

ROCHESTER GAS AND ELECTRIC CORPORATION

R.E. GINNA
NUCLEAR
POWER
PLANT

PROCEDURES GENERATION PACKAGE

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1.0 INTRODUCTION

1.1 PURPOSE

This document describes the development and implementation of the upgrade Emergency Operating Procedures (EOPs) process at the R.E. Ginna Nuclear Power Plant. Ginna is a single unit, dual loop, Westinghouse PWR.

1.2 SCOPE

This document is prepared in response to the requirements of Supplement 1 of NUREG-0737, as further described in NUREG-0899.

1.3 ADMINISTRATIVE CONTROLS AND ORGANIZATION

This document and the processes described herein have been prepared and implemented by Rochester Gas and Electric Corporation staff in conjunction with contractor personnel who are under the direction of an on-site project engineer. The overall organizational structure for the upgrade EOP process at Ginna is shown in Figure 1.3-1. Specific definition of individual responsibilities for each task is described in each of the respective task description sections.

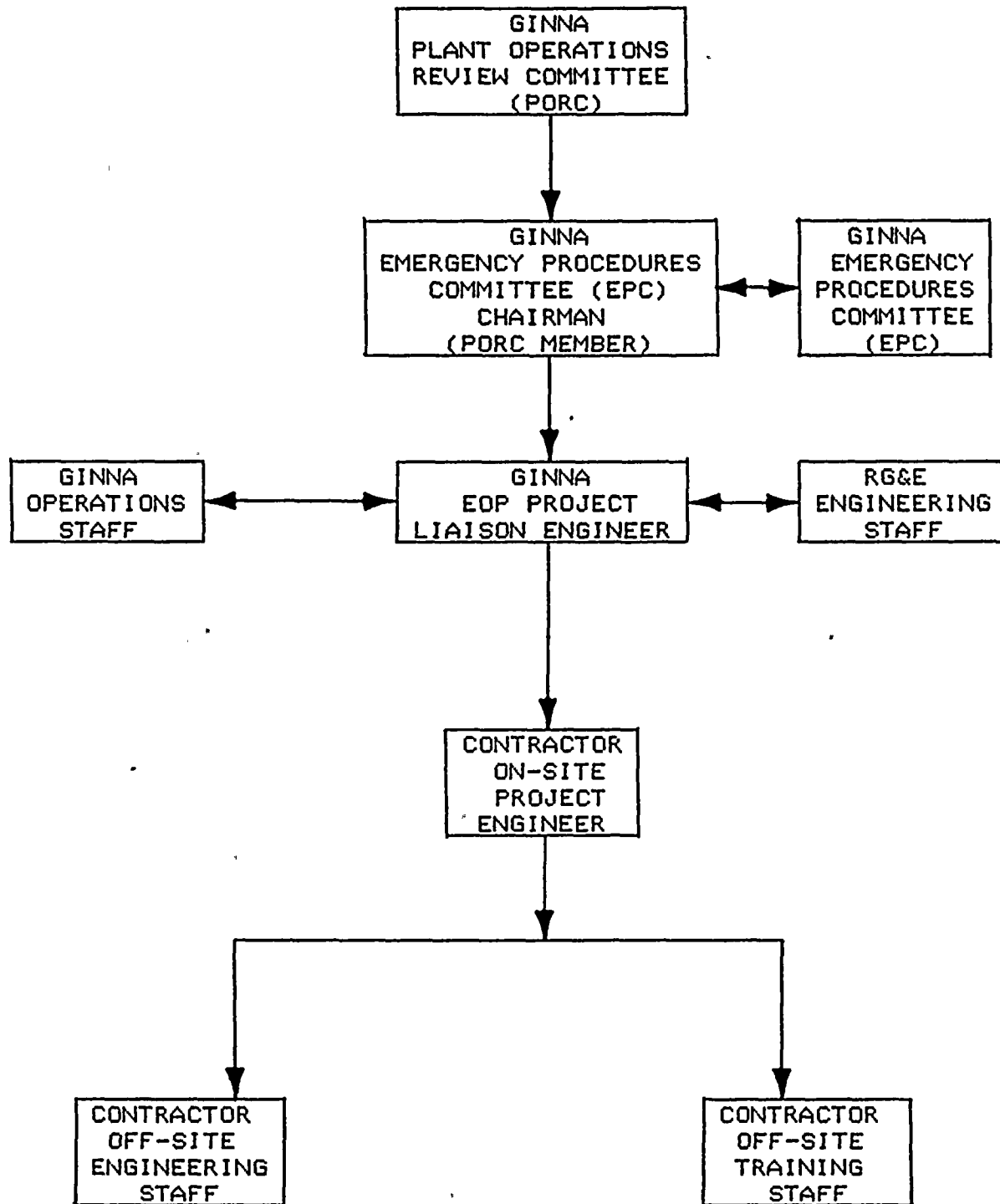


FIGURE 1.3-1
UPGRADE EOP PROJECT
ORGANIZATIONAL STRUCTURE

1.4 ABBREVIATIONS AND DEFINITIONS

A. ABBREVIATIONS

- o CSFST - Critical Safety Function Status Tree.
- o EOP - Emergency Operating Procedure.
- o EPC- Emergency Procedures Committee (Ginna).
- o ERG - Emergency Response Guideline.
- o FRG - Functional Restoration Guidelines.
- o INPO or I - Institute Of Nuclear Power Operations
or INPO 82-017.
- o LP- Low Pressure.
- o NA - Not Applicable.
- o ORG - Optimal Recovery Guidelines.
- o PORC- Plant Operations Review Committee (Ginna).
- o PSSDS- Plant Specific Step Description Sheet.
- o PSTG- Plant Specific Technical Guidelines.
- o SID- System Information Document.
- o TRP - Technical Review Package.
- o WG - Writers Guide.
- o WGCS - Writers Guide Cover Sheet.
- o WGCL - Writers Guide Check List.
- o WGDS - Writers Guide Discrepancy Sheet.
- o WGRS - Writers Guide Review Sheet.
- o WOG - Westinghouse Owners Group.

B. DEFINITIONS

- o Draft 1 EOP - the initial EOP output of the procedure writing which incorporates Plant Specific Technical Guideline (PSTG) and WOG-ERG information in the Ginna EOP Writers Guide format.

- o Draft 2 EOP - the Draft 1 EOP which has been upgraded by the incorporation of applicable Verification process comments.
- o Draft 3 EOP - the Draft 2 EOP which has been upgraded by the incorporation of applicable Validation process comments.
- o Draft 4 EOP - the Draft 3 EOP which has been upgraded by the incorporation of applicable EOP Training feedback comments.
- o Emergency Procedures Committee (EPC)- a Ginna Station committee composed of the Operations Manager, Operations Supervisor, Technical Manager, Shift Supervisor, Reactor Engineer, and Assistant Training Coordinators. The EPC acts as a subcommittee to the Plant Operations Review Committee (PORC) and has the responsibility to review and recommend approval of all Emergency Operating Procedures to PORC. Further description of EPC responsibilities is described in Ginna Station Procedure A-206, EMERGENCY PROCEDURES COMMITTEE.
- o Low Pressure - refers to a plant which has low head SI pumps.
- o Operational Accuracy - degree of proper compatibility with plant responses, control instrumentation and functions and shift staffing to manage emergency conditions.

- o Plant Operations Review Committee (PORC) - a Ginna Station committee composed of the Plant Superintendent, Assistant Plant Superintendent, Operations Manager, Technical Manager, Reactor Engineer, Maintenance Manager, Results and Test Supervisor, Manager of Chemistry and Health Physics, Instrument and Control Supervisor, Quality Control Engineer, and Nuclear Assurance Manager. The PORC has the responsibility to review and recommend approval of all new procedures or procedural changes to the Plant Superintendent. Further description of PORC responsibilities is described in Ginna Station Procedure A-205, PLANT OPERATIONS REVIEW COMMITTEE OPERATING PROCEDURE.
- o Technical Accuracy - degree of proper incorporation of generic (WOG-ERG) and plant specific technical information (TRP).
- o Usability - degree of incorporation of sufficient and understandable operator information to manage emergency conditions.
- o Validation - evaluation performed to confirm the usability and operational accuracy of the EOPs.
- o Verification - evaluation performed to confirm the technical and written accuracy of the EOPs.
- o Written Accuracy - degree of proper incorporation of Writers Guide requirements.

1.5 REFERENCES

- A. Westinghouse Owners Group (WOG) Emergency Response Guidelines (ERG), LP Version, Revision 1, 9/1/83.
- B. NUREG-0899, Guidelines for the Preparation of Emergency Operating Procedures, 8/82.
- C. Battelle Topical Report, Review Criteria for Evaluation of Procedure Generation Packages, Final Draft, 11/1/83.
- D. INPO 82-017, Emergency Operating Procedures Writing Guideline, Preliminary, 7/82.
- E. INPO 83-004, Emergency Operating Procedures Verification Guideline, Preliminary, 3/83.
- F. INPO 83-006, Emergency Operating Procedures Validation Guideline, Preliminary, 7/83.
- G. WCAP-10599, Westinghouse Emergency Response Guidelines Validation Program Final Report, 6/84.

1.6 OVERVIEW

The Ginna EOP upgrade process consists of five (5) main tasks as shown on Figure 1.6-1.

The first task is the preparation of the Plant Specific Technical Guidelines (PSTG) which serve as source documents for the preparation of the first draft of the upgrade EOPs. The PSTG development process is described in detail in Section 2.0.

The second task consists of a comparative review and revision of the Ginna Station Draft EOP Writers Guide to meet both industry and regulatory standards. The EOP Writers Guide Review and Revision process is described in detail in Section 3.0.

The third task involves the actual preparation and revision of the upgrade draft EOPs. This process involves generation of a Draft 1 EOP from the source documents following the revised EOP Writers Guide specifications through three revision stages which are the result of the Verification, Validation and Training processes. The entire EOP Draft Development and Revision process is described in Section 4.0.

The fourth task is the development and implementation of the Verification and Validation programs which will be used to test the applicability, accuracy and usability of the draft EOPs. The Verification and Validation Programs as described in detail in Section 5.0.

The fifth task is the Training Program which will be administered prior to the implementation of the upgrade EOPs at Ginna Station. The Training Program consists of three sub-programs; a Licensed Operator Training Program, a Management/Technical Staff Training Program, and a Pre-EOP Implementation Summary Training Program. The EOP Training Program is outlined in Section 6.0.

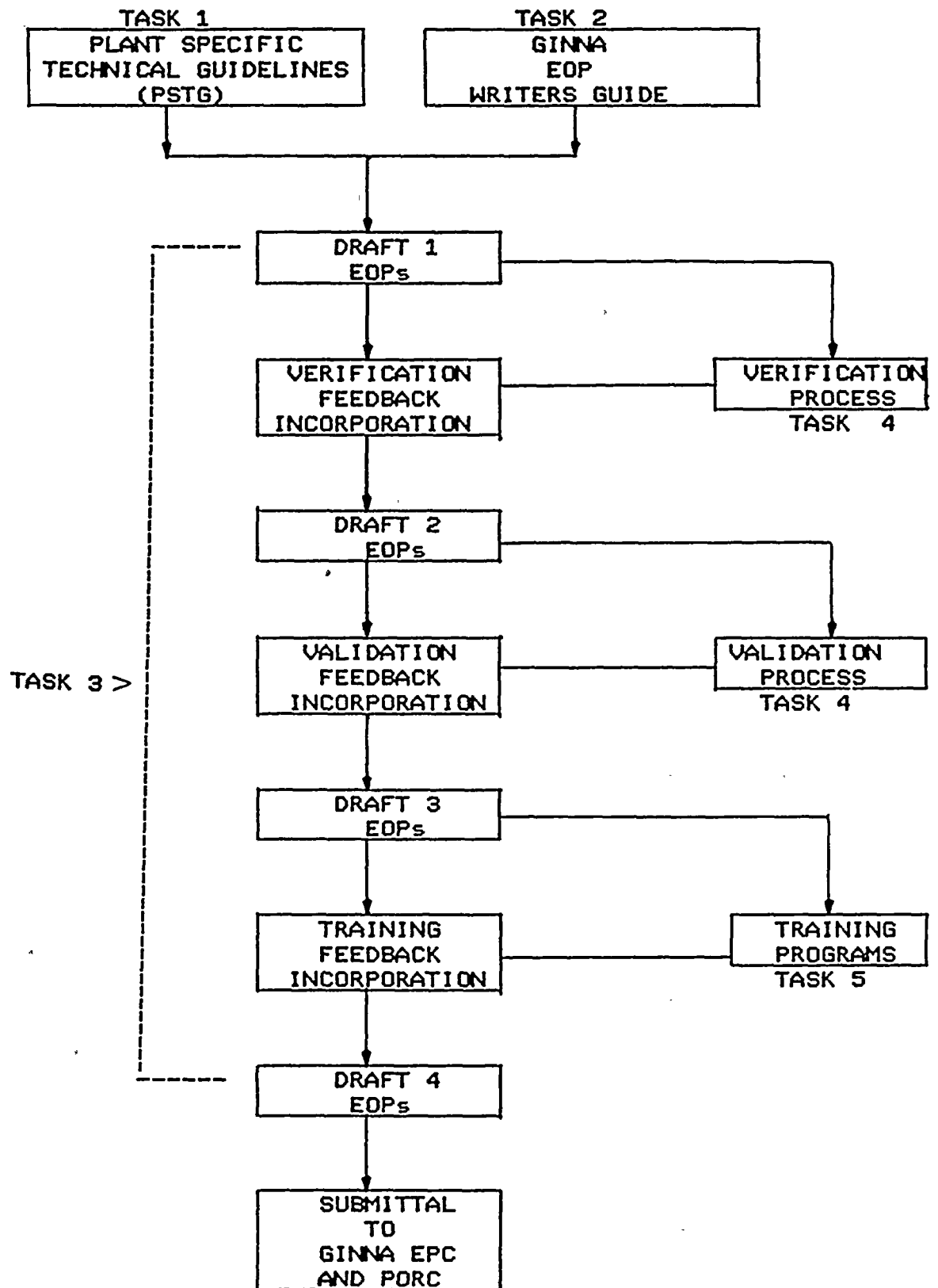


FIGURE 1.6-1
EOP DEVELOPMENT
FLOW CHART

2.0 PLANT SPECIFIC TECHNICAL GUIDELINES DEVELOPMENT

2.1 GENERAL DESCRIPTION

The Plant Specific Technical Guidelines (PSTGs) are intended to be the source documents for the technical preparation of the Ginna Draft 1 EOPs. In general, WOG-ERGs, in combination with a Reference plant/Specific plant comparison, satisfy the requirements for PSTGs. However, the need for specific conversion documentation from ERGs to EOPs, and a comparison of available instrumentation and controls to needed information and controls necessitates additional development to be performed. As such, the PSTGs for Ginna Station will be composed of the WOG-ERGs, LP Version, Revision 1, a System Review Package, and the Technical Review Packages (TRPs).

The Revision 1 WOG-ERGs are the most current generic guidelines available and the Low Pressure (LP) version most closely represents the Ginna Station plant.

The System Review Package contains the documentation of the Reference Plant/Ginna Station comparison and provides a summary of source information to be used in preparing the Technical Review Packages. The method of performing and documenting the Reference Plant/Ginna Station comparison is described in Section 2.2.

The Technical Review Packages (TRPs) will contain documentation relating to the Generic ERG/Ginna Specific EOP conversion process. The methods for preparation of the TRPs is described in Section 2.3. A flowchart for the entire PSTG development process is shown in Figure 2.1-1.

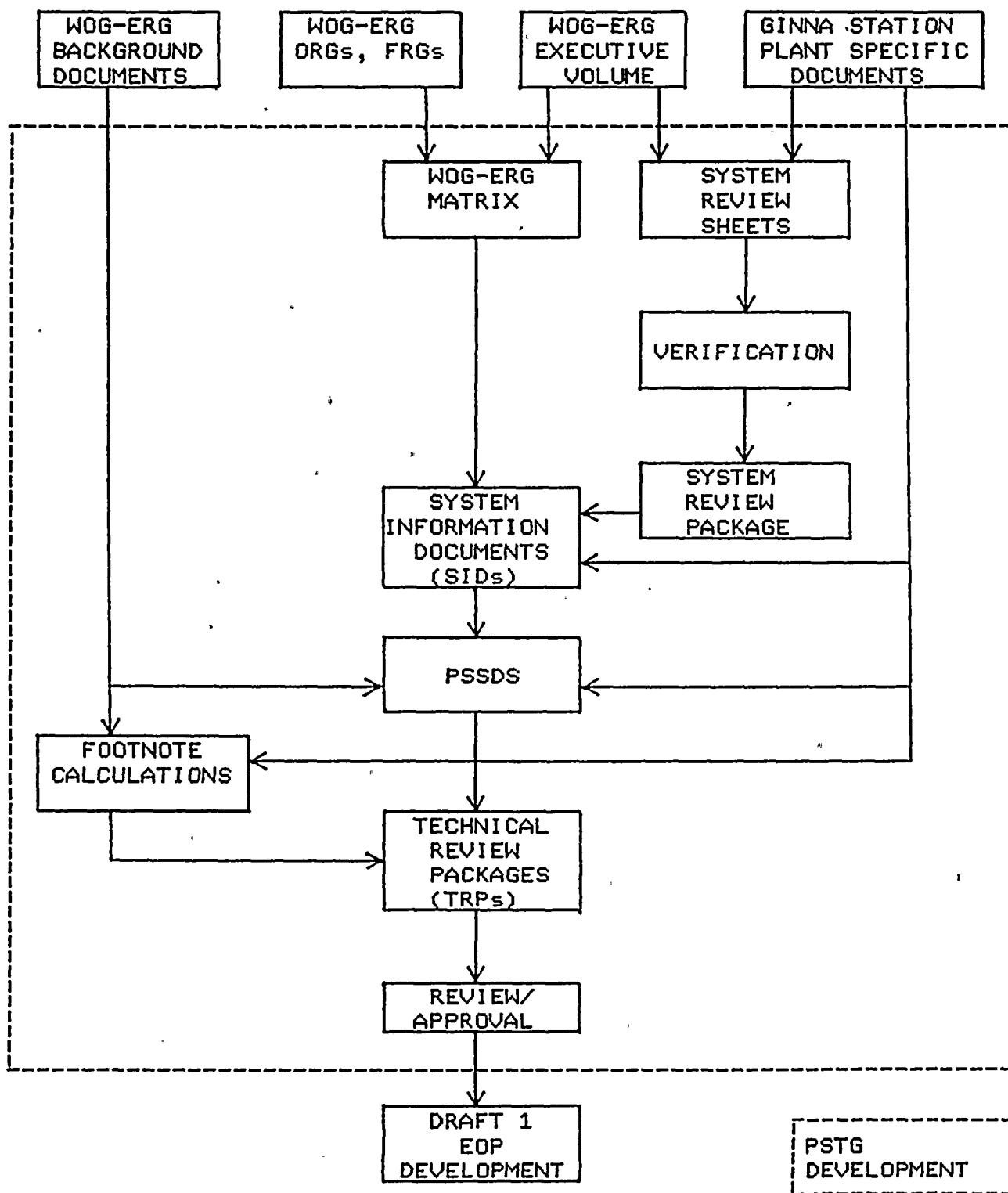


FIGURE 2.1-1
PSTG DEVELOPMENT

2.2 REFERENCE PLANT/GINNA STATION COMPARISON

A. GENERAL DESCRIPTION

The comparison of the WOG-ERG LP Reference Plant and the Ginna Plant will be performed by off-site contract personnel and involve three main areas:

- o Plant Systems,
- o Instrumentation and Control Requirements, and
- o Generic Instrumentation.

