with black ink."
- 3.2.2 "Vertical lines for the table on Attachment 1 must be hand drawn."
- 3.2.3 "Greater-than symbols for parameter 1 of symptom set I and III of Attachment 1 must be hand drawn."
- 3.2.4 "Figure 1 shall be printed on the reverse of page 2 of 12."

ATTACHMENT 4
PAGE 7 OF 29

COMANCHE PEAK STEAM ELECTRIC STATION
EMERGENCY RESPONSE GUIDELINES

3.1.1

3.1.2
3.1.3

3.1.4

SUBMITTED BY _____ DATE _____
3.1.5

APPROVED BY _____ DATE _____
3.1.6

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 48 OF 72

ATTACHMENT 4
PAGE 8 OF 29

FIGURE 2

Procedure No.
Revision No.

NOTE:

1. The following administrative items must be complete prior to issuing this procedure.
 - a. Identification, numbers for Steps 1 through 17 shall be circled with black ink.
 - b. Place keeping aids (boxes, approximately 3/8" square) shall be hand drawn at the conclusion of each "circled" step.
 - c. Bullets "o" shall be "colored" in with black ink.
 - d. Foldout step 4 - Table must be hand drawn, also greater than for 1200°F and 700°F.
2. Upon completion of the above items, the procedure, less this sheet, is ready to be issued.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 49 OF 72

ATTACHMENT 4
PAGE 9 OF 27

The Administrative note page shall contain a statement that indicates it is not to be issued with the procedure.

3.3 First Page of Each Procedure

The first page of each procedure shall contain the purpose statement and symptoms for entry into the procedure, as applicable per the latest revision of the Westinghouse Owners Group generic guideline. Figure 3 is an example of a typical procedure first page.

3.4 Remaining Procedure Pages

A two column format for the remaining pages of the procedure shall be used (Figure 4). The left hand column is designated for operator action or expected response to automatic actions. The right hand column is designated "response not obtained" and lists contingency actions for the operator to take when the expected response is not obtained.

3.4.1 With the exception of the title page and the attachments, each page of an Emergency Guideline shall contain the following information in the title block at the top of that page (Figure 4).

- 3.4.1.1 Title
- 3.4.1.2 Procedure identifying number
- 3.4.1.3 Procedure Revision number
- 3.4.1.4 Page number as part of the entire procedure, including its attachments.

ATTACHMENT 4
PAGE 10 OF 29

Figure 3

CPSES EMERGENCY RESPONSE GUIDELINE		PROCEDURE NO. EOP- 0.0
REACTOR TRIP OR SAFETY INJECTION	REVISION NO. 2	PAGE 2 OF 17

A. PURPOSE:

This procedure provides actions to verify proper response of 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:

- 2/4 power ranges $\geq 109\%$.
- 2/4 power ranges $\geq 25\%$ (Below P-10).
- 2/4 power range high positive rate $\geq 5\%$ of RTP (Rated Thermal Power) in ≤ 2 seconds.
- 2/4 power range high negative rate $\geq 5\%$ of RTP in ≤ 2 seconds.
- 1/2 intermediate range amps equivalent to $\geq 25\%$ of RTP (Below P-10).
- 1/2 source ranges $\geq 10^5$ cps (Below P-6).
- 2/4 overtemperature N-16 \geq indicated setpoint.
- 2/4 overpower N-16 $\geq 112\%$.
- 2/4 pressurizer pressures ≤ 1910 psig.
- 2/4 pressurizer pressures ≥ 2385 psig.
- 2/3 pressurizer levels $\geq 92\%$.
- 2/3 reactor coolant flows $\leq 90\%$ in 1/4 loops (Above P-8).
- 2/3 reactor coolant flows $\leq 90\%$ in 2/4 loops (Below P-8 and above P-7).
- 2/4 steam generator levels $\leq 43.4\%$ in 1/4 steam generators.
- 2/4 RCP voltages ≤ 4930 volts.
- 2/4 RCP frequencies ≤ 57.2 Hz.
- 2/3 turbine trip oil pressures ≤ 45 psig or 4/4 stop valves closed (Above P-7).
- Safety injection.
- 2/2 General Warnings.

