PROCEDURES GENERATION PACKAGE

SAN ONOFRE NUCLEAR GENERATING STATION

UNITS 2 AND 3

PROCEDURES GENERATION PACKAGE CONTENTS

PROCEDURES GENERATION PACKAGE

PART A

OVERVIEW AND TECHNICAL GUIDELINES

OVERVIEW AND TECHNICAL GUIDELINES

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1.0 INTRODUCTION

1.1 Purpose

The purpose of the Procedures Generation Package (PGP) is to provide a description of the process used to upgrade the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 and 3) Emergency Operating Instructions (EOI's). The process utilizes upgraded technical, writing, validation, and training bases to develop and implement EOI's.

1.2 Scope

1.2.1 The EOI upgrade process is documented in response to Item 7.2.b, Supplement 1 of NUREG-0737, "Requirements for Emergency Response Capability," as committed to in SCE letter to Mr. D. G. Eisenhut from Mr. K. P. Baskin dated May 13, 1983. The guidance presented in NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures," was used in developing the upgrade process. NUREG-0899 provides guidance for determining that the requirements of Title 10 Code of Federal Regulations, Part 50.34(b)(6)(ii), have been met. NUREG-0899 also provides guidance on the recommendations of NUREG-0737, Item I.C.1 "Emergency Operating Procedures."

1.2.2 The EOI's are based on CEN-152 Rev. 01, Combustion Engineering Emergency Procedure Guidelines. The guidelines were determined to be acceptable for implementation as stated in NRC letter D. G. Eisenhut to R. W. Wells, dated July 29, 1983. The letter transmitted the Safety Evaluation (Report) by the Office of Nuclear Reactor Regulation in the Matter of Combustion Engineering Owners Group Emergency Procedures Guidelines. The EOI upgrade does not attempt to resolve any open Safety Evaluation Report issues associated with CEN-152 Rev. 01. As these issues are resolved, the EOI's will be reviewed and revised as necessary to incorporate the resolutions.

1.2.3 Ongoing work by the NRC and its contractors is continuously being reviewed by the Southern California Edison Company (SCE) and industry groups such as the Institute of Nuclear Power Operations (INPO) for appropriate EOI incorporation.

1.2.4 Previous results of tasks relating to the Safety Parameter Display System; Regulatory Guide 1.97 Rev. 2, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident"; and Detailed Control Room Design Review are not required to be addressed by this package. However, these results are integrated into the design, configuration, and operation of SONGS 2 and 3, and the EOI's.

1.2.5 The parts of this package dealing with the Technical Guidelines, Writer's Guide, Validation Program, and Training Program were written as autonomous sections. This was done to facilitate subsequent incorporation, as applicable, into the station documentation system for administrative control purposes. The various PGP parts may be revised prior to incorporation into the station documentation system. This revision process is not intended to alter nor diminish the integrity of the development process. This would be done to improve directional clarity for the forthcoming revision process vice the completed upgrade process, to incorporate lessons learned in the execution of the upgrade program steps, etc.

1.2.6 The plant configuration for purposes of EOI development is considered to be that corresponding to the SONGS 2 and 3 configuration following completion of the first refueling outage for Unit 2.

1.2.7 Input was obtained from Combustion Engineering (C-E) in the areas of technical guidelines, conversion to plant specific information, determination of safety significant deviations or additions to the guidelines and justification for them, and review and verification of the EOI's.

1.2.8 References stated in the Procedures Generation Package are current for the time of this submittal.

1.3 Background

San Onofre Units 2 and 3 EOI's were initially developed consistent with the guidance of NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations." These EOI's incorporated improved analysis and operator guidance for non-normal events. The basis information was supplied by the Combustion Engineering Owners Group (CEOG) in CEN-128, "Response of Combustion Engineering Nuclear Steam Supply System to Transients and Accidents." Best estimate analysis techniques were used.

The guidance of NUREG-0578 was integrated into and expanded by NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident." NUREG-0660 task I.C.1 was to conduct a short-term program of best estimate accident analyses and procedure revisions. Task I.C.8 was to conduct "Pilot Monitoring of Selected Emergency Procedures for Near Term Operating License Applicants." Task I.C.9 was to conduct a long-term program of EOI revision to include improved writing, engineering, and operational practicalities.

San Onofre Units 2 and 3 EOI's were selected as part of the pilot review program. The EOI's were revised to include improved emergency classification, prioritization of actions, place-keeping aids, and technical and administrative features. The revisions were validated by walk-through on a simulator and in the control room.