The comparison will be documented on System Review Sheets (Figure 2.2-1) with differences identified, detailed and documented on Discrepancy Sheets (Figure 2.2-2).

Completed System Review and Discrepancy Sheets will be reviewed, approved and compiled on the basis of reference plant systems and review areas into a System Review Package. The System Review Package will then be verified/corrected by the Project Engineer or by knowledgeable Ginna staff and returned to the contract personnel for use in preparation of the Technical Review Packages.

B. SYSTEM REVIEW SHEET PREPARATION - will be performed using the following steps:

1. List the LP Reference Plant system being reviewed.
2. List the Ginna Station system or systems which correspond to the reference system.
3. List the specific Review Area
 - a. Plant Systems;
 - b. Instrumentation and Control Requirements;
 - c. Generic Instrumentation.

4. List the requirements for the system being reviewed in the Reference Plant column.
 - a. Major categories will be numbered.
 - b. Sub-categories under major categories will use letters.
 5. List the Ginna Station plant specific information which corresponds to the reference plant information in the Ginna Station column.
 - a. The designations for the Ginna Station plant specific information will be the same as for the Reference plant.
 - b. The references for the Ginna Station plant specific information will be listed and keyed to each item.
 6. Prepare a Discrepancy Sheet when differences between the Reference plant and the Ginna Station are identified.
 7. The last page of the review for each Reference plant system for a review area will be signed and dated by the preparer, reviewer and approver.
- C. DISCREPANCY SHEET PREPARATION - will be performed using the following steps:
1. List the applicable Reference Plant System.
 2. List the Review Area.
 3. List the item number from the review sheet, where the discrepancy is identified.

4. Describe the difference and the evaluation/resolution of the difference. If a difference cannot be resolved with the available information, it shall be stated.

5. The last page of the Discrepancy Sheet will be signed and dated by the preparer, reviewer and approver.

D. ASSEMBLY AND USE OF REVIEW SHEETS

The approved System Review Sheets and associated Discrepancy Sheets will be assembled into a System Review Package on a Reference plant system basis by review area. The System Review Package will then be reviewed and its contents verified and/or corrected by the on-site Project Engineer or a knowledgeable member of the Ginna Staff. The verified System Review Package may then be used as a reference for the preparation of the Technical Review Packages identified and described in Section 2.2.

___ of ___

SYSTEM REVIEW

GINNA STATION vs L P REFERENCE PLANT

REFERENCE PLANT SYSTEM _____

GINNA STATION SYSTEM _____

REVIEW AREA _____

_____ REFERENCE PLANT _____ GINNA STATION

Note: The following signatures are to appear on last page
only.

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____

FIGURE 2.2-1

SYSTEM REVIEW SHEET

___ of ___

DISCREPANCY SHEET

GINNA STATION vs L P REFERENCE PLANT

REFERENCE PLANT SYSTEM _____

REVIEW AREA _____

ITEM NUMBER _____

DISCREPANCY:

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____

FIGURE 2.2-2
DISCREPANCY SHEET

2.3 TECHNICAL REVIEW PACKAGE PREPARATION

A. GENERAL DESCRIPTION

The Technical Review Packages (TRPs) provide a bridge between the generic WOG-ERGs and the Ginna Station EOPs. The TRPs are developed, reviewed and approved by off-site contract personnel using the previously developed System Review Package and other current Ginna specific source documents.

The TRPs contain a composition of matrices, System Information Documents (SIDs), Plant Specific Step Description Sheets (PSSDS), Footnote Sections, Cover and Review Sheets. The plant specific technical requirements will be developed from the WOG-ERG's. A matrix (Figure 2.3-1) will be developed for each of the ERG's showing the step descriptions, the sequence of their performance, and the reference plant system or systems required by each step. Each step will be analyzed using the Step Description Table from the WOG-ERG and comparing the requirements against the Ginna plant specific configuration. Any differences will be documented on a System Information Document (SID). The SID (Figure 2.3-2) also documents Ginna plant specific information such as equipment names, numbers and plant specific setpoints as required by the Step Description Table. Any ERG steps which cannot be performed due to Reference Plant/Ginna Plant differences will also be identified as part of this analysis.

The Plant Specific Step Description Sheets (PSSDS) (Figure 2.3-3) will be prepared using Ginna plant specific information. These sheets will list information such as equipment, instruments and controls required as well as any required plant specific information and required actions.

The Footnote section will be prepared using the Footnote page(s) (Figure 2.3-4) from the applicable ERG and an EOP Footnotes Explanation page (Figure 2.3-5) to document the information relating to the specific footnotes.

The TRP will be reviewed and approved and upon approval will be transmitted to the on-site Project Engineer for use in developing the Draft 1 EOPs.

B. WOG-ERG MATRIX PREPARATION - will be performed using the following steps:

1. List the specific ERG number, and title in the title block.
2. List the step number of the ERG.
3. List the Step Description. This will normally be the "Action" from the ERG; however, "Caution" and "Notes" will be included.
4. List the step sequence number for the step.
5. Identify those Reference plant systems which are either affected by or have parameters observed for the step. The identified systems are to be checked on the matrix.

6. If a system is not shown on the matrix, a number is to be placed in the "Other" column to identify the system. A footnote on the last page will list the identifying number and corresponding system.

C. SYSTEM INFORMATION DOCUMENT (SID) PREPARATION - will be performed using the following steps:

1. List the Reference plant system and the corresponding Ginna plant system.
2. List the ERG number and step number, as given on the matrix.
3. List any differences between the Reference plant system and the Ginna plant system for the ERG step. This also includes the justification for the difference.
 - a. The justification is to be from a documented source. This may include plant drawings or procedures, Technical Specifications, letters, etc. and will include, title, date, revision number, and paragraph number, where applicable. The documentation may also be in the form of calculations.
 - b. Justification documents can include System Review Sheets prepared as described in Section 2.2, and Footnotes.
4. List the required plant specific information for the ERG step.

5. If the analysis of the step indicates that there is not a Ginna plant system which corresponds to a reference plant system, this is to be indicated and justified and "N/A" placed in the Required Plant Specific Information column.
6. If the analysis of the step indicates that the step or a portion of the step should be deleted for the Ginna Station, this is to be indicated and justified.

D. PLANT SPECIFIC STEP DESCRIPTION SHEET (PSSDS)

PREPARATION - will be performed using the following steps:

1. List the ERG number/Step number and the Step Description.
2. Leave the EOP number/step number and Step Description blank.
3. List the plant specific systems required for the step in Required Systems.
4. List the Required Equipment, Required Instruments, and Required Controls for the step.
 - a. These are to be Ginna Station specific.
 - b. The standard plant nomenclature as used in existing plant procedures or other plant documents is to be used.
5. List the required Plant Specific Information. This is the information from the applicable SIDs, or the System Review Sheets.
6. List the Required Actions. These are the operator actions required to complete the step.

7. If it has been previously determined that the ERG step is not applicable for the Ginna Station, indicate this in the Required Plant Specific Information section and reference the applicable SID.

E. FOOTNOTES SECTION PREPARATION - will be performed using the following steps:

1. The first page(s) of the Footnote Section will be the Footnote page(s) from the ERG.
2. The EOP Footnote Explanation pages will be prepared as follows:
 - a. List the ERG number and title.
 - b. List the Footnote number.
 - c. List/calculate the information which is requested in the footnote. The information source, calculations, etc. are to be shown.
 - d. The individual preparing the information will sign the page.

F. TRP ASSEMBLY, REVIEW AND APPROVAL

The completed Matrix, SID's, PSSDSs, Footnote Pages, Cover Sheet, Review Sheets and any other supporting documentation will be assembled into a complete package (TRP) representing a single ERG. Each sheet of the entire TRP will be numbered.

After assembly, the preparer will complete the preparation portion of the TRP Review Sheet (Figure 2.3-6) and Cover Sheet (Figure 2.3-7) and transmit the package to the reviewer. The reviewer will check the package for validity and indicate his concurrence by signing the Review portion of the Review Sheet and Cover Sheet. If the reviewer has questions or comments regarding the package, he will indicate these on the review sheet and return the package to the preparer for resolution. If the preparer and reviewer can not reach a resolution, the package will be referred to the next higher level of supervision for resolution. All comments or questions noted on the review sheet will be dated and initialed by the preparer and reviewer when resolved. The reviewed package will then be transmitted for approval. Following approval, the TRP will be transmitted to the Project Engineer for use in the Draft 1 EOP development.

MEM
REV. _____
Page _____ of _____

APPROVED FOR RELEASE BY THE PROJECT ENGINEER

TRP:
REV. _____
Sheet _____ of _____

SID _____
REV. _____
Page ____ of ____

TRP: _____
REV. _____
Sheet ____ of ____

SYSTEM INFORMATION DOCUMENT

REFERENCE PLANT SYSTEM _____

GINNA PLANT SYSTEM _____

APPLICABLE ERG NO./STEP NO.	REFERENCE-GINNA PLANT DIFFERENCES & JUSTIFICATION	REQUIRED PLANT SPECIFIC INFORMATION

FIGURE 2.3-2
SYSTEM INFORMATION DOCUMENT
(SID)



PSSDS _____
 REV. _____
 Page ____ of ____

TRP: _____
 REV. _____
 Sheet ____ of ____

PLANT SPECIFIC STEP
DESCRIPTION SHEET

ERG#/Step# _____ Step Description _____

EOP#/Step# _____ Step Description _____

REQUIRED SYSTEMS _____

REQUIRED EQUIPMENT	
--------------------	--

REQUIRED INSTRUMENTS	
----------------------	--

REQUIRED CONTROLS	
-------------------	--

REQUIRED PLANT SPECIFIC INFORMATION	
-------------------------------------	--

REQUIRED ACTIONS	
------------------	--

FIGURE 2.3-3
 PSSDS

F N: _____
 REV. _____
 Page ____ of ____

TRP: _____
 REV. _____
 Sheet ____ of ____

Number:	Title:	Rev: Issue/Date:
E-0	REACTOR TRIP OR SAFETY INJECTION	LP-Rev. 1
		1 Sept. 1983

FOOTNOTES

- (1) Enter plant specific containment pressure setpoint for spray actuation.
- (2) Enter plant specific value for the shutoff head pressure of the high-head SI pumps, plus allowances for normal channel accuracy.
- (3) Enter plant specific value for the shutoff head pressure of the high-head SI pumps, plus allowances for normal channel accuracy and post accident transmitter errors, not to exceed 2000 psig.
- (4) Enter plant specific value for the shutoff head pressure of the low-head SI pumps, plus allowances for normal channel accuracy.
- (5) Enter plant specific value for the shutoff head pressure of the low-head SI pumps, plus allowances for normal channel accuracy and post accident transmitter errors.
- (6) Enter the minimum safeguards AFW flow requirement for heat removal, plus allowances for normal channel accuracy (typically one MDAFW pump capacity at S/G design pressure).
- (7) Enter plant specific no-load temperature.
- (8) Enter plant specific value showing S/G level just in the narrow range, including allowances for normal channel accuracy.
- (9) Enter plant specific value showing S/G level just in the narrow range, including allowances for normal channel accuracy, post accident transmitter errors, and reference leg process errors, not to exceed 50%.
- (10) Enter PRZR PORV pressure setpoint.
- (11) Enter PRZR Spray pressure setpoint.
- (12) Enter plant specific RCP trip parameter and setpoint, including allowances for normal channel accuracy. Refer to document RCP TRIP/RESTART in Generic Issues section of Executive Volume.

FIGURE 2.3-4
 ERG FOOTNOTE PAGE



F N: _____
 REV. _____
 Page _____ of _____

TRP: _____
 REV. _____
 Sheet _____ of _____

ERG FOOTNOTE EXPLANATION

ERG: _____

TITLE: _____

Footnote Number

Prepared by: _____

FIGURE 2.3-5
 FOOTNOTE EXPLANATION/CALCULATION

TRP: _____
REV. _____
Sheet _____ of _____

The information on sheet 3 through _____ of this package has been reviewed as specific to the Ginna Station design and does not compromise the generic technical basis for the Emergency Response Guideline.

REVIEW COMMENTS:

All comments have been resolved

PREPARER:

REVIEWER:

Signature Date

Signature Date

Print Name

Print Name

FIGURE 2.3-6
TRP REVIEW SHEET

TRP: _____
REV. _____
Sheet _____ of _____

TECHNICAL REVIEW PACKAGE
FOR

Prepared by _____ Date _____

Reviewed by _____ Date _____

Approved by _____ Date _____

FIGURE 2.3-7
TRP COVER SHEET

3.0 EOP WRITERS GUIDE REVIEW AND REVISION

3.1 GENERAL DESCRIPTION

In 1983, the Ginna Station Emergency Procedures Committee prepared a Draft EOP Writers Guide. This Draft EOP Writers Guide (WG) will be reviewed and revised to meet both industry and regulatory standards by subjecting it to a comprehensive review process. The review process will be conducted by contract personnel and consist of the following steps:

1. Comparing the Draft EOP Writers Guide to NUREG-0899 requirements.
2. Comparing the Draft EOP Writers Guide to the industry guideline, INPO EOP Writers Guide.
3. Identifying differences between the Draft EOP Writers Guide and the NUREG and INPO documents.
4. Documenting any identified differences.
5. Recommending changes to the Draft EOP Writers Guide due to identified differences or to increase the readability and usability of the guide.
6. Reviewing recommended changes from a Human Factors standpoint.
7. Submitting all recommended changes to the Ginna EPC for approval or resolution.

Following the review process, the Ginna Draft EOP Writers Guide will be rewritten and revised to incorporate all documented and approved changes which are a result of the review.



The following section describes this review and documentation process. The Ginna Station EOP/AP Writers Guide is presented in APPENDIX A.

3.2 EOP WRITERS GUIDE REVIEW

A. GENERAL DESCRIPTION

Each item of sections 5.0 through 5.8 of NUREG 0899 and the entire INPO Example Writers Guide (WG) (Horizon Generating Station) will be listed on a Writers Guide Check List (Figure 3.2-1) along with a brief descriptive term/statement/requirement representing that item..

Any corresponding section/subsection/paragraph of the Ginna Draft EOP Writers Guide (Ginna WG) will then be identified, listed on the Writers Guide Check List and compared to the NUREG and INPO requirements.

Any identified requirement discrepancy or item needing clarification or expansion will then be listed on a Writers Guide Discrepancy Sheet (Figure 3.2-2) along with any required justification. A recommended change will then be written for any discrepancy item listed on the discrepancy sheet.

The Writers Guide Check List, all Writers Guide Discrepancy Sheets, Writers Guide Review Sheets (Figure 3.2-3) and a Writers Guide Cover Sheet (Figure 3.2-4) will then be compiled into a Writers Guide Review Package and submitted to a Human Factors Specialist who will review and comment on the discrepancies and recommend changes from a human factors standpoint.

The human factors reviewed Writers Guide Review Package will then be submitted to the Ginna Station Emergency Procedures Committee (EPC) for review, comment and necessary resolution of recommended changes.

B. EOP WRITERS GUIDE CHECK LIST PREPARATION - will be performed using the following steps:

1. Write the word INPO in the first blank column under the SECTION/SUBSECTION heading and NA in each remaining column of that row.
2. Enter the numerical identifiers for each section/subsection/paragraph of the reference document (NUREG or INPO) in the remaining rows of that column.
 - a. Use paragraph designators (p1, p2, p3, ---) for any section having more than one paragraph.
 - b. Use paragraph designators for items identified by "bullets" (o).
3. Enter the title, requirement or brief descriptive statement for each item identified above in the TOPIC/REQUIREMENTS column.
4. Perform steps 2. and 3. for all Sections of the INPO Example Writers Guide.
5. Write the word NUREG in the first blank column under the SECTION/SUBSECTION heading and NA in each remaining column of that row.
6. Perform steps 2. and 3. for Sections 5.0 through 5.8 of NUREG-0899.

7. Identify and enter the applicable section/subsection/paragraph identifier from the Ginna Draft EOP Writers Guide (WG) in the APPLICABLE SECT/SUBSECTION column for each item entered in steps 2. and 3. above and;
 - a. Enter NA in the APPLICABLE SECT/SUBSECTION column if the referenced Writers Guide (NUREG or INPO) item has no requirements; such as a title, general information statement, definition, etc, or
 - b. Enter NONE in the APPLICABLE SECT/SUBSECTION column if the Ginna WG has no section which corresponds to the referenced Writers Guide (WG) requirement,
or
 - c. Enter NA in the APPLICABLE SECT/SUBSECTION column if the Ginna WG has no section which corresponds to the referenced WG requirement and the requirement is optional.
8. Compare each applicable item of the Ginna WG to the reference document.
 - a. Enter YES in the MEETS REQUIR. column if the item in the Ginna WG meets the requirements of the reference WG.
 - b. Enter NO in the MEETS REQUIR. column if the item in the Ginna WG does not meet the requirements of the referenced WG or if NONE was entered in the APPLICABLE SECT/SUBSECTION column.