2) The following are symptoms of a reactor trip:

- a. Any reactor trip first out annunciator lit.
- b. Rapid decrease in neutron flux level.
- c. Shutdown and control rods inserted.

3) The following are symptoms that require a safety injection:

- 2/3 containment pressures ≥ 3.35 psig.
- 2/4 pressurizer pressures ≤ 1829 psig.
- 2/3 steam line pressures ≤ 605 psig in any steam line.

ATTACHMENT 4
PAGE 11 OF 29

Figure 4

CPSES EMERGENCY RESPONSE GUIDELINE		PROCEDURE NO. EOP- 0.0
REACTOR TRIP OR SAFETY INJECTION		REVISION NO. 0
		PAGE 3 OF 14
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> Circled numbers show IMMEDIATE ACTION steps.</p> <p><u>NOTE:</u> Foldout page should be open (Attachment 1 - Red Tab).</p>	
1	<p>Verify Reactor Trip:</p> <p>a. Reactor trip and bypass breakers - OPEN</p> <p>- AND -</p> <p>Neutron flux - DECREASING</p>	<p>a. Manually trip reactor. <u>IF</u> reactor will <u>NOT</u> trip, <u>THEN</u> go to FRS-0.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, Step 1.</p>
	<p>b. All DRPI RB lights - ON</p>	<p>b. Manually trip reactor. Continue with Step 2.</p>
2	<p>Verify Turbine Trip:</p> <p>a. All turbine stop valves - CLOSED</p>	<p>a. Manually trip turbine. <u>IF</u> the turbine will <u>NOT</u> trip, <u>THEN</u> <u>EITHER</u> pull-to-lock the control fluid pumps <u>OR</u> trip the turbine via the Local Trip Valve located at the Hydraulic Control Rack.</p>
3	<p>Verify Power To AC Safeguards Buses:</p> <p>a. AC safeguards buses - AT LEAST ONE ENERGIZED</p> <p>* AC safeguards bus voltage - 6900 (6210 to 7590) VOLTS</p>	<p>a. Try to restore power to at least one AC safeguards bus. <u>IF</u> power can <u>NOT</u> be restored to at least one AC safeguards bus, <u>THEN</u> go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.</p>
	<p>b. AC safeguards buses - BOTH ENERGIZED</p>	<p>b. Try to restore power to de-energized AC safeguards bus while continuing with this procedure.</p>

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 52 OF 72

ATTACHMENT 4
PAGE 12 OF 29

3.5 Attachments

Attachments to Emergency Response Guidelines shall be minimized; however, there are cases where attachments may be necessary. The attachments should contain information pertinent to accomplish certain functions in the procedure. Fold-out pages will be attachments. Other Attachments might be steps necessary to start a reactor coolant pump.

3.5.1 Attachments to Emergency Response Guidelines shall contain identifying information at the top of each page as follows (see Figure 5):

- 3.5.1.1 Title.
- 3.5.1.2 Procedure identifying number.
- 3.5.1.3 Procedure revision number.
- 3.5.1.4 Procedure page number as part of the entire procedure, including its attachments.
- 3.5.1.5 Attachment Number.
- 3.5.1.6 Attachment Page Number as part of the entire attachment.