NUREG-0737 "Clarification of TMI Action Plan Requirements," was issued to improve the recommendations of NUREG-0660. Item I.C.1 of NUREG-0737 recommends that the events analyzed for EOI bases include multiple failures, that guidelines be prepared to communicate designer information to the procedure writers, and that the EOI's include function oriented procedures as well as the event oriented ones.

In response to Item I.C.1 of NUREG-0737 as clarified in Supplement 1, and as required in Item 7.2.b, this Procedure Generation Package is submitted. It integrates the efforts of the CEOG Emergency Procedure Guidelines, CEN-152, Rev. 01; the Writer's Guide; and previous EOI efforts. Implementation of the first set of EOI's generated as described in this package for Units 2 and 3 is scheduled to be complete prior to the return to power following the first refueling outage for Unit 2.

2.0 UPGRADE PROCESS

2.1 Resources and Organization

San Onofre Units 2 and 3 EOI's will be initially upgraded by a multidiscipline team familiar with the development process and the plant, and consisting of licensed operators, design engineers, and contracted human factors support. A multidisciplined group is necessary to maintain compliance with the requirements set forth in the Technical Guidelines, Writer's Guide, and Validation Program.

2.2 Operating Instruction System

Operating instructions are divided into six groups. These are administrative, normal, surveillance, alarm response, abnormal, and emergency. EOI's are entered whenever the reactor trips or needs to be tripped or a Safety Injection Actuation Signal is initiated.

Emergency events can be divided into two kinds. For the first kind, the operator can ascertain the general type of the event by diagnosing its symptom set from control room indications and knowledge of the plant and recent operating history. For the events where an accurate diagnosis can be made, mitigating instructions are selected and sequenced to strategically address that symptom set (e.g., LOCA, steam generator tube rupture). Since these types of events have been well analyzed and understood, it is possible to write the emergency instructions to optimize the

recovery (i.e., minimize release of radiation, minimize system leakage, reduce risk of core damage, reduce post accident recovery time to full power, etc.).

In the second kind of emergency, the operator is unable to diagnose a recognizable symptom set for the disturbance. This may be due to errors in symptom assessment by the operator, multiple failures in the plant, the occurrence of an event that has not been previously analyzed, or instrumentation failures which distort the symptom picture.

Emergency instructions provide guidance for both kinds of emergencies. Thus, when a reactor trip occurs or should occur, the operator can refer to an instruction which will provide a safe response whether or not a symptom set is identified. In this system, EOI's written to treat specific symptoms are called Optimal Recovery Instructions. The EOI which provides guidance for undiagnosed events for which a reactor trip is required is called the Functional Recovery Instruction. Figure 1 illustrates the sequence of occurrences and decisions which lead to the relation of either an Optimal Recovery Instruction or the Functional Recovery Instruction.

The EOI system is illustrated in Figure 2. The Standard Post Trip Actions are performed following all required or activated trips to evaluate the status of each safety function (e.g., RCS inventory control, RCS pressure control) and to provide immediate actions which can be quickly and easily performed to improve the status of functions in jeopardy. Following the Standard Post Trip Actions, diagnostic actions occur in which the operator attempts to determine the symptom set corresponding to the type of event which is transpiring. Depending on the diagnosis made from the symptom set evolving, the operator will select either an Optimal Recovery Instruction or the Functional Recovery Instruction.

2.3 Process Description

The upgrading and revision of EOI's is a process consisting of several steps. The process steps are: 1) establish a technical basis, 2) develop a writing method, 3) write the EOI's, 4) validate the EOI's, 5) train the operators to use the EOI's, 6) implement the revised EOI's. The process is illustrated in Figure 3. The process elements taken collectively are a description of the methods used to convert the generic guidelines to EOI's, and continuing through actual implementation of the EOI's. The elements are the CEOG Guidelines, the Writer's Guide, a description of the Validation Program, and a description of the Training Program. The four elements are more fully described elsewhere in this Procedures Generation Package.