- c. Enter NA in the MEETS REQUIR. column if NA was entered in the APPLICABLE SECT/SUBSECTION column.
 - d. Enter ? in the MEETS REQUIR. column if it is questionable that the item in the Ginna WG meets the requirements of the referenced WG.
 - e. Enter * in the MEETS REQUIR. column if it is felt that the item in the Ginna WG should be rewritten for clarification.
9. Enter a number (starting with 1) sequentially in the DISCREP SHEET NO. column for each NO, ? or * entered in the MEETS REQUIR. column.
 10. Enter NA in the DISCREP SHEET NO. column if NA was entered in any previous column of that row.
- C. WG DISCREPANCY SHEET PREPARATION (WGDS) - will be performed using the following steps:
1. Complete a WGDS for each item on the Writers Guide Check List (WGCL) which contains a number in the DISCREP SHEET NO. column.
 2. Enter the number from the DISCREP SHEET NO. column on the WGCL in the blank at the top of the WGDS.
 3. State the difference between the reference WG (INPO or NUREG) and the Ginna WG in the DISCREPANCY block. Include identification of the section/subsection/paragraph from the reference which states the requirement.

4. State a proposed change in the RECOMMENDED CHANGE block. Include identification of the section/subsection/paragraph of any reference which provides justification for the change.

- D. WG REVIEW SHEET PREPARATION (WGRS) - will be performed by the Human Factors Reviewer using the following steps:
1. Complete a WGRS for each completed WGDS.
 2. Enter the same number listed on the WGDS in the blank at the top of the WGRS.
 3. Enter any review comments in the Reviewer block.
 4. Enter NONE if there are no comments.
 5. Identify any reference documents used to justify comments.

E. WRITERS GUIDE REVIEW PACKAGE USE

The Writers Guide Review Discrepancy and Review Sheets will be compiled with the Writes Guide Check List and the Cover Sheet into a Writers Guide Review Package which will then be submitted to the Emergency Procedures Committee (EPC) for resolution.

Each Discrepancy Sheet and associated Review Sheet will be acted upon by the EPC and the recommendations approved or disapproved. The resolved Writers Guide Review Package will then be used to revise the Draft EOP Writers Guide which will then be submitted to the Ginna Plant Operations Review Committee for approval.

The revised Draft EOP Writers Guide will be designated as the Ginna Station EOP/AP Writers Guide since it will also be used to upgrade other procedures into Abnormal Procedures (APs).

FIGURE 3.2-1
WRITERS GUIDE
REVIEW CHECKLIST

WG REVIEW
DISCREPANCY
SHEET

DISCREPANCY:

RECOMMENDED CHANGE:

FIGURE 3.2-2
WRITERS GUIDE
REVIEW DISCREPANCY SHEET



WG REVIEW

REVIEW

SHEET # _____

REVIEW:

RESOLUTION:

EPC REVIEW DATE: _____
APPROVED RECOMMENDED CHANGE _____
NOT APPROVED RECOMMENDED CHANGE _____
APPROVED PER RESOLUTION _____

FIGURE 3.2-3
WRITERS GUIDE
REVIEW SHEET

TASK 2
WRITERS GUIDE
REVIEW PACKAGE

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

Submitted by: _____ Date: _____

FIGURE 3.2-4
WRITERS GUIDE
REVIEW COVER SHEET

4.0 EOP DRAFT DEVELOPMENT AND REVISION PROCESS

4.1 GENERAL DESCRIPTION

The EOP Draft Development and Revision process will be an iterative process performed by the on-site Contractor Project Engineer. The overall process is shown in Figure 4.1-1 and begins with the development of a Draft 1 EOP which will utilize direct translation and insertion of plant specific data and technical information from the Technical Review Packages (TRPs) and current Ginna Station Emergency procedures into the WOG-ERGs. This development stage is described in detail in Section 4.2.

Revision of Draft 1 EOPs to a Draft 2 status will incorporate all resolved discrepancies from the EOP Verification process into the Draft 1 EOPs which will then be issued as Draft 2 documents.

Revision to a Draft 3 Status will incorporate all resolved discrepancies from the EOP Validation process into the Draft 2 EOPs which will then be issued as Draft 3 EOPs. Revision to a Draft 4 Status will incorporate all resolved operator and staff feedback comments from the EOP Training Program into the Draft 3 EOPs which will then be issued to the Ginna Station Emergency Procedures Committee (EPC) chairman for EPC review. Following EPC review the PORC will review and approve the Draft 4 EOPs and upgrade them to Revision 0 Status.

The entire revision process, from Draft 1 to Revision 0 status, is described in detail in Section 4.3.

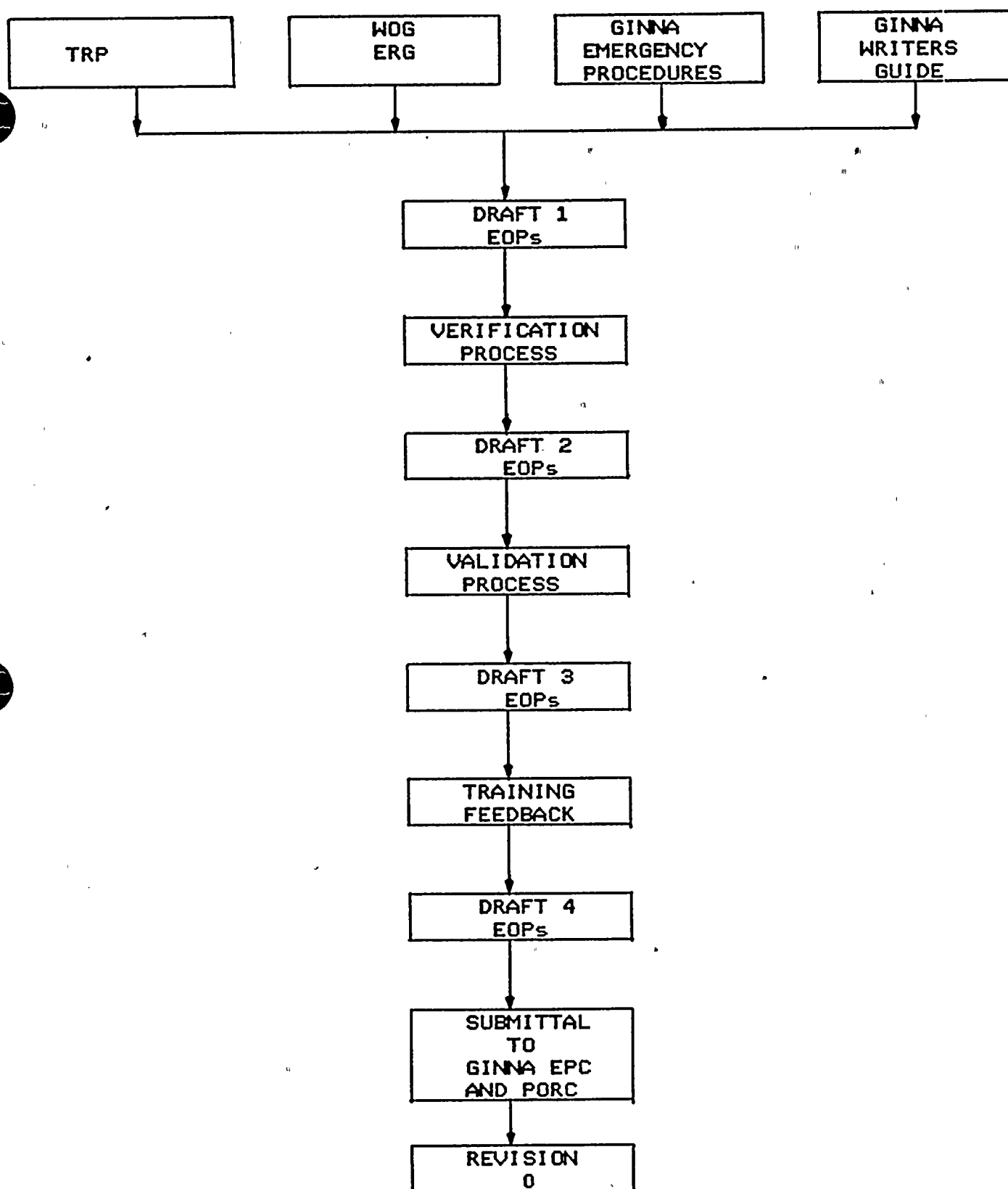


FIGURE 4.1-1
EOP DRAFT DEVELOPMENT AND REVISION
FLOW CHART

4.2 DRAFT EOP DEVELOPMENT

A. GENERAL DESCRIPTION

The draft EOPs will be developed and written by the incorporation of data and information from the references listed in this procedure. The upgraded EOPs will supersede the following current Ginna Station Emergency (E) and Emergency Supplementary (ES) procedures;

1. E-1.1 , IMMEDIATE ACTIONS AND DIAGNOSTICS FOR
SPURIOUS ACTUATION OF SI, LOCA, LOSS OF
SECONDARY COOLANT, AND STEAM GENERATOR
TUBE RUPTURE
2. E-1.2 , LOSS OF REACTOR COOLANT
3. E-1.3 , LOSS OF SECONDARY COOLANT
4. E-1.4 , S/G TUBE RUPTURE
5. E-1.5 , VOID FORMATION IN THE RCS
6. E-4.3 , LOSS OF ALL AC POWER
7. ES-3.1A , SGTR ALTERNATE COOLDOWN BY BACKFILLING
RCS
8. ES-3.1B , SGTR ALTERNATE COOLDOWN USING STEAM
GENERATOR BLOWDOWN
9. ES-3.1C , SGTR ALTERNATE COOLDOWN BY STEAMING
RUPTURED STEAM GENERATOR
10. ES-3.2 , MULTIPLE SGTR CONTINGENCY
11. ES-3.3 , SGTR WITH SECONDARY DEPRESSURIZATION

The remainder of the current Ginna Station E procedures, will be redesignated as Abnormal Procedures (APs) and may be referenced in the EOPs.



The initial draft EOP development will consist of a direct translation and incorporation of plant specific information from the TRP Plant Specific Description Sheets (PSSDs) into the WOG-ERGs on a step for step basis. This process will also reference procedures within the superseded E procedures. The procedure will also be compared against existing procedures as a whole to ensure that other plant specific requirements, information or steps are incorporated. This process should also identify any generic procedural steps, notes or cautions which have to be modified, deleted or rearranged to make the procedure plant specific. Any major step addition, deletion or rearrangement which affects the generic procedure step numbering will be documented on a STEP ADDITION/DELETION/REARRANGEMENT SHEET (shown in Figure 4.2-1). Deletion or addition of any Notes or Cautions associated with the procedure will be documented in the same manner. All changes affecting ERG steps will be logged on a Tracking Sheet (shown in Figure 4.2-9) to facilitate tracing the path of all modifications. The Draft 1 EOP will be prepared in accordance with the Ginna EOP/AP Writers Guide and entered into the Verification Process.

B. DRAFT EOP DEVELOPMENT/WRITING PREREQUISITES

1. Review and be familiar with Ginna EOP/AP Writers Guide content, format and style requirements.
2. Obtain copy of and review specific WOG-ERG.
3. Obtain copy of specific ERG background document and review the following sections;
 - a. Section 1 - Introduction
 - b. Section 2 - Description
 - c. Section 3 - Recovery/Restoration Technique
 - d. Section 5 - Frequent Questions
4. Obtain copy of the specific Technical Review Package (TRP) associated with WOG-ERG.
5. Obtain copies of current Ginna E-procedures applicable to the draft EOP being developed.

C. DETAILED INSTRUCTIONS

1. Make all changes additions and insertions on a clean copy of the WOG-ERG.
2. Note all changes or inserts to the WOG-ERG with a carat (^) or circle the information and draw an arrow to place of insertion.
3. Enclose all notes to typist in [brackets].
4. Change the word guideline to the word procedure wherever it appears in the WOG-ERG.
5. Use the action verbs which are used in the WOG-ERG.
6. Maintain WOG-ERG format.

7. Use only abbreviations which are designated in the Ginna Station EOP/AP Writers Guide.
8. Ensure that plant specific nomenclature is used; for example, change terms such as low head SI pumps to RHR pumps.
9. List system or component indicators only in the first step in which they are used if the indicator(s) are commonly used.
10. Insert plant specific data/information from the Plant Specific Step Description Sheet (PSSDS) of the Technical Review Package (TRP) into designated areas of the WOG-ERG.
11. Insert plant specific setpoints/limits from the Footnote Section of the TRP into designated areas of the WOG-ERG.
12. Insert the correct Abnormal Procedure reference number for any current E-procedure not being superseded and which is referenced by the TRP PSSDS.
13. Enter the word (LATER), in all capitals, underlined and in parentheses for any incomplete or unknown item in the designated space in the WOG-ERG .
14. Enter the step (and substep number if applicable) and the word (LATER) for any open item identified in the previous item (13) on the procedure Administrative Sheet.

15. Add other plant specific information from the TRP (such as equipment identification or valve numbers) to any step whenever it would add clarity to the procedure and be beneficial to the operator. Do not add superfluous or repetitive information which would cause wordiness or would not be of direct benefit to the operator.
16. Add, delete or rearrange steps and substeps in accordance with Section D of this procedure.
17. Place a Note statement which refers to SC-100, GINNA STATION EVENT EVALUATION AND CLASSIFICATION, prior to any reference to a Safety Function Status Tree.

See Section D.2 for details.

D. STEP ADDITION, DELETION AND REARRANGEMENT INSTRUCTIONS

This section applies only to those changes of the generic WOG-ERG step structure which are necessary because of plant specific operational characteristics and procedural requirements which have not been previously documented in the Technical Review Packages.

The changes which may occur are classified as follows;

- o Addition of a major step (task).
- o Addition of a Note or Caution.
- o Addition of task sub-steps.
- o Deletion of a major step (task).
- o Deletion of a Note or Caution.
- o Deletion of task sub-steps.
- o Rearrangement of major steps.

All of these changes will be documented on a STEP ADDITION/DELETION/REARRANGEMENT (SA/D/R) SHEET as shown in Figures 4.2-1 through 4.2-8.

Those changes associated with major steps, notes or cautions will also be tracked on a STEP TRACKING SHEET as shown in Figure 4.2-9.

1. ADDITION OF A MAJOR STEP (task) - will be done only when the generic tasks are deemed insufficient to meet the operational requirements for specific plant safe operation.
2. ADDITION OF A NOTE OR CAUTION - will be done to incorporate current notes or caution statements that appear in existing procedures which are applicable to the EOP and are not covered by the ERG. A specific example of this is the note statement;

NOTE: Conditions should be evaluated for Site Contingency Reporting. REFER TO SC-100, GINNA STATION EVENT EVALUATION AND CLASSIFICATION.

This note will be added prior to any step which references monitoring of a Critical Safety Function Status Tree.

3. ADDITION OF TASK SUB-STEPS - will be done to incorporate specific plant procedural actions necessary to complete a major step evolution which may not have been identified in the TRP or incorporation of actions which are the result of a procedural rearrangement as described in item 7 of this section.
4. DELETION OF A MAJOR STEP - will be done to delete those steps not applicable to the specific plant which have not been identified in the TRP.
5. DELETION OF A NOTE OR CAUTION - will be done to delete those notes or cautions not applicable to the specific plant.
6. DELETION OF TASK SUB-STEPS - will be done to delete any generic evolution actions which are not plant specific nor have been previously identified as such in the TRP.
7. REARRANGEMENT OF MAJOR STEPS - will be done to place generic steps into the plant specific order as allowed by the step sequencing order shown on the Tracking Sheet and described in the ERG background documents and ERG Executive Volume. Rearrangement of steps can consist of either complete step rearrangement wherein the complete step is moved to a different location or partial step rearrangement in which the step or substep actions are incorporated into another step.

E. STEP ADDITION/DELETION/REARRANGEMENT(SA/D/R) SHEET COMPLETION INSTRUCTIONS

1. Complete the EOP identification information in the header at the top of the page.
2. Circle the applicable function (Addition, Deletion or Rearrangement) for which this sheet is being completed.
3. Enter a sequential number (beginning with 1) on the sheet in the space provided.
4. For a major step addition enter an alphanumeric step number in capitals for the step to be added in which the numerical portion of the number coincides with the previous ERG step number and the alphabetical portion of the number sequentially follows the alphabet. (See example on Figure 4.2-1).
5. For a substep addition enter an alphabetical letter (lower case) for each substep to be added to the list of substeps within a step. If a substep is to be added between existing substeps, a double alphabetical identifier shall be used.
(See example on Figure 4.2-3).
6. For a note or caution statement addition enter the appropriate step number for the note or caution to be added to the procedure. (Remember that the caution or note applies to the following step).
(See example on Figure 4.2-2).

7. For any note, caution or major step deletion enter the appropriate step number and to be deleted. (See Figures 4.2-4 and 4.2-5).
 8. For any substep deletion enter the substep number and substep verbatim (See example on Figure 4.2-6).
 9. For a step which is to be rearranged in its entirety and inserted into a new location, enter the alphanumerical step number which identifies to where the step will be rearranged.
(See example on Figure 4.2-7).
 10. For a step whose actions are to be incorporated into another step, enter the step number which is to be incorporated followed by the word TO and the step number followed by the alphabetical substep numbers where the information will be located. (See example on Figure 4.2-8).
 11. Complete the Reason/Justification Section for each item. Include applicable source or reference documents.
 12. Sign in the Prepared By space provided.
- F. STEP TRACKING SHEET INSTRUCTIONS - this section is applicable to the addition/deletion of major steps, notes, cautions and to the rearrangement of major steps.



1. For deletion of steps, notes and cautions enter the word DELETE followed by the appropriate SA/D/R SHEET number in parentheses in the appropriate Draft 1,2,3 or Rev 0 column beside each step, note or caution deleted from the ERG. (See examples on Figure 4.2-9).
2. For additions of steps, notes or cautions enter the word ADD followed by the appropriate SA/D/R SHEET number in parentheses, and the alphanumeric numbers of the added step or the word Note or Caution in the appropriate Draft 1,2,3 or Rev 0 column beside each step, note or caution added to the ERG. (See examples in Figure 4.2-9).
3. For step rearrangements, enter the phrase RA TO followed by the step alphanumeric number which indicates where the step will be placed, followed by the appropriate SA/D/R SHEET number in parentheses in the appropriate Draft 1,2,3 or Rev 0 column beside the step which is being rearranged. Treat the rearranged step as an addition as per instructions F.2.
4. For a step which is to be rearranged into the content of another step, enter the phrase RA TO followed by the step number and the SA/D/R SHEET number in parentheses in the appropriate Draft 1,2,3 or Rev 0 column beside the step which is being rearranged.