3.5.2 The "foldout" page shall always be the last attachment and shall have a color coded tab for rapid identification.

ATTACHMENT 4
PAGE 13 OF 29

Figure 5

CPSES EMERGENCY RESPONSE GUIDELINE		PROCEDURE NO. EOP-0.0
REACTOR TRIP OR SAFETY INJECTION	REVISION NO. 1	PAGE 17 OF 17
<p>ATTACHMENT 1 PAGE 1 OF 1</p> <p>FOLDOUT FOR EOP-0.0 REACTOR TRIP OR SAFETY INJECTION</p> <ol style="list-style-type: none"> <u>RCP TRIP CRITERIA</u> Trip all RCPs if <u>BOTH</u> conditions listed below occur: <ol style="list-style-type: none"> GCP or SI pump - AT LEAST ONE RUNNING RCS subcooling - LESS THAN 15°F (RCS to Secondary Differential Pressure - LESS THAN 480 PSID FOR ADVERSE CONTAINMENT). <u>SI ACTUATION CRITERIA</u> Actuate SI and go to EOP-0.0, REACTOR TRIP OR SAFETY INJECTION Step 1, if <u>EITHER</u> condition listed below occurs: <ol style="list-style-type: none"> RCS subcooling - LESS THAN 15°F (45°F FOR ADVERSE CONTAINMENT) PRZR level - CANNOT BE MAINTAINED GREATER THAN 20% (35% FOR ADVERSE CONTAINMENT) <u>ADVERSE CONTAINMENT</u> Adverse containment parameters shall be used if any condition below exists: <ol style="list-style-type: none"> Containment pressure - GREATER THAN 5 PSIG. - OR - Containment radiation - GREATER THAN 10⁵ R/HR - OR - Integrated containment radiation dose - GREATER THAN 10⁶ RADS (to be determined by TSC staff). <u>AFW SUPPLY SWITCHOVER CRITERION</u> <u>IF</u> CST level decreases to less than 10%, <u>THEN</u> switch to alternate AFW water supply. <u>EMERGENCY PLAN ACTIVATION CRITERION</u> Reference EPP-201, ASSESSMENT OF EMERGENCY ACTION LEVELS AND PLAN ACTIVATION to determine if this event requires activation of the emergency plan. <u>PLANT ANNOUNCEMENT</u> Announce "Unit 1 Reactor Trip" over the gai-tronics. 		

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 54 OF 72

ATTACHMENT 4
PAGE 14 OF 29

3.6 Procedure Organization

The following section headings will be used for all ERGs:

- 3.6.1 PURPOSE - Brief statement of the purpose of the specific procedure.
- 3.6.2 SYMPTOMS OR ENTRY CONDITIONS - The entry conditions or symptoms requiring the use of the procedure. The list will contain those alarms, indications operating conditions, automatic system actions or other unique entry conditions that the operator is to use in deciding to use the procedure.
- 3.6.3 ACTION/EXPECTED RESPONSE and RESPONSE NOT OBTAINED - The operator actions will be short, concise, identifiable instructions that give appropriate directions to the user.

3.7 Section and Instruction Step Numbering

- 3.7.1 The PURPOSE and SYMPTOMS sections shall be identified as sections A and B respectively (see Figure 3)
- 3.7.2 An alpha-numeric system will be used for numbering steps in the ACTION/EXPECTED RESPONSE and RESPONSE NOT OBTAINED sections as follows:

1. Verify

A. All

1) Start

• CCP Running

When steps are identified by a number or letter they must be followed in sequence. When bullets "o" are used, they may be performed in any order.

4.0 WRITING INSTRUCTION STEPS

4.1 Instruction Step Length and Content

Instruction steps will be concise and precise. Conciseness denoted 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 objectives are as follows:

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 55 OF 72

ATTACHMENT 4
PAGE 15 OF 29

- 4.1.1 Instruction steps should deal with only one idea.
- 4.1.2 Short, simple sentences should be used in preference to long, compound, or complex sentences.
- 4.1.3 Complex evolutions should be prescribed in a series of steps, with each step made as simple as practicable.
- 4.1.4 Objects of operator actions should be specifically stated. This includes identification of exactly what is to be done and to what.
- 4.1.5 Limits should be expressed quantitatively whenever possible.
- 4.1.6 Mandatory sequence of steps is assumed unless the steps are identified by bullets "•".
- 4.1.7 Identification of components and parts should be complete.
- 4.1.8 Instruction content should be written to communicate to the user.
- 4.1.9 Expected results of routine tasks need not be stated.
- 4.1.10 When actions are required based upon receipt of an annunciated alarm, list the setpoint of the alarm for ease of verification.
- 4.1.11 When requiring resetting or restoration of an alarm or trip, list the expected results immediately following the resetting or restoration if it would be beneficial to the operator.
- 4.1.12 When considered beneficial to the user for proper understanding and performance, describe the system response time associated with performance of the instruction.
- 4.1.13 When system response dictates a time frame within which the instruction must be accomplished, prescribe such time frame. If possible, however, avoid using time to initiate operator actions. Operator actions should be related to plant parameters.
- 4.1.14 When anticipated system response may adversely affect instrument indications, describe the conditions that will likely introduce instrument error and means of determining if instrument error has occurred by using a NOTE.
- 4.1.15 When additional confirmation of system response is considered necessary, prescribe the backup readings to be made.

4.2 Action/Expected Response Column

The left-hand column of the dual-column format will contain operator action steps and expected response steps. The following rules are established for this column, in addition to the general rules above.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 56 OF 72

ATTACHMENT 4
PAGE 16 OF 29

- 4.2.1 Expected indications should be presented in this column.
- 4.2.2 Operator actions in this column should be appropriate for the expected indications.

4.3 Response Not Obtained Column

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

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

4.4 Use of Logic Terms

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

The use of AND and OR within the same action shall be avoided. When AND or OR are used together, the logic can be very ambiguous.

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

Use other logic terms as follows:

- 4.4.1 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.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 57 OF 72

ATTACHMENT 4
PAGE 17 OF 29

- 4.4.2 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."
- 4.4.3 When action steps are contingent upon certain conditions or combinations of conditions, the step shall begin with the words IF or WHEN followed by a description of the condition or conditions (the antecedent), a comma, the word THEN, followed by the action to be taken (the consequent). WHEN is used for an expected condition. IF is used for an unexpected but possible condition.
- 4.4.4 Use of IF NOT should be limited to those cases in which the operator must respond to the second of two possible conditions. IF should be used to specify the first condition.
- 4.4.5 THEN shall not be used at the end of an action step to instruct the operator to perform the next step because it runs actions together.

4.5 Use of Cautions and Notes

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

Cautions shall extend across the entire page and shall be highlighted as shown in the Example CAUTION. This placement of cautions helps ensure that the procedure user observes the caution before performing the step. A caution cannot be used instead of an instructional step. It should be used to denote a potential hazard to equipment or personnel associated with or consequent to the subsequent instructional step.

If additional information other than cautions is necessary to support an action instruction, a NOTE should be used. A NOTE should present information only, not instructions. Notes will extend across the page.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 58 OF 72

ATTACHMENT 4
PAGE 18 OF 29

4.5.1 The following examples illustrate these instructions.

4.5.1.1 Example NOTE:

NOTE: Circled numbers show IMMEDIATE ACTION steps.

4.5.1.2 Example CAUTION:

```

*****
*
* CAUTION: Do not throttle ATF flow until level is
*             above the top of the U-tubes
*
*****

```

4.6 Calculations

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

4.7 Use of Underlining

Underlining will be used for emphasis of logic terms NOTE AND CAUTION.

4.8 Referencing Among and Between Procedures

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

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

Use quotation marks to emphasize the title of the referenced or branched procedure; example: Go to EOS - 0.1, "REACTOR TRIP RECOVERY." Go to Step 20.

When cross referencing is unavoidable, appropriate place keeping aids shall be incorporated. See section 4.11.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 59 OF 72

ATTACHMENT 4
PAGE 19 OF 29

4.9 Component Identification

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

- 4.9.1 Equipment, controls, and displays will be identified in operator language (common usage) terms. These terms will generally match engraved names on panels.
- 4.9.2 When the engraved names and numbers on panel placards and alarm windows are specifically the item of concern in the procedure, the engraving should be quoted verbatim and emphasized by using all capitals.
- 4.9.3 The names of plant system titles are emphasized by capitalization of first letter in each word. When the word is deleted from the title because of brevity and is understood because of the capitalization.
- 4.9.4 If the component is seldom used or it is felt that the component would be difficult to find, location information should be given in parentheses following the identification.