FIGURE 1

SEQUENCE OF DECISIONS FOR OFF-NORMAL OPERATIONS

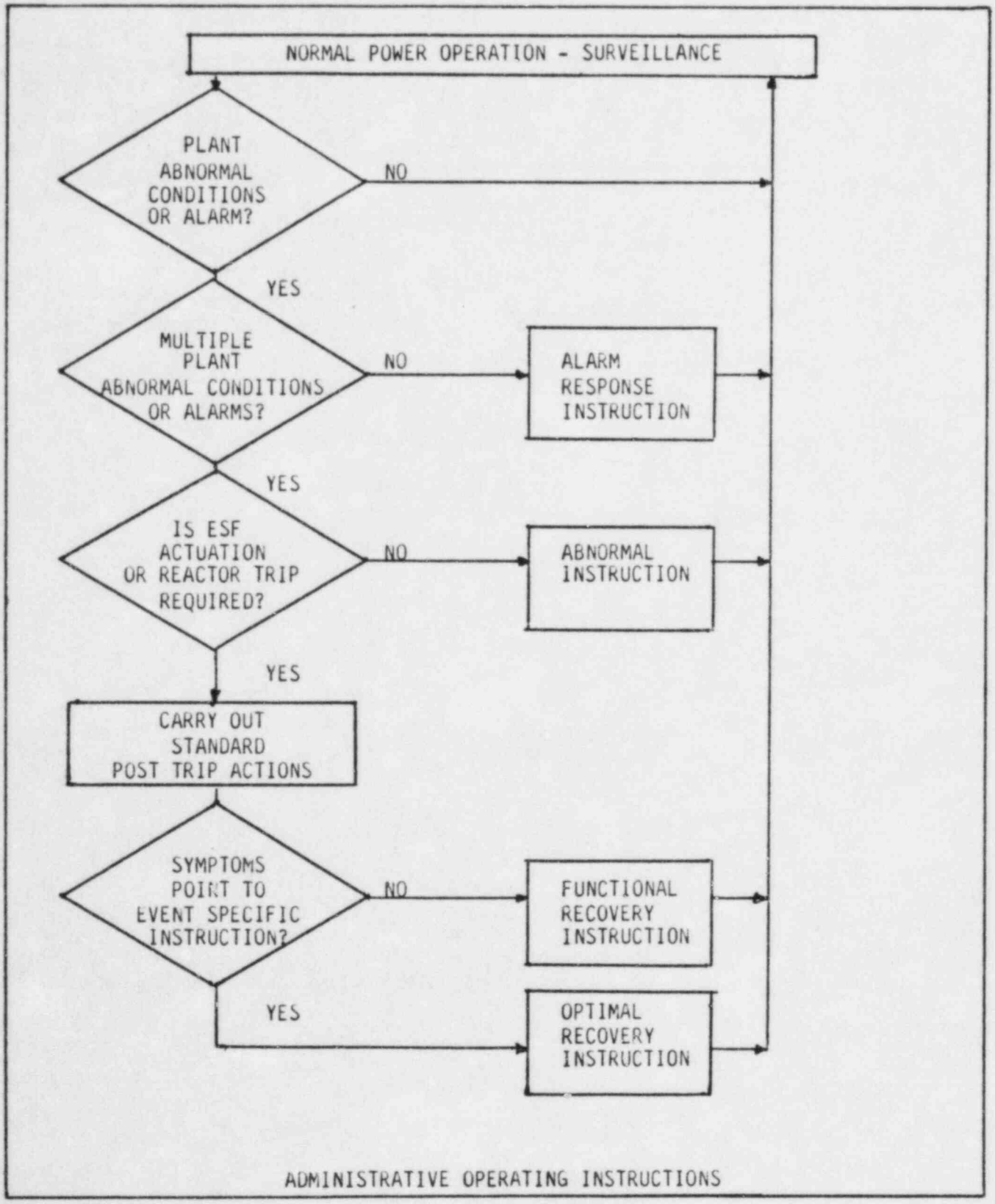

FIGURE 2

OVERVIEW OF THE EMERGENCY OPERATION INSTRUCTION SYSTEM

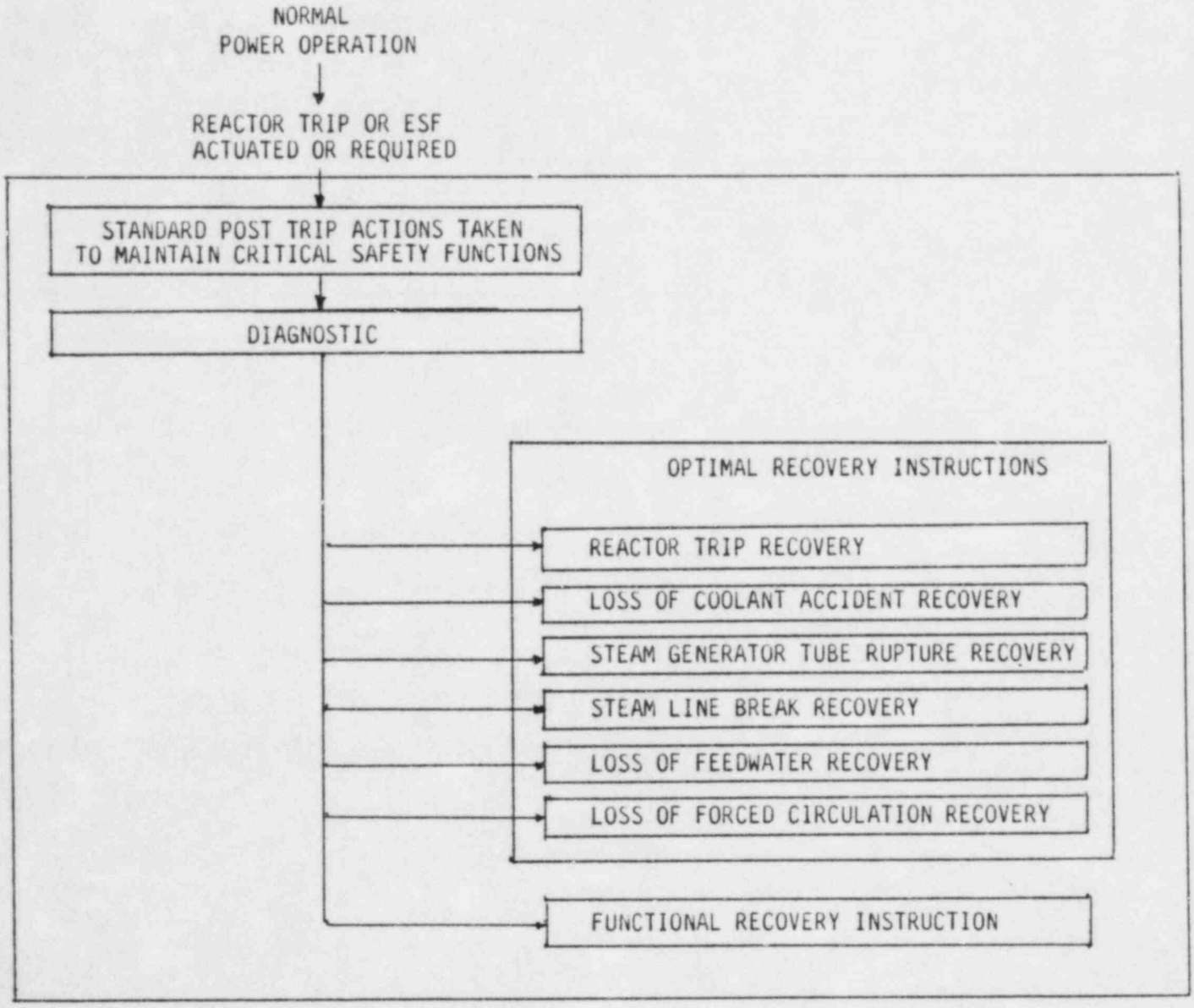

FIGURE 3

EOI UPGRADE PROCESS

	PROCESS STEPS	ELEMENTS	SUPPORTING INFORMATION
1	TECHNICAL BASIS	CEOG GUIDELINES	-- C-E PLANT SPECIFIC GUIDANCE -- PREVIOUS INSTRUCTIONS -- OPERATING HISTORY -- STATION DOCUMENTATION CONFIGURATION -- STATION FACILITIES CONFIGURATION -- CEOG AND LICENSING ISSUES
2	WRITING METHOD	WRITER'S GUIDE	-- INPO WRITER'S GUIDE -- WESTINGHOUSE WRITER'S GUIDE -- HUMAN FACTORS CONSULTANT -- ADMINISTRATIVE PROCEDURES
3	EOI WRITING	-- CEOG GUIDELINES -- WRITER'S GUIDE	OPERATING EXPERIENCE
4	VALIDATION	VALIDATION PROGRAM	-- INPO VALIDATION GUIDE -- INPO VERIFICATION GUIDE
5	TRAINING	TRAINING PROGRAM	-- CEOG LESSON PLANS -- TRAINING MEMORANDA
6	IMPLEMENTATION		ADMINISTRATIVE PROCEDURES

The writing of EOI's is performed in the third process step. The writer is tasked with implementing the CEOG guidelines, the Writer's Guide, and operating experience thereby generating EOI's. The CEOG guidelines and supporting information identify the plant objectives to be met, the systems required, the required level of performance, the required operator actions, and the strategy with which the actions are to be carried out.