5. For steps with no changes, enter the step, note or caution number in the appropriate Draft 1,2,3 or Rev 0 column beside the original step.

EOP:	TITLE:	REV:
EXP-0	EXAMPLE - STEP ADDITION	DRAFT 1

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
1

STEP # 1A

[Enter step to be added in dual column format exactly as it is to be entered in procedure.]

[Comply with Writers Guide requirements]

[Note this addition on Tracking Sheet]

Reason/Justification

[State exact reasons or justification for the step addition]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By: [EOP Writer Sig] Reviewed By: [Project Engineer Sig]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-1
EXAMPLE STEP ADDITION

EOP: EXP-0	TITLE: EXAMPLE - NOTE ADDITION	REV: DRAFT 1
---------------	-----------------------------------	-----------------

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
2

STEP # 8 Note

[State Note to be added verbatim and in correct form]

[Notes and Cautions are not to be stated as a command]

[Note this addition on Tracking Sheet]

Reason/Justification

[State exact reasons or justification for the step addition]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By: [EOP Writer Sig.] Reviewed By: [Proj. Engineer Sig]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-2
EXAMPLE NOTE ADDITION

EOP:	TITLE:	REV:
EXP-0	EXAMPLE - SUBSTEP ADDITION	DRAFT 1

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
3

STEP # 5.aa.,ba.

[Enter the following form to delineate where the substeps are added and state the substeps verbatim]

5 Major Steps

a. Substep.

aa. Added substep [State substep verbatim].

b. Substep.

ba. Added substep [State Substep verbatim].

[There may be a contingency action which will have to be entered in the RNO column. This is to be shown also.]

Reason/Justification

[State exact reasons or justification for the step addition]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By:[EOP Writer Sig.] Reviewed By:[Proj. Engineer Sig]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-3
EXAMPLE SUBSTEP ADDITION

EOP:	TITLE:	REV:
EXP-0	EXAMPLE - STEP DELETION	DRAFT1

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
4

STEP # 2 - DELETE

[State Step Verbatim]

[It is not necessary to list associated substeps which are to be deleted along with the step]

[Note this deletion on Tracking Sheet]

Reason/Justification

[State exact reasons or justification for the step deletion]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By: [EOP Writer Sig.] Reviewed By: [Proj. Engineer Sig]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-4
EXAMPLE STEP DELETION



EOP:	TITLE:	REV:
EXP-0	EXAMPLE - CAUTION DELETION	DRAFT 1

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
5

STEP # 19 CAUTION

[State Caution Verbatim]

[Note this deletion on Tracking Sheet]

Reason/Justification

[State exact reasons or justification for the step deletion]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By: [EOP Writer Sig.] Reviewed By: [Proj. Engineer Sig.]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-5
EXAMPLE CAUTION DELETION

EOP EXP-0	TITLE: EXAMPLE - DELETION OF SUBSTEPS	REV: DRAFT 1
--------------	--	-----------------

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
6

STEP # 5

[List substep number and substep verbatim]

Reason/Justification

[State exact reasons or justification for the step deletion]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By:[EOP Writer Sig.] Reviewed By:[Proj. Engineer Sig.]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-6
EXAMPLE SUBSTEP DELETION

EOP: EXP-0	TITLE: EXAMPLE - STEP REARRANGEMENT TO ANOTHER POSITION	REV: DRAFT 1
---------------	---	-----------------

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
7

STEP # 13 TO 8A [The new position of the step is treated as
a step addition]

[State the major step verbatim]

[It is not necessary to list all substeps if they are
included in the rearrangement]

[Note the rearrangement on the Tracking Sheet]

Reason/Justification

[State exact reasons or justification for the step
rearrangement]

[List applicable references, source documents, including
related procedural step numbers, revision number, etc. so
that exact location can be easily found]

[Part of the justification included should be that the step
sequencing numbers allow this rearrangement]

Prepared By:[EOP Writer Sig.] Reviewed By:[Proj. Engineer Sig.]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-7
EXAMPLE STEP REARRANGEMENT
TO ANOTHER POSITION

EOP: EXP-0	TITLE: EXAMPLE - STEP REARRANGEMENT, INCORPORATION OF STEP	REV: DRAFT 1
---------------	--	-----------------

STEP
ADDITION/DELETION/REARRANGEMENT
SHEET
8

STEP # 18 into 11

[State complete breakdown of step and to where the substeps are being incorporated] such as;

Step 18.a. to 11.aa.

Step 18.b. to 11.c.

Step 18.c. to 11.e.

[Note rearrangement on the Tracking Sheet]

Reason/Justification

[Part of the justification included should be that the step sequencing numbers allow this rearrangement]

[State exact reasons or justifications for the step rearrangement]

[List applicable references, source documents, including related procedural step numbers, revision number, etc. so that exact location can be easily found]

Prepared By:[EOP Writer Sig.] Reviewed By:[Proj. Engineer Sig.]
or
[EOP Liaison Eng. Sig.]

FIGURE 4.2-8
EXAMPLE STEP REARRANGEMENT
INCORPORATION OF STEP

EOP STEP TRACKING SHEET					
ERG STEP,NOTE, CAUT. NUMBER	SEQ. #	DRAFT 1	DRAFT 2	DRAFT 3	REV. 0
1 NOTE	1				
1 NOTE	1				
1	1				
		ADD 1A (1)			
2	2				
3	3				
		ADD NOTE(2)			
4	4				
5	5				
6	5				
7	5	DELETE (4)			
8	5				
		ADD 8A (7)			
9	5				
10	5				
11	5				
12	5				
13	5	RA TO 8A(7)			
14	5				
15	5				
16	5				
17	5				
18	5	RA TO 11(8)			
19 CAUT.	6	DELETE (5)			
19 CAUT.	6				
19	6				

FIGURE 4.2-9
EXAMPLE STEP TRACKING SHEET

4.3 DRAFT EOP REVISION AND UPGRADE

A. GENERAL DESCRIPTION

The revision and upgrade procedure will be an iterative process (as shown in Figure 4.1-1) beginning with the Draft 1 EOPs and the Verification Packages. Necessary changes noted in the Verification Packages which are evaluated to be incorporated into the Draft 1 EOPs will be so inserted, documented and the entire Draft 1 upgraded to a Draft 2 status. The Draft 2 EOPs and changes from the Validation Packages will then be combined as required by evaluation and upgraded to a Draft 3 status. The Draft 3 EOPs and the Training Feedback Comment sheets will then be combined as required by evaluation and the Draft 3 EOPs will be upgraded to a Draft 4 status at which time they will be delivered to the Emergency Procedures Committee for final review and approval.

B. DRAFT 1 TO DRAFT 2 UPGRADE - will be performed using the following steps:

1. Insert or delete, by means of direct replacement, any changes from the Verification Package Discrepancy Sheets which have been resolved to be incorporated and which do not alter a major step sequence, note or caution shown on the EOP Tracking Sheet.

2. Incorporate, delete, or rearrange, by means of the STEP ADDITION, DELETION AND REARRANGEMENT SHEETS (SADR) any changes from the Verification Package Discrepancy Sheets which have been resolved to be added, deleted or rearranged and which do alter a major step sequence or note or caution shown on the EOP Tracking Sheet.

C. DRAFT 2 TO DRAFT 3 UPGRADE - will be performed using the following steps:

1. Insert or delete, by means of direct replacement, any changes from the Validation Package Discrepancy Sheets which have been resolved to be incorporated and which do not alter a major step sequence, note or caution shown on the EOP Tracking Sheet.
2. Incorporate, delete, or rearrange, by means of the STEP ADDITION, DELETION AND REARRANGEMENT SHEETS (SADR) any changes from the Validation Package Discrepancy Sheets which have been resolved to be added, deleted or rearranged and which do alter a major step sequence or note or caution shown on the EOP Tracking Sheet.

D. DRAFT 3 TO DRAFT 4 UPGRADE - will be performed using the following steps:

1. Insert or delete, by means of direct replacement, any changes from the Training Feedback Comment Sheets which have been resolved to be incorporated and which do not alter a major step sequence, note or caution shown on the EOP Tracking Sheet.
2. Incorporate, delete, or rearrange, by means of the STEP ADDITION, DELETION AND REARRANGEMENT SHEETS (SADR) any changes from the Training Feedback Comments Sheets which have been resolved to be added, deleted or rearranged and which do alter a major step sequence or note or caution shown on the EOP Tracking Sheet.
3. Verify upgrades, renumber the EOP as required by the EOP Tracking Sheet and reprint a new clean copy of the Draft 4 EOP.
4. Complete and clear all administrative items which can be completed which are identified on the Administrative Sheet which accompanies the EOP.
5. Attach a copy of the Administrative Sheet to the front of any EOP which has open or incomplete items identified.
6. Present each complete Draft 4 EOP to the Ginna Station Emergency Procedures Committee (EPC) for review.
7. Submit all EPC reviewed Draft 4 EOPs to the Ginna Station PORC for final review and recommendations.

5.0 VERIFICATION AND VALIDATION PROGRAM

5.1 SCOPE

The Verification and Validation programs described herein pertains to the EOPs which are developed and revised as described in Section 4.0, of this document and Revisions to the EOPs past the Draft 4 stage will be subject to the standard revision process for Emergency Procedures specified in Ginna Station Procedure A-206, Emergency Procedures Committee.

The Verification and Validation program was developed by the Project Engineer and consists of a Verification process, a Validation process and a Training Feedback process. Implementation of these processes is a combined effort involving the Project Engineer, Ginna Station staff and Rochester Gas and Electric Corporation personnel. The EOP Verification process is described in Section 5.2; the Validation process in Section 5.3 and the Training Feedback process in Section 5.4.

5.2 VERIFICATION PROCESS

A. GENERAL DESCRIPTION

A Verification process is performed on all Draft 1 EOPs to ensure their technical and written accuracy by providing a means where cognizant personnel from all areas of interest can review and comment on the initial EOPs with regard to specific criteria.

The Ginna EOP Verification process begins with the Draft 1 EOP output (including source documents) and proceeds to follow parallel pathways as shown in Figure 5.2-1. One path train will consist of Technical Accuracy Verification while the other train encompasses Written Accuracy Verification.

The Technical Accuracy train will utilize different technical segments of Rochester Gas and Electric Engineering and Ginna Station staff and the Written Accuracy train will utilize contract personnel.

The output of both trains will then be reviewed by a Ginna Station Evaluator(s).

The Technical Accuracy Verification train will consist of each EOP being reviewed and evaluated against a set of technical criteria by Ginna Operating Shift personnel. The Draft 1 EOP and resulting Operating Shift Verification Package will then be reviewed and evaluated against other sets of technical criteria in a parallel manner by RG&E Licensing personnel, Ginna Station I&C and Electrical Department staff, Ginna Station Training Department staff and Ginna Station Shift Technical Advisors.

The Written Accuracy train will consist of each EOP being evaluated against a set of Writers Guide criteria by off-site contractor staff.

Completed Verification Packages from each group of both trains will then be given to Verification Evaluators who are members of the Ginna Operations staff. The EOP Verification Evaluators will compile all completed Verification Packages, review all comments, discrepancies and, with the assistance of the Project Engineer as necessary, resolve all open items and make changes necessary for revision of the EOP to a Draft 2 status.

In addition to the review of each EOP, all footnote calculations, generated as a part of the Plant Specific Technical Guidelines, will be compiled and then reviewed for accuracy by a member of the Rochester Gas and Electric Nuclear Engineering Department. The reviewed and corrected footnote compilation will then be delivered to the Ginna Station Emergency Procedures Committee (EPC) for final determination and resolution of plant specific values to be used in the EOPs.

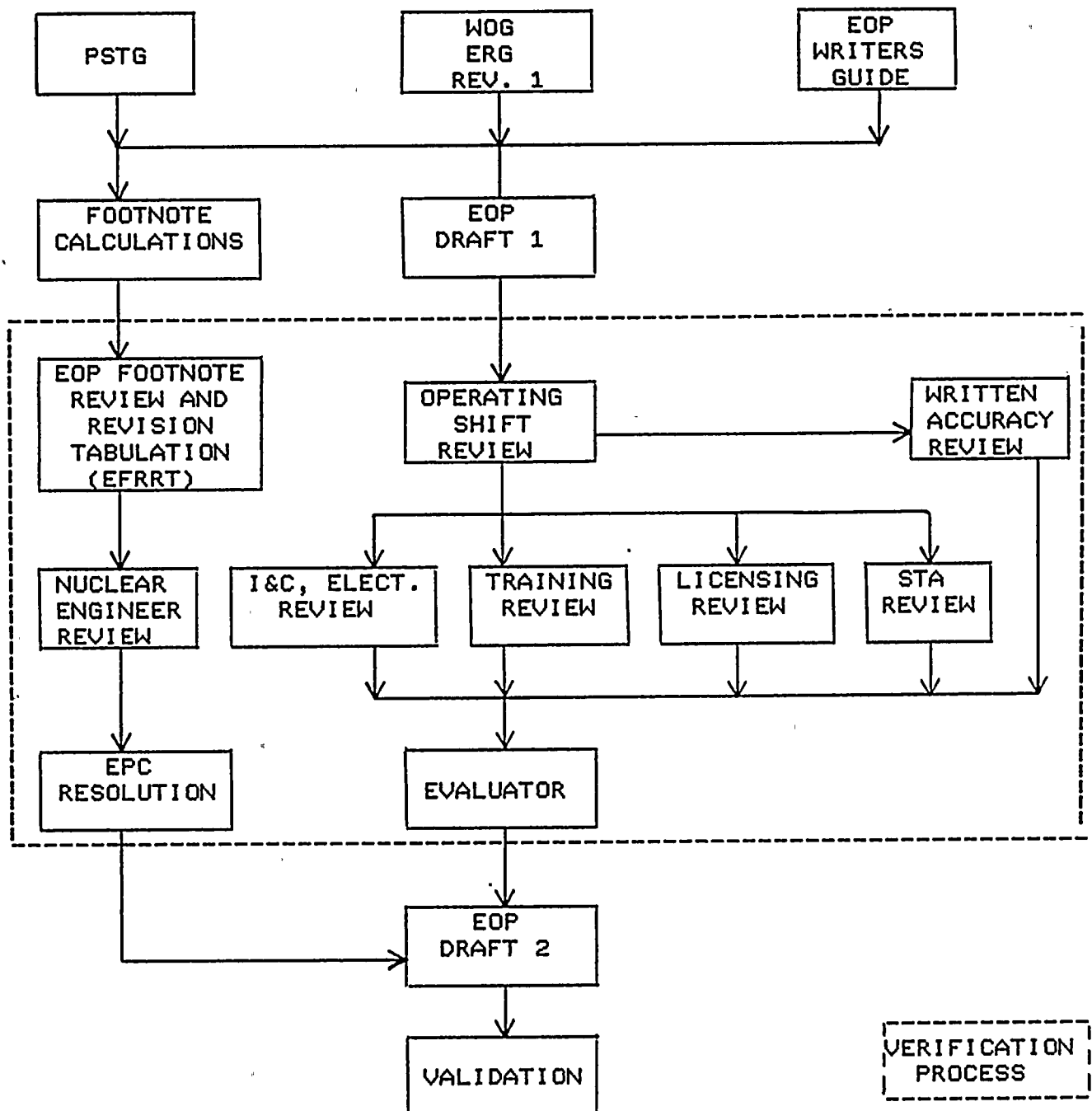


FIGURE 5.2-1
EOP VERIFICATION FLOWCHART



B. EOP VERIFICATION PACKAGES - all segments of each verification train will receive and complete a verification package for each EOP received. The Verification Package consists of the following three (3) types of documents which are standard in form for each review segment;

1. The EOP Verification Package Cover Sheet (Figure 5.2-2) provides the following:

- a. EOP identification in terms of a designator, number, title and revision number.
- b. A listing of reference documents used in preparing the EOP plus provision for listing reference documents used in the verification process.
- c. Brief instructions on the method to be used to complete the package.
- d. Provision for signature by the reviewer(s).
- e. Provision for signature by the Verification Evaluator.

2. The EOP Verification Criteria Checklist (Figure 5.2-3) provides the following:

- a. EOP identification in terms of a designator, number, title and revision number.

- b. A list of evaluation criteria against which the procedure is compared. The criteria are specific to the particular review area as follows and shown in Tables 5.2-1, 5.2-2, 5.2-3, and 5.2-4.

- 1) Operating Shift Verification Criteria -
Table 5.2-1
- 2) Written Accuracy Verification Criteria -
Table 5.2-2
- 3) Licensing Verification Criteria -
Table 5.2-3
- 4) I&C , Electrical Verification Criteria -
Table 5.2-4
- 5) Training Verification Criteria -
Table 5.2-4
- 6) STA Verification Criteria -
Table 5.2-4

c. Provisions for noting:

- 1) the applicability of the criterion
- 2) whether the procedure meets the criterion
- 3) if the procedure does not meet the criterion and if so;
- 4) identification of the Discrepancy Sheet which describes how the criterion is not met.

3. EOP Verification Discrepancy Sheet(s)(Figure 5.2-4)) provides the following:

- a. EOP identification in terms of a designator, number, title and revision number.
- b. Provision for identifying the applicable EOP discrepancy area so that crossreferencing and location of discrepancies is made easier.
- c. Space for writing the specific discrepancy (additional pages may be attached as needed).
- d. Space for listing the reasons and source documents for justifying the discrepancy.
- e. Provision for identifying the reviewer of the particular discrepancy.
- f. Space for the Evaluator to make a written evaluation and recommendation relating to the identified discrepancy.
- g. Provision for Evaluators signature.

C. OPERATING SHIFT VERIFICATION SEGMENT - every EOP will be reviewed by a member of a Ginna Operating Shift who will be at least a licensed RO. Each EOP delivered for review will be accompanied by the associated WOP-ERG, the EOP Technical Review Package (TRP) and Verification Package Forms.

- D. WRITTEN ACCURACY VERIFICATION SEGMENT - every EOP will be reviewed by a member of the contractor staff who has extensive training and experience in the area of technical writing composition, correctness and readability. Each EOP delivered for review will be accompanied by Verification Package Forms. The EOP Writers Guide will be provided prior to commencement of the verification process.
- E. LICENSING VERIFICATION SEGMENT - every EOP will be reviewed by a member(s) of the RG&E organization who is familiar with previous licensing commitments. Each EOP delivered for review will be accompanied by the associated WOG-ERG, the TRP, Verification Package forms and the completed Operating Shift Verification Package.
- F. TRAINING SECTION VERIFICATION SEGMENT - every EOP will be reviewed by a member of the Ginna Station Training section staff who will be at least a licensed SRO. Each EOP delivered for review will be accompanied by the associated WOG-ERG, the TRP, Verification Package forms and the completed Operating Shift Verification Package.
- G. I&C, ELECTRICAL VERIFICATION SEGMENT - every EOP will be reviewed by a member(s) of the Ginna I&C and/or Electrical staff. Each EOP delivered for review will be accompanied by the associated WOG-ERG, the TRP, Verification Package forms and the completed Operating Shift Verification Package.