4.10 Level of Detail

Too much detail in ERGs 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 desire during an emergency condition.

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

- 4.10.1 For each control that is provided for infrequent or abnormal operation, with a number engraved on the control panel placard, the number should be included in parentheses within the instructional step. Indication for Controls provided for normal plant operation will not generally be listed in the ERGs.
- 4.10.2 For control circuitry that executes an entire function upon actuation of the control switch, the action verb appropriate to the component suffices without further amplification of how to manipulate the control device; for example, "SI PMPS SUCTION FROM RWST, (1/1-8806) - OPEN." Recommended action verbs are as follows:

CPSSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 60 OF 72

ATTACHMENT 4
PAGE 20 OF 29

- 4.10.2.1 For power-driven rotating equipment, use Start, Stop.
- 4.10.2.2 For valves, use Open, Close, Throttle Open, Throttle Close, Trip
- 4.10.2.3 For power distribution breakers, use Synchronize and Close, Trip
- 4.10.3 For control switches with a potential placement that establishes a specified readiness condition, the verb "Place" should be used along with the engraved name of the desired position; For example, "Place the Steam Dump Interlock Selector Switch in the "BYP INTLK" position.
- 4.10.4 Standard practices for observing for abnormal results need not be prescribed within procedural steps. For example, observation of noise, vibration, erratic flow, or discharge pressure need not be specified by steps that start pumps.

4.11 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.

4.11.1 Units of Measure

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

4.11.2 Titles and Headings

Capitalization should be used for references to tables and figures, titles of tables and figures within text material, and column headings within a table.

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

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 61 OF 72

ATTACHMENT 4
PAGE 21 OF 29

4.11.3 Figures, Table, and Attachment Numbering

Sequential arabic numbers should be assigned to figures, tables, and attachments in separate series. The sequence should correspond with the order of their reference in the text. The symbol "#" and abbreviation "No." are unnecessary and should not be used. The number alone suffices.

Examples: Figure 1, Figure 2, etc.
Table 1, Table 2, etc.
Attachment 1, Attachment 2, etc.

4.11.4 Place Keeping Aids

Place keeping aids should be used when it is determined to be helpful to ensure that procedural steps are completed or when cross referencing is required.

4.11.4.1 Place keeping aids shall be provided for immediate action steps. This aid will consist of a check-off block (about 3/8" square) at the completion of the immediate action step.

4.11.4.2 Place keeping aids for use during cross referencing will be provided for the control room copy of the ERG manual. This aid will be attached to the binder, and will be used as a marker during transitions from one procedure to another.

5.0 MECHANICS OF STYLE

5.1 Spelling

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

5.2 Hyphenation

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

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 62 OF 72

ATTACHMENT 4
PAGE 22 OF 29

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

5.2.2 Hyphens should be used in the following circumstances:

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

one hundred thirty-four

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

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

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

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

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

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

5.2.2.8 to separate chemical elements and their atomic weight; examples: Uranium-235, U-235

5.3 Punctuation

Punctuation should be used only as necessary to aid reading and prevent misunderstanding. Word order should be selected to require a minimum of punctuation. When extensive punctuation is necessary for clarity, the sentence should be rewritten and possibly made into several sentences. Punctuation should be in accordance with the following rules.

5.3.1 Brackets

Do not use brackets.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 63 OF 72

ATTACHMENT 4
PAGE 23 OF 29

5.3.2 Colon

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

5.3.3 Comma

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

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

5.3.4 Parentheses

Parentheses shall be used to indicate alternative items in a procedure, instruction, or equipment numbers.