The writer also identifies additional strategies, functions, tasks, and analysis needed to prepare the EOI's. The writer or writing team integrates the EOI process elements based on operating experience, writing methods, engineering, plant design features and operating characteristics. While integrating the process elements, the writer adds subsystem and component detail to the EOI. Finally, administrative requirements for emergency plant operation are incorporated into the EOI's.

2.4 Implementation and Revision

EOI implementation as well as subsequent revisions will be accomplished in accordance with Administrative Procedure SOI23-VI-1.0, "Station Orders, Procedures and Instructions - Preparation, Revision, Review, Approval and Publication," and SOI23-VI-1.C.5, "Units 2 and 3 EOI's - Preparation, Revision And Validation." The first procedure delineates the method for indexing, preparation, review, approval and revision of station documents. The latter procedure, developed from applicable PGP parts, provides amplifying direction specific to that portion of the station document system consisting of the Units 2 and 3 EOI's.

Following EOI implementation, the Operations Procedure Group (OPG) will assume responsibility for the EOI's. Administrative controls used by the OPG to prepare, review and issue EOI's as well as other operating instructions is contained in Operating Instruction SO23-O-37, "Operations Procedure Coordination." Items that may affect procedure revision are forwarded to the OPG from a variety of sources. These sources include but are not limited to the following:

- Amendments to the Technical Specifications
- Amendments to the Final Safety Analysis Report
- Proposed Facility Changes
- Design Change Packages
- Temporary Change Notices
- Revision requests submitted to OPG per SO23-O-35, "Use of Procedures"

- o Vendor-supplied information
- o Procedure validation review comments in accordance with SO123-VI-12.0, "Procedure Validation"
- o Feedback of operating experience
- o Review comments from Project Support, Engineering, Management, and Bechtel Power Corporation
- o Combustion Engineering Owners Group

Configuration Control Procedure SO123-XIV-3.1, "Configuration Document Change Control" provides an additional source of input for OPG consideration. This procedure provides a system for identifying, recording, and monitoring completion of changes to identified documents resulting from physical changes to SONGS 2 and 3 and/or other Configuration Documents.

Should the information received by the OPG indicate that an EOI revision is warranted, previously discussed Administrative Procedures SO123-VI-1.0 and SO123-VI-1.0.5 will be utilized in effecting the revision development and implementation.

3.0 TECHNICAL GUIDELINES

3.1 Introduction

Technical guidelines are documents that identify equipment or systems to be operated, and list the necessary steps to (1) mitigate the consequences of transients and accidents, and (2) restore safety functions. They represent the translation of engineering data derived from best estimate transient and accident analyses into information presented in such a way that it can be used to write EOI's.

3.2 Description

San Onofre Units 2 and 3 will use the CEOG Guidelines to upgrade the current EOI's. The process used to convert the generic guidelines to plant specific EOI's is described in Section 2. The guideline information was implemented using the approach described in Section 12 of the CEOG Guidelines. Combustion Engineering performed the following tasks for the initial upgrade of the EOI's.

1. Determination of which guideline steps are compatible with SONGS 2 and 3.
2. Determination of plant specific values to be put into the guideline steps.

3. The addition of plant specific details to the guideline steps.

4. The addition of plant specific steps to encompass and address the systems and actions that are unique to SONGS 2 and 3.

5. The deletion or modificaton of generic steps that cannot be performed at SONGS 2 and 3.

6. The rewording of generic steps to conform to SONGS 2 and 3 standard terminology.

7. The rearrangement of generic steps to improve operator task efficiency provided the technical intent remains unchanged.

8. Determination of safety significant deviations or additions, and justification for them.

The results of these C-E tasks and writer review of these tasks is termed C-E plant specific guidance on Figure 3. The plant specific guidance will be documented by letter from C-E to SCE. Resolution of any comments pursuant to the C-E letter should be accomplished by the EOI upgrade team and a C-E representative. A memorandum to file should be prepared indicating the resolution of SCE writer comments on the C-E plant specific guidance.

The EOI initial upgrade team will augment the C-E plant specific guidance with balance of plant details, and will forward the supportive information for subsequent EOI revisions to the Corporate Document Control System and/or OPG file system.