H. SHIFT TECHNICAL ADVISOR (STA) VERIFICATION SEGMENT

- every EOP will be reviewed by a member(s) of the Ginna STA staff. Each EOP delivered for review will be accompanied by the associated WOG-ERG, the TRP, Verification Package forms and the completed Operating Shift Verification Package.

I. VERIFICATION EVALUATOR SEGMENT - each EOP Verification Package will be evaluated by an Evaluator who is a member of the Ginna staff who is familiar with WOG-ERG development and/or has extensive plant operations and systems experience.

J. FOOTNOTE CALCULATION REVIEW SEGMENT

All footnote calculations generated as a part of the PSTG will be reviewed for technical accuracy. In addition, the values determined from the footnote calculations will be submitted to the EPC for final resolution of the actual value to be used in the EOP. Resolution of certain values will be required because the specific number may require roundoff to a higher or lower value in the conservative direction to meet instrument reading capabilities. To facilitate this process and aid in the revision process, an EOP Footnote Review and Revision Tabulation (EFRRT) will be constructed. The EFRRT is a compilation of all ERG footnotes used in the draft 1 EOPs and Critical Safety Function Status Trees (CSFSTs) along with their associated documentation.

For each footnote the following is provided:

1. The footnote, written verbatim from the WOG-ERG.
2. A list of each EOP (or CSFST) and the associated steps where the footnote information is incorporated.
3. The source or base number of the derived plant specific information
4. Justification or basis for using a particular base number or plant specific information, where necessary.
5. Calculations and modifications required on certain information or numbers.
6. The required end number or specific information required by the ERG footnote.
7. Notation of the unavailability of certain information required for determination of the footnote or the inapplicability of the footnote to the specific application.

The EFRRT will then be reviewed by a member of the RG&E Nuclear Engineering Department who will review and provide any corrections to those footnote calculations determined to be in error. Those corrections will then be inserted into the EFRRT and the entire document submitted to the EPC for approval. The EPC will provide resolution comments for every applicable footnote in the EFRRT which will then be returned to the EOP writing process for incorporation of changes into the Draft 2 EOPs.



K. VERIFICATION REVIEW - will be performed using the following steps:

1. Limit the review to only those questions set forth on the Verification Criteria Checklist.
2. Review and use the reference documents which are identified on the Verification Package Cover Sheet during the review process. These documents are provided with the EOP and are the source documents from which the EOP was written.
3. Identify (completely) any other source/reference documents which are used, both on the Discrepancy Sheets and on the Cover Sheet in the spaces provided.
4. Complete a separate Discrepancy Sheet for each criterion for which a discrepancy is noted. A single discrepancy sheet may identify multiple items within a procedure but they must be itemized for rapid identification.
5. Attach additional sheets to a Discrepancy Sheet if additional space is needed to complete the Discrepancy or Reason/Documentation sections. (Do not write on the back of any discrepancy sheet).
6. Return the EOP, completed Verification Package, ERG and TRP to the Evaluator when the review is complete and signed off.

PAGE 1 OF

EOP VERIFICATION PACKAGE
FOR

EOP: _____ TITLE: _____ REV: _____

REFERENCE DOCUMENTS USED:

- 1.
- 2.
- 3.
- 4.
- 5.

INSTRUCTIONS:

Review (verify) the procedure for each of the items identified on the attached checklist. Check the NA column if the criteria does not apply to the procedure. Check the YES column if the entire procedure meets the criterion of each item on the checklist. Check the NO column and complete a separate discrepancy sheet for each procedural item which does not meet the criterion. Enter all discrepancy sheet numbers associated with the checklist item in the Discrepancy Sheet #s column. Sign and date in the VERIFIED BY space provided below when review is complete.

VERIFIED BY: _____	DATE: _____
VERIFIED BY: _____	DATE: _____
VERIFIED BY: _____	DATE: _____
VERIFIED BY: _____	DATE: _____

EVALUATED BY: _____	DATE: _____
---------------------	-------------

FIGURE 5.2-2
EOP VERIFICATION PACKAGE COVER SHEET

PAGE 2 OF

VERIFICATION CRITERIA CHECKLIST
FOR

EOP: _____ TITLE: _____ REV: _____

ITEM:DISCREP.
NA YES NO SHEET #sFIGURE 5.2-3
EOP VERIFICATION CRITERIA CHECKLIST

EOP: _____ TITLE: _____ REV: _____

- ## 2. DISCREPANCY-

3. REASON/DOCUMENTATION-(written additional ref. on Page 1)

REVIEWER: _____ DATE: _____
(print name)

4. EVALUATION/RECOMMENDATION-

EVALUATOR: _____ DATE: _____

FIGURE 5.2-4
EOP VERIFICATION DISCREPANCY SHEET

TABLE 5.2-1
OPERATING SHIFT VERIFICATION CRITERIA

ITEM	CRITERIA
1)	Are entry SYMPTOMS correct and complete?
2)	Are referenced procedures (other than another EOP) complete and correct?
3)	Are the given units and ranges of measurement the same as displayed on plant instruments?
4)	Are control values and limits; <ul style="list-style-type: none">a. Stated quantitatively where needed?b. Expressed within reading ability of the operator?c. Given as ranges as well as single values?d. Compatible with those in current use?
5)	Is the location of not-commonly used equipment specified?
6)	Is equipment identification identical to control board placards or identified using abbreviations which are familiar to the operator?
7)	Can information or values be readily extracted from graphs, tables or figures?
8)	Is the correct placement of multiposition switches or controls specified?
9)	Are AUTOMATIC ACTIONS correct and complete?
10)	Is FOLDOUT page information sufficient and correct?
11)	Are Control Room instruments and controls adequate to provide the necessary information, data and control as specified by the EOP?

TABLE 5.2-2
WRITTEN ACCURACY VERIFICATION CRITERIA

ITEM	CRITERIA
1)	Do the following pages exist in each EOP: <ul style="list-style-type: none">a. Cover pageb. Purpose and entry conditions/ symptoms pagec. Operator action step page
2)	Does the procedure have all its pages in the correct order?
3)	Does the procedure have the number of pages indicated?
4)	Are page layouts consistent with the Writers Guide sample page format?
5)	Does the cover page provide the following identification information? <ul style="list-style-type: none">a. Titleb. Procedure numberc. Revision numberd. Effective datee. Approval signature and datef. Number of pages
6)	Does each page provide the following identification information? <ul style="list-style-type: none">a. Procedure designator and numberb. Titlec. Revision numberd. Page ____ of ____
7)	Is the location of page identification information consistent?
8)	Is the title descriptive of the procedure?

TABLE 5.2-2 (con't)

ITEM	CRITERIA
9)	Is the purpose statement indicative of the purpose for which the procedure is applicable?
10)	Are instruction steps numbered correctly?
11)	Are operator action steps written in short, concise steps which deal with only one idea?
12)	Are the instructions typed in both upper and lower case letters as conventionally used as opposed to all upper case letters?
13)	Are fixed sequence steps clearly distinguishable from steps that do <u>not</u> have to be performed in a fixed sequence?
14)	Are the methods of emphasis consistent and correct?
15)	Are abbreviations and acronyms consistent?
16)	Are operator actions specifically identified (open, turn, shut)?
17)	Are objects of operator actions specifically stated?
18)	If a step contains three or more objects of an action, are they listed and space provided for checkoff?
19)	Are control settings and limits expressed quantitatively, e.g. 2 turns, 80 (75-85)gpm.
20)	Do the instructions in the procedure meet all of the following criteria? <ul style="list-style-type: none"><li>a. Each item requiring alignment is individually specified. (It is not acceptable to refer personnel to previous steps).<li>b. Each item is identified with a unique number or nomenclature.<li>c. The position in which the item is to be placed is specified.
21)	Are cautions placed immediately ahead of the step(s) to which they apply?
22)	Are cautions separate and easily distinguishable in appearance from instructional steps?
23)	Can the text of a caution be read without interruption by page turning?

TABLE 5.2-2 (con't)

ITEM	CRITERIA
24)	Do cautions avoid the use of operator action statements?
25)	Are notes placed immediately ahead of the step(s) to which they apply?
26)	Are notes separate and easily distinguishable in appearance from instructional steps?
27)	Can the text of a note be read without interruption by page turning?
28)	Do notes avoid the use of operation action statements?
29)	Are punctuation and capitalization correct?
30)	Do operator action steps make proper use of logic terms and structure?
31)	Are the titles and numbers of all referenced documents identified correctly and consistently?
32)	Are referencing instructions correctly worded? <ul style="list-style-type: none">a. GO TO (transition to another or same EOP)b. REFER TO (branching to procedures other than EOP)
33)	If calculations are required, is space provided in the procedure to perform the computations and to record the results?
34)	Are graphs, tables and figures legible and readable?
35)	Are titles of graphs, figures and tables descriptive of contents and use?



TABLE 5.2-3
LICENSING VERIFICATION CRITERIA

ITEM	CRITERIA
	<ol style="list-style-type: none"><li>1) Have implemented licensing commitments applicable to EOPs been addressed?<li>2) Are differences between licensing commitments and the EOP documented?

TABLE 5.2-4
I&C, ELECT, TRAINING, STA
VERIFICATION CRITERIA

ITEM	CRITERIA
1)	Are entry SYMPTOMS correct and complete?
2)	Are entry CONDITIONS correct and complete?
3)	Are operator actions complete and correct?
4)	Are the expected results of operator actions complete and correct?
5)	Are contingency actions correct and complete?
6)	Are EOP exit conditions compatible with the entry conditions of a referenced procedure (other than another EOP)?
7)	Are control values and limits correct and compatible with those in current use?
8)	Do required calculations use values which are compatible with and readily available from plant data sources?
9)	Are referenced procedures (other than another EOP) complete and correct?
10)	Do referenced procedures route users past important information?
11)	Are Caution statements provided when displays are based on secondary sensing devices?
12)	Are components (equipment, instruments, controls) identified completely and correctly?
13)	Are graphs, tables and figures complete and correct?
14)	Are AUTOMATIC ACTIONS correct and complete?
15)	Is FOLDOUT page information sufficient and correct?
16)	Are recent plant modifications reflected in the EOP?

5.3 VALIDATION PROCESS

A. GENERAL DESCRIPTION

A Validation process is performed on the Draft 2 EOPs to ensure that they are usable and operationally accurate. The Validation process provides a means by which minimum operating shift personnel test the procedures in a replicate control room during scenario driven, simulated emergency conditions.

The Ginna EOP Validation process is shown in Figure 5.3-1 and will consist of five phases listed as follows:

1. Preparation - preparation for the EOP Validation process will consist of the determination of the following elements as described in Sections 5.3 B,C,D,E,F AND G;
 - o Validation Methods.
 - o Validation Criteria.
 - o Scenario Selection.
 - o Validation Team.
 - o Observer/Review Team.
 - o Validation Coordinator.
2. Prevalidation Training - prevalidation training for the EOP process will consist of a special training course as described in Section 5.3 H.

3. Evaluation - evaluation of the EOP process will consist of the following elements as described in Section 5.3 I.

- o Walkthrough Performance.
- o Observation Team comments.
- o Validation Team debriefing comments.

4. Review/Resolution - review and resolution will consist of the following elements as described in Section 5.3 J.

- o Tabletop discussions, review and compilation of all generated comments.
- o Emergency Procedures Committee (EPC) resolution of the comment package submitted from the evaluation process.

5. Documentation - documentation of the EOP Validation process will consist of a Final Validation Report as described in Section 5.3 K.



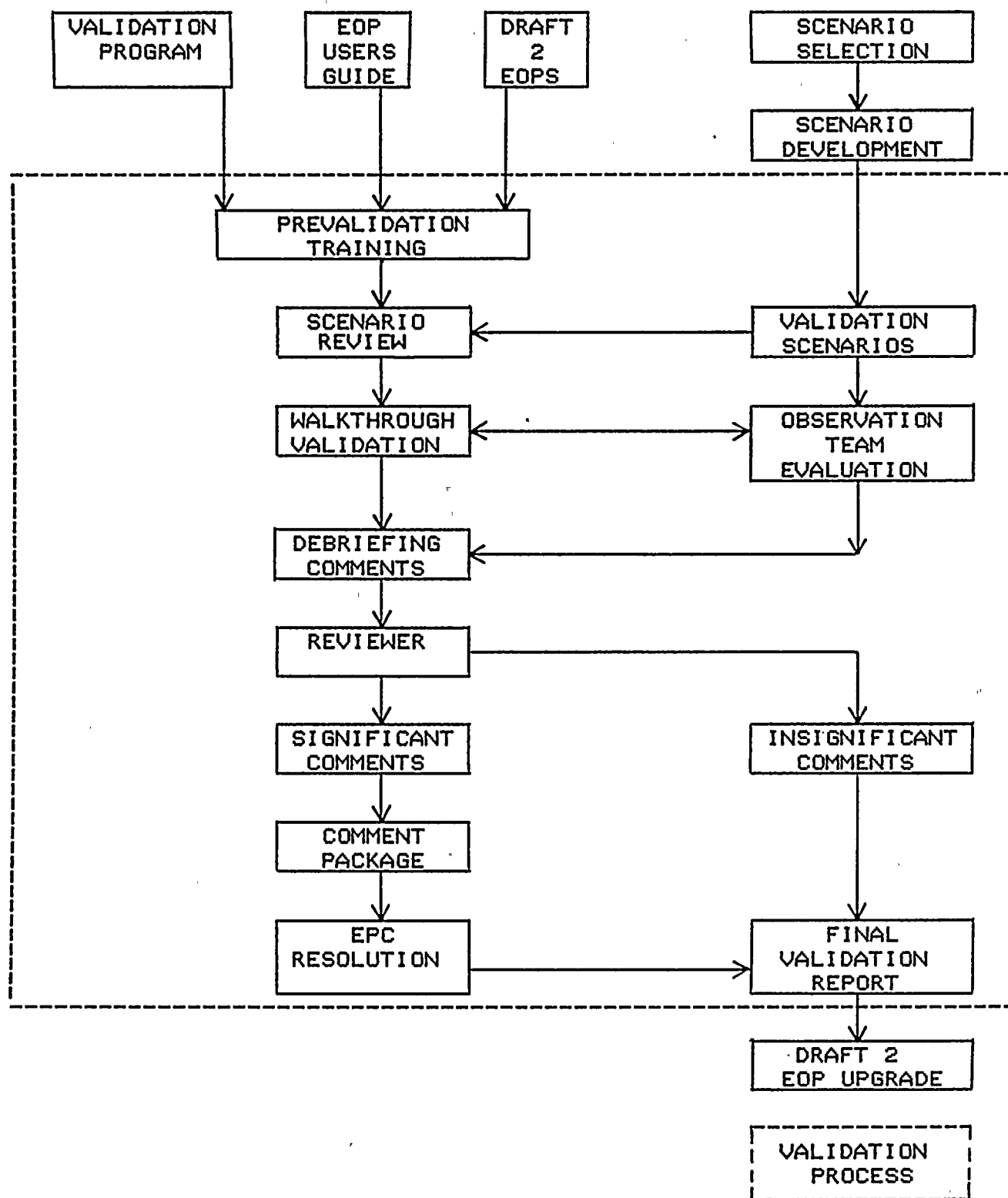


FIGURE 5.3-1
EOP VALIDATION FLOWCHART

B. VALIDATION METHOD

The Ginna Station EOPs have been written closely employing the structure, format and wording of the Revision 1 WOG-ERGs. Overall generic validation of the principles of usability and operational correctness of the WOG-ERGs has been proven as described in WCAP-10599, Emergency Response Guidelines Validation Program Final Report, 6/84. The generic validation is therefore, applicable to and referenced by Ginna Station. However, to further satisfy those principles with respect to plant specific requirements and shift staffing levels and to ensure compliance with the intent of validation requirements, the Ginna Draft EOP set will be subjected to a comprehensive, scenario based, walkthrough type of evaluation followed by an indepth tabletop review and compilation of any and all problems encountered during performance of the walkthrough evaluation. The Ginna Station Validation Program will then, in essence, employ three of the four (walkthrough, tabletop, reference, simulator) applicable validation methods listed in INPO 83-006, Emergency Operating Procedures Validation Guideline, Preliminary, 8/83. Since Ginna Station does not, at present, have a plant specific simulator, the simulator validation method is not considered a viable method. This is acceptable since plant responses have been validated as stated in WCAP-10599.

C. VALIDATION CRITERIA

1. The function of this validation is to test how well the entire EOP/operator interface functions in terms of ability to control the plant from the control room. In that context, only those criteria pertaining to the EOP/Operator and EOP/Control Room interactions will be used to judge the performance of this test. For ease of use during the evaluation phase, these two segments of validation criteria are combined into one set of validation criteria as shown in Table 5.3-1.

Since the training process is a distinct phase in the program, those criteria listed in WCAP-10599 pertaining to EOP/Training and Operator/Training will not be discussed in this section but will provide a basis for the training phase to be given to both Validation and Observer/Review Teams.

2. The Validation Team has sufficient training and experience that it is not necessary to address any criteria pertaining to the Training/Control Room interaction in this plan.

3. Since a Control Room Design Review (CRDR) is being performed and reported independently from, but closely interfacing with the EOP development program, it is not necessary to address particular criteria relating to Operator/Control Room interactions in this plan. However, a question relating to control instrumentation and information needs has been addressed in the Verification process and is again addressed in the Validation criteria.
4. Procedure Specific Criteria are not developed for this plan because the method of scenario development will provide observers with direction for determining correct actions which should be taken during the evaluation walkthrough. The Validation Criteria in Table 5.3-1 and provides sufficient checks from which proper actions may be evaluated.