5.3.5 Period

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

5.4 Vocabulary

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

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

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

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

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

5.4.5 Verbs with specific meaning should be used. Examples are listed in Table 1.

5.4.6 Equipment status should be denoted as follows:

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE AFR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 64 OF 72

ATTACHMENT 4
PAGE 24 OF 29

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

Table 1. Action Verbs

Verb	Application
Allow	To permit a stated condition to be achieved prior to proceeding, for example, "allow discharge pressure to stabilize"
Check	To perform a comparison with a procedural requirement "Check if SI can be terminated"
Close	To change the physical position of a mechanical device so that it prevents physical access or flow or permits passage of electrical current, for example, "close valves ZL-2462A"
Complete	To accomplish specified procedural requirements.
Decrease	<u>Do not</u> use because of oral communication problems.
Establish	To make arrangements for a stated condition, for example, "establish communication with control room"
Increase	<u>Do not</u> use because of oral communication problems.
Inspect	To measure, observe, or evaluate a feature or characteristic for comparison with specified limits; method of inspection should be included, for example, "visually inspect for leaks"
Open	To change the physical position of a mechanical device, such as valve or door to the unobstructed position that permits access or flow, for example, "open valve ZL-2459A"

ATTACHMENT 4
PAGE 25 OF 29

Table 1. Action Verbs (continued)

Verb	Application
Record	To document specified condition or characteristic, for example, "record discharge pressure"
Set	To physically adjust to a specified value an adjustable feature, for example, "set diesel speed to . . . "rpm"
Start	To originate motion of an electric or mechanical device directly or by remote control, for example, "start . . . pump"
Stop	To terminate operation, for example, "stop . . . pump"
Throttle	To operate a valve in an intermediate position to obtain a certain flow rate, for example, "throttle valve ZL-2461A to . . ."
Trip	To manually activate a semi-automatic feature, for example, "trip breaker . . ."
Vent	To permit a gas liquid confined under pressure to escape at a vent . . . pump"
Verify	To observe an expected condition or characteristic, for example, "verify discharge pressure is stable"

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

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

5.5 Numerical Values

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

5.5.1 Arabic numerals should be used.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 66 OF 72

ATTACHMENT 4
PAGE 26 OF 29

- 5.5.2 For numbers less than unity, the decimal point should be preceded by a zero; for example: 0.1.
- 5.5.3 The number of significant digits should be equal to the number of significant digits available from the display and the reading precision of the operator.
- 5.5.4 Acceptance values should be specified in such a way that addition and subtraction by the user is avoided if possible. This can generally be done by stating acceptance values as limits. Examples: 510°F maximum, 300 psig minimum, 580° to 600°F. For calibration points, statement of the midpoint and its lower and upper limits for each data cell would accomplish the same purpose; for example, 10 milliamperes (9.5 to 10.5). Avoid using ±.
- 5.5.5 Engineering units should always be specified for numerical values of process variables. They should be the same as those used on the control room displays, for example: psig instead of psi.

5.6 Abbreviations, Letter Symbols, and Acronyms

- 5.6.1 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. The full meaning of the abbreviation should be written in after the first use of the abbreviation and whenever in doubt. Consistency should be maintained throughout the procedure.
- 5.6.2 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.
- 5.6.3 Letter symbols may be used to represent operations, quantities, elements, relations, and qualities.
- 5.6.4 An acronym is a type of symbol formed by the initial letter or letters of each of the successive parts or major parts of a compound term.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 67 OF 72

ATTACHMENT 4
PAGE 27 OF 29

5.6.5 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 mathematic ideas.

5.6.6 Only those abbreviations, symbols and acronyms that are listed in the Comanche Peak standard list may be used in the ERGs.

6.0 TYPING FORMAT

6.1 General Typing Instructions

For emergency operating procedures, the following general requirements are to be followed:

- 6.1.1 Paper size should be 8-1/2 x 11 inches.
- 6.1.2 White, bond paper with printed border should be used.
- 6.1.3 Procedures are to be typed on an electric typewriter.
- 6.1.4 Modern, pitch 12, typerwriter element is to be used.