D. SCENARIO SELECTION

1. Scenarios will be selected to exercise all major procedures including Contingency (ECA) and Red and Orange path Functional Restoration (FR) procedures. Yellow path FR procedures will be used as encountered to test their usefulness, however it will not be necessary to exercise all yellow path procedures since the majority of these steps will have been encountered in other EOPs and because they are optional as to use. All scenarios will be carried through to a cold shutdown condition to ensure that ES procedures are exercised, however it will not be necessary to repeat an ES procedure for a similar event (ie, if 2 LOCA scenarios are used, it is not necessary to do both POST-LOCA cooldowns). Multiple failures will also be addressed.
2. Several simple scenarios will be selected to initiate the walkthrough evaluation to allow both observers and operators to become familiar with the evaluation process and to indicate the extent of operator understanding of the basic principles of the upgrade EOPs. This is an especially important factor at established operating plants where the upgrade EOPs are in a different format and organization from current Emergency Procedures. A list of scenarios to be used is shown on Table 5.3-2.

E. VALIDATION TEAM

The EOP Validation Team will be composed of Ginna Operations Department personnel (1 licensed Senior Reactor Operator and 2 Reactor Operators). All of these operators have from four (4) to twelve (12) years plant specific experience each.

F. OBSERVER/REVIEW TEAM

The Observer/Review Team will be composed of senior RG&E personnel. At least two of the observer/reviewers have current Senior Reactor Operator licenses and extensive experience in the senior shift operating position of Shift Supervisor. One SRO also has experience in scenario based drill observations.

G. VALIDATION COORDINATOR

The Validation Coordinator will be a currently licensed Senior Reactor Operator with over ten years plant specific experience. The Validation Coordinator will conduct the actual evaluation and debriefing sessions and will provide the necessary direction at these two points of the process.

H. PREVALIDATION TRAINING

A special training program to present the validation program and the EOPs, their bases and use, to the validation and observer/review teams will be developed. The training program will cover three areas of interest:

1. The first area will be the Validation program itself; what it is intended to achieve and how the process works. This will include such items as observation team duties, validation criteria, test scenarios and debriefing process. The operators will be constantly reminded that it is not their personal abilities which are being judged, but the procedures themselves.
2. The second area is the development and use of the EOPs. This section will describe the historical background of the upgrade EOP requirements and their development with respect to Westinghouse PWRs and a detailed review of the Ginna EOP Users Guide which was revised to reflect the updated Ginna EOP/AP Writers Guide contents.
3. The third area to be discussed will be a summary review of each of the Draft 2 EOPs for familiarization purposes.

An outline of the training program is shown in Table 5.3-3. In addition to this training course, the Observer/Review Team will review the scenarios for familiarization prior to the actual walkthrough.

I. EOP EVALUATION

1. The walkthrough evaluations will be performed at the Ginna specific simulator which is currently under construction at the vendor facility in Pittsburgh. Although the simulator is not yet operational, all control room panels are in place with virtually all instrumentation and controls represented. Thus, an adequate and thorough evaluation can be performed without disruption of normal operations in the Ginna Station control room.

The Validation Coordinator will then provide all necessary initial conditions, symptoms and or entry conditions to the validation teams to begin the walkthrough. He will direct the entire scenario performance, provide parameter setpoints and information necessary to operator decision making and determine when the scenario has progressed sufficiently to effect termination.

2. The Observer team will be provided with copies of the EOPs, lists of validation criteria (shown on Table 5.3-1), EOP flowcharts and validation Discrepancy Sheets (shown in Figure 5.3-2). They will remain in the background and limit their comments to written notation of observations/discrepancies to minimize noise and distraction during the walkthrough process.

3. Immediately following the conclusion of each scenario walkthrough, the evaluation team will be provided with a debriefing questionnaire (shown in Figure 5.3-3) for recording their comments while the walkthrough process is still fresh in their memory.

J. REVIEW/RESOLUTION

1. Following the completion of all the scenario walkthroughs, the Validation Coordinator, Validation Team and Validation Observer/Review Team will meet to discuss, review and compile all comments/discrepancies noted during the walkthrough evaluations. Multiple source comments will be integrated. All comments will be sorted into significant and insignificant groupings prior to input into the resolution process to minimize impact on resolution time requirements. Significant comments will be recorded on the Validation Discrepancy Sheets shown in Figure 5.3-2 and then submitted to the Ginna Station Emergency Procedures Committee (EPC) for review.
2. After sufficient review time, the EPC will meet as a group to discuss and resolve all discrepancies provided by the Validation Coordinator. Completed Validation Discrepancy Sheets will then be transmitted to the EOP Project Engineer.

K. DOCUMENTATION

Upon completion of the first four phases of the Validation process, a Final Validation Report will be prepared and submitted to the EPC by the Project Engineer. The final report will contain the following documentation:

- o EOP Validation Procedure.
- o Scenarios used in the walkthrough evaluation.
- o Prevalidation Training program contents.
- o List of insignificant comments generated during the walkthrough evaluation.
- o Compilation of Discrepancy Sheets submitted to and acted upon by the EPC.

TABLE 5.3-1
VALIDATION CRITERIA

ITEM	CRITERIA
V1)	Are procedures easily identified?
V2)	Are procedure transitions made correctly <ul style="list-style-type: none">o within a procedure?o to another EOP? ; at the correct step?o to another procedure not an EOP? ; at the correct step?
V3)	Does any procedure or procedural step appear to cause confusion?
V4)	Are there sufficient steps to complete an evolution?
V5)	Do steps contain sufficient information?
V6)	Is proper step sequence maintained?
V7)	Are alternative actions (use of OR) explicit?
V8)	Are contingency actions (RNO) sufficient?
V9)	Are CAUTIONS and NOTES recognized and understood?
V10)	Are internal procedure loops performed correctly?
V11)	Is the FOLDOUT page used properly?
V12)	Are Figures and Tables accurately readable?
V13)	Are CSF Status Trees properly monitored and used?
V14)	Are instruments and controls referenced by the EOPs available in the control room?
V15)	Can instruments be read within the required reading accuracy?
V16)	Are control room instruments and controls sufficient to perform the step required by the EOP?
V17)	Is the minimum control room staff sufficient to perform the required actions effectively?
V18)	Is procedure nomenclature consistent with control room labeling and operator language?

TABLE 5.3-2
VALIDATION TEST SCENARIOS

- 1 Loss of all AC power with stuck open S/G safety valve.
- 2 Spurious Rx trip with PRZR level transient.
- 3 Intermediate LOCA (4 inch).
- 4 Design Basis Accident - LOCA
- 5 Small break LOCA inside containment.
- 6 Small break LOCA - cold leg (inadequate core cooling).
- 7 Secondary break outside containment with no AFW.
- 8 SGTR (about 400 gpm).
- 9 SGTR with subsequent secondary break.
- 10 SGTR with subsequent LOCA.
- 11 Loss of all AC power - no SI required.
- 12 ATWS from full power - S/G low low level with no trip.
- 13 LOCA outside containment
- 14 SGTR without RCS pressure control
- 15 Service Water rupture in containment with subsequent reactor trip.
- 16 Both MSIVs fail closed with subsequent secondary break.

TABLE 5.3-3
EOP PREVALIDATION TRAINING
COURSE CONTENTS

1. EOP Validation Plan Review
2. Development/Use of EOPs
 - o Historical Background (TMI, NUREG 0737, WOG, etc.)
 - o EOP structure
 - o EOP basis
 - o EOP usage as a set
 - o Individual procedure usage
 - o Use of NOTES and CAUTIONS
 - o Entry conditions
 - o Transitions
 - o Barrier Concept
 - o Critical Safety Functions
 - o Status Trees
 - o Status Tree usage
 - o Priorities of colors
3. Draft 2 EOP Review and Familiarization
 - a. Rx Trip, SI and AC Power EOPs.
 - o E-0 series
 - o ES-0 series
 - o ECA-0 series
 - b. Loss of Coolant Accident EOPs
 - o E-1 series
 - o ES-1 series
 - o ECA-1 series
 - c. Secondary Break EOPs
 - o E-2
 - o ECA-2.1
 - d. SGTR EOPs
 - o E-3 series
 - o ES-3 series
 - o ECA-3 series
 - e. Function Restoration EOPs
 - o H-series
 - o C-series
 - o S-series
 - o P-series
 - o Z-series
 - o I-series

VALIDATION DISCREPANCY SHEET FOR SCENARIO _____	
1. COMPLETE/CHECK THE FOLLOWING APPLICABLE ENTRIES:	
a. EOP DESIGNATOR/#	_____
b. Purpose & Entry Conditions/Symptoms Page	_____
c. Operator Action Step Number(s)	_____
d. Foldout Page	_____
e. Other	_____
2. DISCREPANCY - {Use item codes from Table 5.3.1 if desired to expedite comment preparation}	
3. VALIDATION COORDINATOR COMMENT -	
4. EPC RESOLUTION -	

FIGURE 5.3-2
EOP VALIDATION DISCREPANCY SHEET

DEBRIEFING QUESTIONNAIRE
FOR SCENARIO _____

1. Was there any instruction step or contingency action that:
 - a. You did not clearly understand?
 - b. You could not perform as written?
 - c. Provided unnecessary information?
2. Did you feel that there were any sequencing problems with the steps that were performed?
3. Were you at any time unsure as to whether you had followed the written instructions exactly?
4. Was there any situation or action needed on your part that was not covered in the written instructions?
5. Do you have any general comments about the procedures used in the scenarios?

FIGURE 5.3-3
EOP VALIDATION
DEBRIEFING QUESTIONNAIRE

5.4 TRAINING FEEDBACK PROCESS

A. GENERAL INSTRUCTIONS

Following the discussion of each EOP in the Licensed Operator Training Program which is described in Section 6.2 and at the end of the Management/Technical Staff Training Program which is described in Section 6.3, the Training Instructor will provide EOP Training Feedback forms (as shown in Figure 5.4-1) to classroom participants.

As time allows, the instructor will provide for discussion, compilation and immediate resolution of identified errors. Multiple related comment sheets will be integrated and the compiled, EOP related forms returned to the Project Engineer for submittal to the Emergency Procedures Committee for necessary resolution of open items or discrepancies.

The resolved discrepancies will then be incorporated into the Draft 3 EOPs for revision to a Draft 4 status.

EOP TRAINING FEEDBACK FORM FOR EOP# _____ EOP TITLE _____	
1. COMPLETE/CHECK THE FOLLOWING APPLICABLE ENTRIES:	
a. Purpose & Entry Conditions/Symptoms Page	_____
b. Operator Action Step Number(s)	_____
c. Foldout Page	_____
d. Other	_____
2. DISCREPANCY/COMMENT -	
3. EPC RESOLUTION -	

FIGURE 5.4-1
EOP TRAINING FEEDBACK FORM



6.0 EOP TRAINING PROGRAM

6.1 SCOPE

The training program described herein is for pre-EOP implementation only. Post-EOP implementation training and requalification training are described in the Ginna Administrative procedures A-103.5, R.E. Ginna NRC Licensing Training Program, and A-103.4, R.E. Ginna Operator Requalification Program.

The pre-EOP implementation training process is composed of three separate training programs;

- o Licensed Operator EOP Training Program.
- o Management/Technical Staff EOP Training Program.
- o Pre-EOP Implementation Summary Training Program.

These individual programs are described in the following Sections. Each program will incorporate a feedback mechanism as described in Section 5.4 to provide a final revision effort prior to the upgrade EOPs being implemented.

6.2 LICENSED OPERATOR EOP TRAINING PROGRAM

A. GENERAL DESCRIPTION

The intent of the Licensed Operator EOP Training program is to provide the necessary training to licensed operators in the areas of EOP philosophy, technical basis, use and content. This training program will address four major areas as follows:

1. Historical basis and philosophy of the EOPs including structure and approach to transient accident mitigation as it relates to:
 - a) Control of safety functions
 - b) Accident evaluation and diagnosis
 - c) Achievement of safe, stable, or shutdown conditions.
2. Technical basis of the EOPs including the relationship of plant systems, sub-systems and components to the EOP during transients and accidents. The specific use and operation of plant systems, sub-systems, and components is not within the scope of this training program but is in the Ginna License Training and Re-Training programs.
3. Content of the EOPs such that the operators understand and are able to utilize the information.
4. Execution of the EOPs will be demonstrated by the use of replicate control room walk-throughs, and table-top discussions. The specific implementation of this element of training will be made in conjunction with the EOP validation task.

B. LICENSED OPERATOR EOP TRAINING PROGRAM OUTLINE**1. SEQUENCE NUMBER: 1**

- a. Lesson Title: History Of Emergency Operating Procedures.
- b. Lesson Topic: Provides a history of the requirements for the current EOPs and the basis for NUREG-0899.
- c. Source Material: Applicable IE Bulletins, NUREGs, and SECY documents.
- d. Classroom Time: One Hour.

2. SEQUENCE NUMBER: 2

- a. Lesson Title: Generic WOG ERGs.
- b. Lesson Topic: Provides an overview of how the WOG ERGs were developed and their basis.
- c. Source Material: WOG'ERG Seminar Notes.
- d. Classroom Time: One Hour.

3. SEQUENCE NUMBER: 3

- a. Lesson Title: EOP Implementation Program.
- b. Lesson Topic: Provides an overview of the development and implementation methodology for the Ginna EOPs.
- c. Source Material: R.E. Ginna EOP Project Manual.
- d. Classroom Time: One Hour.

4. SEQUENCE NUMBER: 4

- a. Lesson Title: Plant Specific Technical Guidelines.
- b. Lesson Topic: Provides information on how the generic guide lines were developed into Ginna Plant Specific Guide Lines.
- c. Source Material: R.E. Ginna EOP Project Manual
- d. Classroom Time: One Hour.

5. SEQUENCE NUMBER: 5

- a. Lesson Title: Development of Ginna EOPs.
- b. Lesson Topic: Describes the process of how the plant specific guide lines were merged with the WOG ERGs to form the Draft EOPs.
- c. Source Material: R.E. Ginna EOP Project Manual.
- d. Classroom Time: One Hour.

6. SEQUENCE NUMBER: 6

- a. Lesson Title: Draft EOPs.
- b. Lesson Topic: Provides a review of each Draft EOP and covers the following items:
 - 1. Overview,
 - Purpose of document.
 - EOP/EP cross-reference.
 - Symtom/Entry condition.
 - Logic flow and symbols.

2. Recovery/Restoration

Technique,

- Purpose of actions.
- Technical basis.
- Required systems, instruments and controls.
- Cautions/Notes/and step by step actions.

c. Source Material: For each EOP, the applicable:

- WOG Background Document.
- TRP.
- Draft EOP.

d. Classroom Time: Approximately one to one and one-half hours for each EOP.

Total of 50 hours.

7. SEQUENCE NUMBER: 7

a. Lesson Title: EOP Scenarios.

b. Lesson Topic: Utilized to demonstrate the use of the new EOPs using table tops, control room, or mock-up control room scenarios. Specific EOPs to be selected by the Ginna Station Operations and Training Sections.

c. Source Material: Ginna Draft EOPs

d. Classroom Time: Four Hours.



8. SEQUENCE NUMBER: 8

- a. Lesson Title: Validation and Verification Program.
- b. Lesson Topic: Provides information on the methodology to be used for the Validation and Verification of the Ginna EOPs.
- c. Source Material: R.E. Ginna EOP Project Manual
- d. Classroom Time: One Hour.

6.3 MANAGEMENT/TECHNICAL STAFF EOP TRAINING PROGRAMA. GENERAL DESCRIPTION

The intent of the Management/Technical Staff EOP Training Program is to provide the necessary training to management and technical staff personnel in the areas of EOP philosophy, technical basis, use and content. This training program will address four major areas as follows:

1. Historical basis and philosophy of the EOPs including structure and approach to transient and accident mitigation as it relates to:
 - a) Control of safety functions.
 - b) Accident evaluation and diagnosis.
 - c) Achievement of safe, stable or shutdown conditions.

2. Technical basis of the EOPs including the relationship of plant systems, sub-systems and components to the EOP during transients and accidents. The specific use and operation of plant systems, sub-systems and components is not within the scope of this training program, but is in the License Training and Re-Training programs for those individuals who hold NRC licenses.
3. An overview of the structure, content and use of the EOPs such that the management and technical staff personnel will be capable of evaluating licensed operators in the use of the new EOPs and determine the impact of plant equipment and procedure changes upon the new EOPs.
4. The inter-relationship of the new EOPs to the Ginna Emergency Plan Activation Procedures.

B. MANAGEMENT/TECHNICAL STAFF EOP TRAINING PROGRAM OUTLINE

1. SEQUENCE NUMBER: 1

- a. Lesson Title: History Of Emergency Operating Procedures.
- b. Lesson Topic: Provides a history of the requirements for the current EOPs and the basis for NUREG-0899.
- c. Source Material: Applicable IE Bulletins, NUREGs, and SECY documents.
- d. Classroom Time: One Hour.



2. SEQUENCE NUMBER: 2

- a. Lesson Title: Generic WOG ERGs.
- b. Lesson Topic: Provides an overview of how the WOG ERGs were developed and their basis.
- c. Source Material: WOG ERG Seminar Notes.
- d. Classroom Time: One Hour.

3. SEQUENCE NUMBER: 3

- a. Lesson Title: EOP Implementation Program.
- b. Lesson Topic: Provides an overview of the development and implementation methodology for the Ginna EOPs including the conversion from generic plant technical guidelines to Ginna Plant Specific Technical Guidelines.
- c. Source Material: R.E. Ginna EOP Project Manual.
- d. Classroom Time: One Hour.

4. SEQUENCE NUMBER: 4

- a. Lesson Title: Development of Ginna EOPs.
- b. Lesson Topic: Describes the process of how the plant specific guidelines were merged with the WOG ERGs to form the Draft EOPs.
- c. Source Material: R.E. Ginna EOP Project Manual.
- d. Classroom Time: One Hour.

5. SEQUENCE NUMBER: 5

- a. Lesson Title: Draft EOPs.
- b. Lesson Topic: Provides an overview of the basic structure, content and use of the draft EOPs.
- c. Source Material: Selected Draft 3 EOPs.
- d. Classroom Time: One Hour.

6. SEQUENCE NUMBER: 6

- a. Lesson Title: Validation and Verification Program.
- b. Lesson Topic: Provides information on the methodology to be used for the Validation and Verification of the Ginna EOPs.
- c. Source Material: R.E. Ginna EOP Project Manual.
- d. Classroom Time: One Hour.

6.4 PRE-EOP IMPLEMENTATION SUMMARY TRAINING**A. GENERAL DESCRIPTION**

1. The intent of the Pre-EOP Implementation Summary Training program is to provide the necessary training to Ginna personnel on changes that have been made to the EOPs as a result of Emergency Procedures Committee (EPC) or Plant Operations Review Committee (PORC) review.

B. TRAINING PROGRAM

The Pre-EOP Implementation Summary Training Program specific course content will be identified based on the changes made as a result of EPC and PORC review.

APPENDIX A

EMERGENCY AND ABNORMAL OPERATING PROCEDURES
WRITERS GUIDE

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER _____

PROCEDURE NO. A.502.1

REV. NO. 0

EMERGENCY AND ABNORMAL OPERATING PROCEDURES

WRITERS GUIDE

TECHNICAL REVIEW

PORC REVIEW DATE _____

QC REVIEW

PLANT SUPERINTENDENT

EFFECTIVE DATE

QA X NON-QA _____ CATEGORY 1.0

REVIEWED BY: _____

THIS PROCEDURE CONTAINS 30 PAGES

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1.0 INTRODUCTION

1.1 DEFINITIONS

- 1.1.1 EMERGENCY OPERATING PROCEDURE (EOP) - EOPs are procedures that govern plant operations during emergency conditions and specify operator actions to be taken to return the plant to a stable condition.
- 1.1.2 EMERGENCY CONDITION - An emergency condition is defined as any condition that challenges the Reactor Protection system, emergency safeguards systems, the ability to cool the reactor core, or the challenge of a radiation release boundary in an accident condition.
- 1.1.3 ABNORMAL OPERATING PROCEDURE (AP) - APs govern the plant operations during abnormal conditions and specify operator actions that will prevent the condition from degrading into an emergency.
- 1.1.4 SHALL - the word SHALL denotes a requirement.
- 1.1.5 SHOULD - the word SHOULD denotes a recommendation.
- 1.1.6 MAY - the word MAY denotes neither a requirement nor a recommendation.

1.2 PURPOSE - to provide technical and administrative guidance on the preparation of EOPs and APs as outlined in Appendix II of A-206.

1.3 SCOPE OF APPLICATIONS - this Writers Guide shall be applied to the writing and revision of all EOPs and APs as outlined in Appendix II of A-206.

1.4 REFERENCES

- 1.4.1 INPO 82-017, EMERGENCY OPERATING PROCEDURES WRITING GUIDELINE July, 1982.
- 1.4.2 NUREG-0899, GUIDELINES FOR THE PREPARATION OF EMERGENCY OPERATING PROCEDURES, August, 1982.
- 1.4.3 WOG-ERG, Revision 1, LP Version, September, 1983.
- 1.4.4 Battelle Document, REVIEW CRITERIA FOR EVALUATION OF PROCEDURE GENERATION PACKAGES, Draft, November, 1983.

1.5 REVISIONS - revisions to any EOP/AP shall be made in accordance with A-601, Plant Procedure Document Control.

2.0 EOP/AP ORGANIZATION AND CONTENT - each EOP/AP shall contain the following;

2.1 COVER PAGE - which will contain the following information;

- 2.1.1 EOP identification
- 2.1.2 Revision identification
- 2.1.3 Effective Date
- 2.1.4 Page number and total number of pages
- 2.1.5 Provision for review signature
- 2.1.6 Provision for approval signature
- 2.1.7 Facility identification
- 2.2 PURPOSE AND ENTRY CONDITIONS/SYMPTOMS PAGE - which contains;
 - 2.2.1 PURPOSE STATEMENT - which adequately describes the event.
 - 2.2.2 ENTRY CONDITIONS/SYMPTOMS section which will include those alarms, indications, operating conditions, automatic actions or other unique symptoms that the operator is to consider when deciding to use the procedure. Entry conditions may also include referencing or related procedures.
- 2.3 OPERATOR ACTION STEP PAGES - which contain;
 - 2.3.1 OPERATOR ACTION STEPS which are short, instructions that give specific directions to the user, are presented in dual columns designated ACTION/EXPECTED RESPONSE and RESPONSE NOT OBTAINED, and may be identified as either IMMEDIATE or SUBSEQUENT actions.
 - 2.3.1.1 The ACTION/EXPECTED RESPONSE column shall contain the primary operator action and the expected response or results of those actions.
 - 2.3.1.2 The RESPONSE NOT OBTAINED (RNO) column shall contain operator actions that should be taken in the event that the results or expected response of the primary operator actions are not achieved in conjunction with tasks involving verification, observation, confirmation and monitoring. The RNO actions should specify directions to override automatic controls and to manually initiate that which fails to automatically initiate.
 - 2.3.1.3 Immediate Operator Actions - actions which the operator is expected to perform from memory upon entry into the procedure and which should be limited to verification of automatic actions where possible.
 - 2.3.1.4 Subsequent Operator Actions - actions not defined as immediate.
 - 2.3.2 CAUTION STATEMENTS - which will be used to denote potential hazards to equipment or personnel associated with or as a consequence of a subsequent operator action step.



- 2.3.3 NOTE STATEMENTS - which will be used to supply additional information to support a subsequent operator action step.
- 2.4 AUTOMATIC ACTIONS PAGE - which will list automatic actions necessary for purposes of verifying the status of automatic safety equipment.
- 2.5 PRINTED OPERATOR AIDS - will be self explanatory, legible, and readable under the expected conditions of use and within the reading precision of the operator. These may consist of any of the following:
 - 2.5.1 FIGURES - which may include graphs, drawings, diagrams, and illustrations.
 - 2.5.2 TABLES - which should appear on or near the same page as the step from which it is identified.
 - 2.5.3 FOLDOUT PAGES - may be used to provide any additional information that the operator may need throughout the procedure.
 - 2.5.4 OVERSIZED AND REDUCED PAGES - shall not be used.
- 2.6 TEXT REVISIONS - shall be identified by a change bar. The change bar will be located in either the left or right hand margins to indicate the changes to the text of that column. The change bar for the current revision will not be carried forward to the next revision.
- 3.0 EOP/AP DESIGNATION, NUMBERING AND SECTION IDENTIFICATION
 - 3.1 EOP DESIGNATORS - each EOP shall have an alphabetic designator as follows:
 - 3.1.1 E - for Emergency Procedures
 - 3.1.2 ES - for Emergency Sub-procedures
 - 3.1.3 ECA - for Emergency Contingency Actions
 - 3.1.4 FR - for Functional Restoration Guidelines
 - 3.2 EOP NUMBERING - each EOP shall be numbered in the same manner as used in the WOG-ERGs, Revision 1, LP Version.
 - 3.3 AP DESIGNATION AND NUMBERING - each Abnormal Procedure shall be identified by the designator AP followed by a sequential number.
 - 3.4 REVISION DESIGNATION AND NUMBERING - each EOP/AP revision will be identified by the designator REV followed by a sequential number. The first effective EOP/AP shall be identified as REV-0.

- 3.5** EOP/AP SECTION IDENTIFICATION - in order to facilitate rapid location of specific sections and subsections of the EOP/AP, certain pages of the control room copy of the EOP/APs shall be identified as follows:
- 3.5.1 COVER PAGES - provided with large thumb tabs with the EOP/AP designator and number shown in boldfaced, capitalized print.
 - 3.5.2 PURPOSE and ENTRY CONDITIONS/SYMPTOMS PAGES - provided with small thumb tabs labeled ENTRY.
 - 3.5.3 IMMEDIATE OPERATOR ACTION PAGES - provided with small thumb tabs labeled IMM on the first page.
 - 3.5.4 SUBSEQUENT OPERATOR ACTIONS PAGES - provided with small thumb tabs labeled SUB on the first page.
 - 3.5.5 AUTOMATIC ACTIONS PAGES - provided with small thumb tabs labeled AUTO.
 - 3.5.6 FOLDOUT PAGES - provided with small thumb tabs labeled FOLDOUT.
 - 3.5.7 THUMB TABS for all pages of each EOP/AP shall be of one color but shall be of a different color from the next (adjacent) EOP or AP. The thumb tabs of each EOP shall be staggered so that none are hidden.
- 4.0** EOP/AP FORMAT
- 4.1** GENERAL FORMAT - all pages of the EOP/AP (except Cover Page) shall follow the general format as shown in Figure 1 in addition to the following specific rules;
 - 4.1.1 PAPER - shall be white, 8-1/2" by 11", bond.
 - 4.1.2 TYPING - shall be performed on a consistent, legible typing or word processing system.
 - 4.1.3 PAGE MARGINS - a one inch margin is to be maintained between text and the left-hand page edge. A 1/2" margin is to be maintained between text and the right-hand edge. 1" margins shall be maintained between the text and the top and bottom of the pages.
 - 4.1.4 PAGE ORIENTATION - the 8-1/2" edges shall constitute the top and bottom of all procedure and attachment pages.
 - 4.1.5 PAGE IDENTIFICATION - each page of the EOP/AP shall contain the following information;
 - 4.1.5.1 EOP/AP designator and number.
 - 4.1.5.2 EOP/AP title.

- 4.1.5.3 Current revision number.
- 4.1.5.4 Page number and total number of pages in EOP/AP.
- 4.1.6 LINE SPACING - the following rules apply to all EOPs/APs;
 - 4.1.6.1 Two lines between headings and text and between paragraphs.
 - 4.1.6.2 One line between text lines.
- 4.1.7 TEXT ARRANGEMENT - block style is to be used.
- 4.1.8 TEXT CONTINUITY - section and subsection text, operator action steps, Caution statements, Note statements and their first applicable step should be wholly contained on one page.
- 4.1.9 PAGE ROTATION - should be minimized but when it is necessary to rotate a page for the sake of clarity and readability, the following rules are applicable;
 - 4.1.9.1 The left hand edge of the normal page shall become the top of the rotated page.
 - 4.1.9.2 Page margins, identification and numbering shall not rotate.
- 4.2 COVER PAGE FORMAT - each cover page shall contain, as a minimum, the information specified in Section 2.1 and will follow the format shown in Figure 3 of procedure A-601.
- 4.3 PAGE HEADINGS FORMAT - each page of the EOP/AP (except the cover page) shall be identified with a header as shown in Figure 2 which contains the following information:
 - 4.3.1 Procedure designator and number, located in the upper left-hand corner.
 - 4.3.2 Procedure title, centered.
 - 4.3.3 Page # of #, located in the upper right-hand corner.
 - 4.3.4 Revision designator (REV:) and number, located in the upper right-hand corner.
- 4.4 PURPOSE AND ENTRY CONDITIONS/SYMPTOMS PAGE FORMAT - shall contain the information specified in Sections 2.2.1, 2.2.2 and 4.1.5 and follow the modified block format as shown in Figure 2.
- 4.5 OPERATOR ACTION STEP PAGE FORMAT - the operator action step page consists of operator instruction steps, caution statements and note statements which are formatted as follows and as shown in FIGURE 3:

- 4.5.1 OPERATOR ACTION STEPS - shall be of a dual column format. The left-hand column is designated ACTION/EXPECTED RESPONSE and the right-hand column is designated RESPONSE NOT OBTAINED.
 - 4.5.1.1 Both columns contain operator action steps which may be designated IMMEDIATE OR SUBSEQUENT.
 - 4.5.1.2 All operator action steps shall be numbered and sequenced as stated in section 5.1, Sequencing of operator action steps.
 - 4.5.1.3 All IMMEDIATE operator action steps shall be on separate pages from any SUBSEQUENT operator action steps and shall be further identified by a circle surrounding the step number.
 - 4.5.1.4 All operator action steps begin with an action verb as stated in section 5.3.2 and listed in TABLE 1. When an action verb relates to three or more objects, a checkoff space shall be provided beside the action object to aid the operator.
- 4.5.2 CAUTION STATEMENTS - text shall be in a block format in addition to the following formatting requirements:
 - 4.5.2.1 Caution statements shall be enclosed at the top and bottom by a continuous line of asterisks which shall begin three lines below the preceeding text.
 - 4.5.2.2 The statement header CAUTION shall be centered and placed two lines below the preceeding line of asterisks.
 - 4.5.2.3 Caution statement text shall begin two lines below the caution header and extend from margin to margin.
 - 4.5.2.4 Caution statements shall be emphasized as described in section 5.2, Emphasis Techniques.
 - 4.5.2.5 Caution statements which apply to the whole procedure shall be stated prior to any operator action step and be shown on the foldout page if applicable.
 - 4.5.2.6 Caution statements which apply to a particular step shall be stated prior to that step.
- 4.5.3 NOTE STATEMENTS - text shall be in a block format in addition to the following formatting requirements:
 - 4.5.3.1 The statement header NOTE shall be on the same line as the text but separated from the text by a colon.
 - 4.5.3.2 Note statement text shall begin two lines below the preceeding text and extend from margin to margin.



4.5.3.3 Note statements shall be emphasized as described in section 5.2, Emphasis Techniques.

4.5.3.4 Note statements which apply to a particular step shall be stated prior to that step.

4.6 AUTOMATIC ACTIONS PAGE FORMAT - automatic actions shall be listed in a single column format and be located at the end of the procedure, but prior to the foldout page.

4.7 PRINTED OPERATOR AIDS PAGES FORMAT - printed operator aids may consist of figures, tables or foldout pages.

4.7.1 FIGURE FORMAT - figures shall be formatted as follows:

4.7.1.1 Figure number and title are all capitals and are centered on figure field just above the lower margin.

4.7.1.2 Figure field should fill but not violate page margins.

4.7.1.3 All lines and gridlines shall be readable and reproducible.

4.7.1.4 Orientation shall be as natural as possible or in the same direction as the instrumentation which it represents.

4.7.1.5 All items within a figure should be labeled incorporating arrows to identify specifics where possible. Labels should be typed in all capital letters.

4.7.2 TABLE FORMAT - tables shall be formatted as follows:

4.7.2.1 A capitalized table name and number shall be located above the table field and three (3) lines below the preceding text.

4.7.2.2 A capitalized heading shall be entered for each table column.

4.7.2.3 Horizontal lines shall be placed above and below the table heading and below the last line on the table. Vertical column lines should be placed within the table for readability.

4.7.2.4 The table shall appear on the same page as the step from which it was identified.

4.7.2.5 Table columns shall be aligned by first letters for word entries and by decimal points for numerical values.

4.7.2.6 All rows and columns shall be filled. Where no entry is necessary, the abbreviation N.A. shall be used.

4.7.3 FOLDOUT PAGE FORMAT - the foldout page shall be the last page of the procedure and shall be formatted as shown in FIGURE 5.

[Margin Set:9,85] [Spacing:1]
[Top Margin:0]

1"

EOP/AP:	TITLE:	REV:
		PAGE OF

2 sp.

1"	A. PURPOSE-	1 sp.
	B. ENTRY CONDITIONS/SYMPTOMS	
	1. ENTRY CONDITIONS-	
	2. SYMPTOMS-	
	T	T
	10	14
		18

1/2"

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Imperative Action-RESULT	Alternate command
2	a.	a.
3	b.	b.
	2 sp.	
	NOTE: XXX	
	2 sp.	
	Imperative Action-RESULT	
	2 sp.	
	*****	*****
	CAUTION	
	*****	*****
	T	T
	10	15
		48

FIGURE 1
EXAMPLE FORMAT SHEET

1"

EOP/AP:	TITLE:	REV:
		PAGE OF

A. PURPOSE- This procedure provides.....
.....

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS- This procedure is entered from;

a.

b.

c.

d.

2. SYMPTOMS- The symptoms of ...(Procedure Title)...are;

a.

b.

c.

d.

FIGURE 2
EXAMPLE ENTRY CONDITIONS/SYMPTOMS PAGE



EOP/AP:	TITLE:	REV:
		PAGE OF

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Imperitive Action-RESULT	Alternate command
2	a. Sequential Substep-RESULT	a. Alternate command
	o Nonsequential substep-RESULT	o Alternate command

NOTE: The following are typical examples of operator action steps;

- | | | |
|---|--------------------------------------|------------------------|
| 1 | Verify Reactor Trip: | Trip reactor manually. |
| | o Rod bottom lights-LIT | |
| | o Neutron flux-DECREASING | |
| 1 | Check if all RCPs should be Stopped: | |
| | a. SI pumps- AT LEAST ONE RUNNING | a. GO TO Step 2 |

CAUTION

ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY IF CST LEVEL DECREASES TO LESS THAN 19.5 FEET.

- | | | |
|---|---|--|
| 3 | Check Intact S/G Levels: | |
| | a. Narrow range level- GREATER THAN (LATER) | a. Maintain total feed flow low greater than (later) |

FIGURE 3
 EXAMPLE OPERATOR ACTION STEP PAGE

EOP/AP:	TITLE:	REV:
		PAGE OF

AUTOMATIC ACTIONS

0.....

0.....

0.....

0.....

0.....

0.....