6.2 Page Arrangement

- 6.2.1 Page margins are specified by the printed borders. Two type spaces are to be maintained between the text and borders.
- 6.2.2 Page identification information will be in accordance with Section 3.0.
- 6.2.3 The 8-1/2 inch edges shall constitute top and bottom of the pages. Tables and figures shall be readable with the page so arranged. Rotation of printed matter should be avoided for emergency operating procedures.

6.3 Breaking of Words

Breaking of words shall be avoided to facilitate operator reading.

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 68 OF 72

ATTACHMENT 4
PAGE 28 OF 29

6.4 Printed Operator Aids

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

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

6.4.1.2 The figure number and title should be of modern type, pitch 12.

6.4.1.3 The figure field must not violate specified page margins.

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

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

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

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

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

6.4.1.9 In general, items within the figure should be labeled. Typed labels should use modern type, pitch 12. Handwritten labels should be printed, using all capitals, with letters and numbers at least 1/8-inch high.

6.4.1.10 All lines in figures should be reproducible.

6.4.2 Tables should be typed using the following rules.

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

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 69 OF 72

ATTACHMENT 4
PAGE 29 OF 29

- 6.4.2.2 The table number and title should be located above the table field and three line spaces below preceding text.
- 6.4.2.3 A heading should be entered for each column and centered within the column; the first letter of words in the column headings should be capitalized.
- 6.4.2.4 Horizontal lines should be placed above and below the column headings; vertical lines, while desirable, are not necessary or required.

6.5 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 wear of the fold.

6.6 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.

6.7 Use of Reduced Pages

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

7.0 REPRODUCTION

Reproduction will be done on a standard copier, single-sided copy only. The exception is when a figure or graph is to be printed on the reverse of a preceding page.

ATTACHMENT 5
PAGE 1 OF 2

CPSES EMERGENCY RESPONSE GUIDELINE VERIFICATION CHECKLIST	DATE:	PAGE 1 OF 2
GUIDELINE NAME:	ERG NO:	ERG REV NO.:

This checklist shall be used to establish the accuracy of information and instructional steps of the ERGs, to determine that the procedures can be accurately and efficiently carried out, and to demonstrate that the procedures are adequate to mitigate the consequences of transients and accidents. The verification may be accomplished by simulator exercises, control room walk-throughs or Desk top reviews. Any one, combinations or all methods may be used. Indicate the methods(s) used below.

☐ Simulator Exercising

☐ Control Room Walkthrough

☐ Desk top review

Criteria	Reviewer	date
1. The ERG accurately reflects the information presented in the technical guidelines.		/
2. The ERG is written in accordance with the writer's guide.		/
3. The ERG has been walked through the control room and can be followed without confusion, delays or errors.		/
4. Controls, equipment and indications that are referenced in the ERG are available in the plant, use the same designation, use the same units, and operate (or will operate) as specified in the procedure.		/
5. The level of detail is sufficient to allow the least qualified operator on the shift crew to use it effectively.		/

ODA-204-1
R-2
Page 1 of 2

CPSES OPERATIONS DEPARTMENT ADMINISTRATION MANUAL	ISSUE DATE APR 12 1985	PROCEDURE NO. ODA-204
PREPARATION OF EMERGENCY RESPONSE GUIDELINES	REVISION NO. 4	PAGE 71 OF 72

ATTACHMENT 5
PAGE 2 OF 2

CPSES EMERGENCY RESPONSE GUIDELINE VERIFICATION CHECKLIST	DATE:	PAGE 2 OF 2
GUIDELINE NAME:	ERG NO:	ERG REV NO.:

6. The minimum shift crew can complete the ERG without outside assistance. _____ /

7. The ERG has been verified against the Emergency Response Guideline Transition Flow Chart. _____ /

_____ /

Comment:

_____ /

_____ /

Comment Resolution:

_____ /

_____ /

CHECKLIST REVIEWED

_____ /

ODA-204-1
R-2
Page 2 of 2