FIGURE 4
EXAMPLE AUTOMATIC ACTIONS PAGE

EOP/AP:	TITLE:	REV:
		PAGE OF

FOLDOUT PAGE

1. Include any information needed by the operator throughout the procedure.
2.
3.
4.

FIGURE 5
EXAMPLE FOLDOUT PAGE

5.0 WRITING STYLE - the following writing style shall be applied to the writing and revision of all EOPs and APs.

5.1 SEQUENCING OF OPERATOR ACTION STEPS

5.1.1 OPERATOR ACTION STEPS shall be numbered sequentially in order of expected performance.

5.1.2 OPERATOR ACTION SUBSTEPS shall be lettered sequentially in order of expected performance.

5.1.3 OPERATOR ACTION SUBSTEPS shall be designated by "bullets" (o) if no order of performance is expected or required.

5.2 EMPHASIS TECHNIQUES - the following techniques will be used for emphasizing certain information in the EOPs and APs.

5.2.1 CAPITALIZATION - in addition to standard American English usage, the following shall be capitalized as shown;

5.2.1.1 The word NOTE in note statements - all capitals.

5.2.1.2 The word CAUTION and all words contained in caution statements - all capitals.

5.2.1.3 The logic terms identified in section 5.12 - all capitals.

5.2.1.4 The majority of all abbreviations and acronyms as defined in section 5.4 - all capitals.

5.2.1.5 The expected response in an operator action step - all capitals.

5.2.1.6 Procedure designators, numbers, titles and other identifying information - all capitals.

5.2.1.7 Table headings and figure titles - all capitals.

5.2.1.8 The words GO TO, RETURN TO and REFER TO - all capitals.

5.2.1.9 Operator action steps - first letter of each word shall be capitalized.

5.2.1.10 Operator action substeps - first word of each substep shall be capitalized.

5.2.2 UNDERLINING - the following shall be underlined;

5.2.2.1 The word NOTE in note statements.

5.2.2.2 The word CAUTION in caution statements.

5.2.2.3 All logic terms defined in section 5.12.

- 5.2.3 BOLDFACE TYPE - the following shall be typed in boldface type.
 - 5.2.3.1 Procedure designators, numbers, titles, other identifying information and section headings.
 - 5.2.3.2 Operator action step commands (imperative statements).
 - 5.2.3.3 The words NOTE and CAUTION.
- 5.2.4 ASTERISKS - a continuous line of asterisks shall enclose all caution statements at the top and bottom.
- 5.3 VOCABULARY - the following rules apply to all words used in EOPs and APs;
 - 5.3.1 Only words which have the following characteristics shall be used. These characteristics are;
 - 5.3.1.1 Simple, short words of few syllables.
 - 5.3.1.2 Commonly used words.
 - 5.3.1.3 Precise, specific, familiar and definite.
 - 5.3.2 Operator Action Steps shall begin with an action verb as listed and defined in TABLE 1.
 - 5.3.3 Spelling shall be consistent with modern usage and when a choice is offered by a dictionary, the first choice shall be used.
- 5.4 ABBREVIATIONS AND ACRONYMS - are subject to the following limitations;
 - 5.4.1 Abbreviations may be used where necessary to save time and space in the interest of clarity and brevity.
 - 5.4.2 Use of an abbreviation which causes any ambiguity or confusion shall not be permitted.
 - 5.4.3 Only those abbreviations listed in TABLE 2 shall be used in an EOP or AP unless that abbreviation is part of an approved procedure title.
 - 5.4.4 Abbreviations listed in TABLE 2 shall be used verbatim, in terms of upper and lower case letters, numerals, periods and decimals.
 - 5.4.5 Acronyms which are not commonly used or previously defined shall not be used.
- 5.5 SENTENCE STRUCTURE - sentences, clauses, and phrases shall be short and utilize standard American English word order. Operator Instruction Steps shall;

- 5.5.1 Be short, imperative statements which state the exact task that the operator is expected to perform.
- 5.5.2 Deal with only one idea. Complex evolutions shall be broken down into a series of steps and substeps.
- 5.5.3 Specifically state the objects of operator actions.
- 5.6 PUNCTUATION - the rules of punctuation for standard American English shall be used, however, word order should be selected which minimizes the amount of required punctuation. Punctuation shall be in accordance with the following rules;
- 5.6.1 PERIOD - a period shall be used at the end of all complete and incomplete sentences, to indicate a decimal place in numbers and at the end of each item in a list.
- 5.6.2 COMMA - commas are used to indicate natural divisions or slight pauses in sentences. Use of too many commas is an indication that a sentence or instruction is too complex and should be rewritten. Commas shall be used in conditional phrases.
- 5.6.3 SEMICOLON - a semicolon is used to indicate a major division in a sentence where more distinct separation is required than would be suggested by use of a comma. With a semicolon, everything to the right of the semicolon is roughly equal to everything to the left; everything to the left is roughly equal to the right.
- 5.6.4 COLON - a colon is used to indicate that what follows is an elaboration or summation of what precedes it. In summary:
- 5.6.4.1 A colon marks major breaks in a sentence;
- 5.6.4.2 A colon signals an elaboration of the preceding statement;
- 5.6.4.3 A colon introduces a formal summation.
- 5.6.5 HYPHEN - a hyphen is used to form an adjective from two not-normally hyphenated words and when a word must be broken for continuation on another line. The use of hyphenated words should be minimized.
- 5.6.6 DASH - a dash is used to note an abrupt break or hesitation in a sentence and is often interchangeable with a colon or comma as an emphasis method.
- 5.6.7 PARENTHESES - parentheses are used to provide subtle interjections of remarks or material which may be considered extraneous or otherwise off of the subject. The use of parentheses shall be minimized.

- 5.6.8. APOSTROPHE - apostrophes are generally used to indicate the plural form of abbreviations or symbols. Apostrophes shall not be used. The plural form of any word used in the writing of EOPs and APs will be shown simply by the addition of an s or es as necessary.
- 5.6.9 QUOTATION MARKS, EXCLAMATION POINTS, QUESTION MARKS, ITALICS and BRACKETS (except as needed in calculations) shall not be used.
- 5.7 CAPITALIZATION - capitalization techniques and use is stated in section 5.2.1.
- 5.8 UNITS OF MEASURE - units of measure in all text, tables, figures and attachments shall be familiar to the operator such that no interpretation, conversion, translation or mental manipulation is required to relate those stated to actual plant instrumentation and control.
- 5.9 NUMERALS - numerical values should also be consistent with the following rules:
- 5.9.1 Arabic numerals should be used.
- 5.9.2 A decimal point should be preceded by a zero for numbers less than unity.
- 5.9.3 The number of significant digits should be no greater than the number of significant digits available on available instrumentation or the reading precision of the operator. No more than one-half of one meter division should be used.
- 5.9.4 Control values and limits shall be stated quantitatively where necessary and normally will be followed by the tolerance in parentheses.
- 5.10 TOLERANCES - tolerances shall be stated in terms of upper and lower limits where possible such that addition and subtraction by the user is avoided. Tolerances shall have the same units as the instrumentation to which they refer.
- 5.11 FORMULAS AND CALCULATIONS - should be avoided. Values which must be determined to perform a procedural step should utilize graphs or figures. If a calculation has to be performed, the needed formulas, conversion factors and space to perform the calculation shall be provided.
- 5.12 LOGIC TERMS AND CONDITIONAL STATEMENTS - the logic terms AND, OR, IF, IF NOT, THEN, and WHEN are often used to precisely define a set of conditions or sequence of actions. The use of these logic terms shall follow the guidelines listed below:
- 5.12.1 All letters of logic terms shall be emphasized by capitalization and underlining when used in logic statements.

- 5.12.2 The use of AND and OR within the same action step should be avoided.
- 5.12.3 When combinations of conditions are used the word AND shall be placed between a description of each condition for no more than a combination of three conditions. A list format shall be used for four or more conditions.
- 5.12.4 The word OR shall be used between alternative conditions. Use of the word OR in this manner implies the inclusive sense. The exclusive sense of the word OR is denoted by using the form; either A OR B but not both.
- 5.12.5 Should action steps be contingent upon certain conditions or combinations of conditions, the step shall begin with the logic terms IF or WHEN followed by a description of the condition(s), a comma, the logic term THEN and the action to be taken. IF shall be used for unexpected or possible conditions and WHEN shall be used for expected or probable conditions.
- 5.12.6 The use of the logic term IF NOT should be limited to cases in which the operator must respond to the second of any two possible conditions. The term IF should be used to specify operator response to the first of any two possible conditions.
- 5.12.7 THEN should only be used in conditional statements. THEN should not be used at the end of action steps because it tends to run operator action steps together.
- 5.13 REFERENCING - referencing encompasses a transition to another step within the procedure being used; a transition to another procedure of the same type (EOP to EOP, AP to AP) being used, or a branch to another procedure external to the procedure type being used. The following rules shall be used when referencing:
- 5.13.1 TRANSITION TO A LATER STEP WITHIN CURRENT EOP/AP - shall be performed by using the words GO TO as shown by; GO TO Step 20.
- 5.13.2 TRANSITION TO A PREVIOUS STEP WITHIN CURRENT EOP/AP - shall be performed by using the words RETURN TO as shown by; RETURN TO Step 20.
- 5.13.3 TRANSITION TO ANOTHER EOP (or AP) - shall be performed by using the words GO TO, followed by the procedure designator, number, title, and the specific procedure step as shown by; GO TO ES-0.1, REACTOR TRIP RESPONSE, Step 20.

- 5.13.4 BRANCHING TO PROCEDURES OTHER THAN AN EOP (or AP) - shall be performed by using the words REFER TO, followed by the procedure designator, number and title and will additionally contain a return statement as shown by; REFER TO T-41, ALTERNATE WATER SUPPLY FOR AFW PUMPS. When complete, RETURN TO Step 20.
- 5.13.5 The referencing terms GO TO, RETURN TO and REFER TO and the procedure designator and title shall be all capitalized and the word Step shall be initially capitalized for emphasis.
- 5.14 LOCATION INFORMATION - location information should be provided in parentheses following the identification of any components equipment, instruments or controls which are not normally used or which may be difficult to find.
- 5.15 COMPONENT IDENTIFICATION - equipment, controls, and displays should be quoted verbatim as per panel placard and emphasized by using all capitals. System and component abbreviations may be used if the abbreviation is a commonly used designator.
- 5.16 LEVEL OF DETAIL - too much detail should be avoided but the operator must be able to effectively execute the instructions in an explicit, efficient and timely manner. The following rules should be applied towards the level of detail included in an EOP/AP:
- 5.16.1 For each control with a number engraved on a placard, the number should be included within parentheses following the control name.
- 5.16.2 For control circuitry that executes a function upon actuation of the control switch, the action verb is sufficient without further amplification of how to manipulate the control device.
- 5.16.3 For control switches with positional placement that establishes a standby readiness condition, the action verb PLACE should be used along with the engraved name of the desired position.
- 5.16.4 For multiposition switches that have more than one position for a similar function, placement to the desired position should be specified.
- 5.16.5 Standard practices for observing abnormal results need not be prescribed within procedure steps.

TABLE 1
ACTION VERB LIST

VERB	APPLICATION
ACTUATE	<p>To put into action or motion; commonly used to refer to automated, multi-faceted operations.</p> <p>EXAMPLE: actuate SI.</p>
ALIGN	<p>To arrange components into a desired configuration.</p> <p>EXAMPLE: align the system for normal charging.</p>
ALLOW	<p>To permit a stated condition to be achieved prior to proceeding.</p> <p>EXAMPLE: allow discharge pressure to stabilize.</p>
BLOCK	<p>To inhibit an automatic actuation.</p> <p>EXAMPLE: block SI actuation.</p>
CHECK	<p>To perform a comparison with a procedural requirement.</p> <p>EXAMPLE: check if SI can be terminated.</p>
CLOSE	<p>To change the physical position of a mechanical device so that access or flow is prevented or so that passage of electrical current is permitted.</p> <p>EXAMPLE: close valve 4309.</p>
COMPLETE	<p>To accomplish specified requirements.</p> <p>EXAMPLE: complete steps 1 through 9 first.</p>
CONTINUE	<p>To go on with a particular process.</p> <p>EXAMPLE: continue with this guideline.</p>
CONTROL	<p>To manually operate equipment necessary to satisfy guideline requirement on process parameters: pressure, temperature; level, flow, etc.</p> <p>EXAMPLE: control PRZR level.</p>
DECREASE	<p>To reduce a given parameter within certain bounds.</p> <p>EXAMPLE: decrease level to 18-24 inches.</p>

TABLE 1
ACTION VERB LIST
(continued)

VERB	APPLICATION
DETERMINE	To calculate or evaluate using formulas 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. EXAMPLE: energize AC emergency buses.
ESTABLISH	To make arrangements for a stated condition. EXAMPLE: establish communications with the control room.
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.
INCREASE	To make progressively greater within certain bounds. EXAMPLE: increase level to 18-24 inches.
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 high-head SI pump on the AC emergency bus.
MAINTAIN	To control a given plant parameter to some guideline requirement continuously. EXAMPLE: maintain S/G level in the narrow range.



TABLE 1
ACTION VERB LIST
(continued)

VERB	APPLICATION
MINIMIZE	To make as small as possible. EXAMPLE: minimize secondary system contamination.
MONITOR	Similar to "check", except implies a continuous activity.
OPEN	To change the physical position of a mechanical device so that access or flow is permitted or so that passage of electrical current is blocked. EXAMPLE: open breaker 14B.
OPERATE	To turn on or turn off as necessary to achieve the stated objective. EXAMPLE: operate PRZR heaters to increase pressure.
PLACE	To put a multipositioned device in a specific position, or when establishing the readiness condition of a particular item of equipment or control. EXAMPLE: place the feedwater control in automatic.
RECORD	To document a specified condition or characteristic. EXAMPLE: record discharge pressure.
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 by the initial signal to be deenergized. EXAMPLE: reset SI.
SET	To put an adjustable feature to a specified value. EXAMPLE: set the D/G speed to 1800 rpm.
SHUT DOWN	To deenergize equipment and place in standby. EXAMPLE: shut down unnecessary equipment.

TABLE 1
ACTION VERB LIST
(continued)

VERB	APPLICATION
START	<p>To originate motion of an electrical or mechanical device.</p> <p>EXAMPLE: start charging pump 1B.</p>
STOP	<p>To terminate motion of an electrical or mechanical device.</p> <p>EXAMPLE: stop charging pump 1B.</p>
SYNCHRONIZE	<p>To align the electrical characteristics of two different electrical sources.</p> <p>EXAMPLE: synchronize the diesel generators.</p>
THROTTLE	<p>To operate a valve in an intermediate position to obtain a certain flow rate.</p> <p>EXAMPLE: throttle flow via MOV 429 to establish a 100oF/hr cooldown rate.</p>
TRIP	<p>To manually activate a semi-automatic feature which terminates a current function.</p> <p>EXAMPLE: trip RCP 1A.</p>
TRY	<p>To make a continued effort when success may not be immediately obtainable.</p> <p>EXAMPLE: try to restore offsite power.</p>
TURN ON	<p>To supply electrical energy to a non-mechanical component.</p> <p>EXAMPLE: turn on PRZR heaters.</p>
VENT	<p>To permit the ingress or egress of a gas or fluid through a boundary.</p> <p>EXAMPLE: vent CCW pump.</p>
VERIFY	<p>To observe that a condition or characteristic is occurring as expected.</p> <p>EXAMPLE: verify MSIVs are closed.</p>

TABLE 2
ABBREVIATION LIST

ABBR	ABBREVIATED WORD
AC	- ALTERNATING CURRENT
ACCUM	- SAFETY INJECTION ACCUMULATORS
AFW	- AUXILIARY FEEDWATER
AFWP	- AUXILIARY FEEDWATER PUMP
AOV	- AIR OPERATED VALVE
ASDV	- ATMOSPHERIC STEAM DUMP VALVE
AUTO	- AUTOMATIC
AVG	- AVERAGE
AVT	- ALL VOLATILE TREATMENT
BAST	- BORIC ACID STORAGE TANK
CCW	- COMPONENT COOLING WATER
CI	- CONTAINMENT ISOLATION
CIRC	- CIRCULATING
COND	- CONDENSER
CR	- CONTROL ROOM
CRDM	- CONTROL ROD DRIVE MECHANISM
CS	- CONTAINMENT SPRAY
CSD	- COLD SHUTDOWN
CST	- CONDENSATE STORAGE TANK
CV	- CONTAINMENT VESSEL
CVCS	- CHEMICAL AND VOLUME CONTROL SYSTEM
CW	- CIRCULATING WATER
DC	- DIRECT CURRENT
D/G	- DIESEL GENERATOR

TABLE 2
ABBREVIATION LIST
(continued)

ABBR	ABBREVIATED WORD
DI	- DEMINERALIZED WATER OR DEMINERALIZER
DIFF	- DIFFERENTIAL
ECCS	- EMERGENCY CORE COOLING SYSTEM
EH	- ELECTRO HYDAULIC
EOF	- EMERGENCY OFFSITE FACILITY
EVAP	- EVAPORATOR
EXP	- EXPANSION
FW	- FEEDWATER
GPM	- GALLONS PER MINUTE
HCV	- HAND CONTROL VALVE
HP	- HIGH PRESSURE
HSD	- HOT SHUTDOWN
HVAC	- HEATING, VENTILATING, AIR CONDITIONING
HX	- HEAT EXCHANGER
IR	- INTERMEDIATE RANGE
KV	- KILOVOLTS
LAB	- LABYRINTH
LCV	- LEVEL CONTROL VALVE
LOCA	- LOSS OF COOLANT ACCIDENT
LP	- LOW PRESSURE
MCB	- MAIN CONTROL BOARD
MCC	- MOTOR CONTROL CENTER
MD	- MOTOR DRIVEN (reference to pumps)
MOV	- MOTOR OPERATED VALVE



TABLE 2
ABBREVIATION LIST
(continued)

ABBR	ABBREVIATED WORD
MSIV	- MAIN STEAM ISOLATION VALVE
MWt	- THERMAL MEGAWATTS
MWe	- ELECTRICAL MEGAWATTS
NIS	- NUCLEAR INSTRUMENTATION SYSTEM
NR	- NARROW RANGE
NRHX	- NON REGENERATIVE HEAT EXCHANGER
PCV	- PRESSURE CONTROL VALVE
PORV	- POWER OPERATED RELIEF VALVE
PR	- POWER RANGE
PRESS	- PRESSURE
PRT	- PRESSURIZER RELIEF TANK
PRZR	- PRESSURIZER
PWR	- POWER
RCC	- CONTROL RODS (ROD CLUSTER CONTROL)
RCDT	- REACTOR COOLANT DRAIN TANK
RCP	- REACTOR COOLANT PUMP
RCS	- REACTOR COOLANT SYSTEM
RCV	- RADIATION CONTROL VALVE
RECIRC	- RECIRCULATION
REGEN	- REGENATIVE
RHR	- RESIDUAL HEAT REMOVAL SYSTEM
RMS	- RADIATION MONITORING SYSTEM
RTD	- RESISTANCE TEMPERATURE DETECTOR
RV	- REACTOR VESSEL

TABLE 2
ABBREVIATION LIST
(continued)

ABBR	ABBREVIATED WORD
RVLIS	- REACTOR VESSEL LEVEL INDICATING SYSTEM
RWST	- REFUELING WATER STORAGE TANK
Rx	- REACTOR
SI	- SAFETY INJECTION
SIS	- SAFETY INJECTION SYSTEM
S/G	- STEAM GENERATOR
SGTR	- STEAM GENERATOR TUBE RUPTURE
SR	- SOURCE RANGE
SUR	- STARTUP RATE
SV	- SOLENOID VALVE
SW	- SERVICE WATER
Tavg	- AVERAGE TEMPERATURE
Tc	- COLD LEG TEMPERATURE
Th	- HOT LEG TEMPERATURE
Tref	- REFERENCE TEMPERATURE
TC	- THERMOCOUPLE
TCV	- TEMPERATURE CONTROL VALVE
TD	- TURBINE DRIVEN (reference to pumps)
TEMP	- TEMPERATURE
TSC	- TECHNICAL SUPPORT CENTER
V	- VOLTS
VCT	- VOLUME CONTROL TANK
WR	- WIDE RANGE