PROCEDURES GENERATION PACKAGE

PART B

EMERGENCY OPERATING INSTRUCTION WRITER'S GUIDE

EMERGENCY OPERATING INSTRUCTION WRITER'S GUIDE

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EMERGENCY OPERATING INSTRUCTION WRITER'S GUIDE

1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide administrative and technical guidance for the preparation and revision of Emergency Operating Instructions (EOI's) for San Onofre Units 2 and 3.

1.2 General

As discussed in Part A, Section 1.2.5 of this package, the contents of this part of the PGP will be incorporated into the station document system. The current identification of this forthcoming document is Administrative Procedure SO123-VI-1.0.5, "Units 2 and 3 EOI's - Preparation, Revision and Validation."

2.0 COVER PAGE FORMAT

Each EOI has a cover page (See Figure 1) originating from SCE form number, SCE 50-20-1. Information that is generally consistent with the guidance provided in Administrative Procedure SO123-VI-1.0, "Station Orders, Procedures and Instructions - Preparation, Revision, Review, Approval and Publication," is entered on the cover page form for the indicated purpose as follows:

2.1 SAN ONOFRE NUCLEAR GENERATING STATION

identifies the generating station within the Southern California Edison Company to which this document applies.

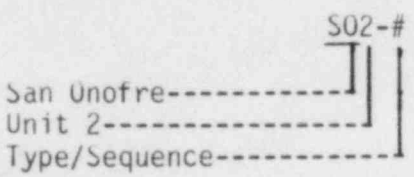
2.2 EMERGENCY OPERATING INSTRUCTION

identifies the type of document within the system of station documents.

2.3 SO#-#

uniquely identifies the document by station, unit and type/sequence number for use and retrival purposes.

EXAMPLE:



2.4 UNIT

identifies the unit to which the document is applicable.

2.5 REVISION #

identifies the revision number.

2.6 PAGE # OF #

identifies the page number and the total number of document pages.

2.7 TITLE

descriptive heading of the procedure scope.

2.8 EFFECTIVE DATE_____

a date is entered in the space provided designating the effectivity of the document.

2.9 PURPOSE

text area contains a narrative description of the procedure objectives followed by a line across the page.

2.10 SYMPTOMS

text area may include alarms, indications, operating conditions, automatic system actions, etc., indicative of the conditions for which the EOI is intended.

2.11 PAGES CHANGED WITH THIS REVISION: (NEW, ALL, #)

indicates the document pages affected by this revision as follows:

- o NEW - first publication of this document,
- o ALL - every page of the document is affected by this revision,
- o (#) - only the indicated page(s) are affected by this revision.

2.12 PREPARED BY:_____ _____
AUTHOR DATE

author signs and dates the document in the space provided prior to final routing.

2.13 APPROVED BY:_____ _____ _____
(NAME) DATE
MANAGER, OPERATIONS

indicated manager signs and dates the document in the space provided during the final approval routing.

2.14 (Initials):(initials):(#)

information entered by the word processor operator as follows:

(Initials): - author's initials in capital letters
(initials): - word processor operator's initials in lower case letters
(#) - word processor document identification number

FIGURE 1

EXAMPLE COVER PAGE

SAN ONOFRE NUCLEAR GENERATING STATION EMERGENCY OPERATING INSTRUCTION SO#-#
UNIT # REVISION # PAGE # OF #

TITLE

EFFECTIVE DATE_____

PURPOSE

[. . . . . .TEXT AREA. . . . . .]

SYMPTOMS

[. . . . . .TEXT AREA. . . . . .]

PAGES CHANGED WITH THIS REVISION: (NEW, ALL, #)

PREPARED BY:_____ _____
AUTHOR DATE

APPROVED BY:_____ _____
(NAME) DATE
MANAGER, OPERATIONS

(Initials):(initials):#

3.0 INSTRUCTION PAGE FORMAT

Each EOI instruction page (See Figure 2) originates from SCE form number SCE 50-20-2. Information from the cover page (2.1.1 through 2.1.7) as well as instructional direction in a two-column format is entered on the instruction page as follows:

3.1 The left-hand column is entitled ACTION/EXPECTED RESPONSE (A/ER).

- The A/ER text contains the action steps to be taken and/or the response which should be obtained after completion of the steps. The action steps consist of top-level and sub-level statements.
- The top-level portion of the action step directs broad actions. The statement begins with a capitalized action verb followed by text in which the first letter of each word is capitalized. The text is underlined and ends with a colon.
- The sub-level portion of the action step directs specific tasks. The statement begins with the first letter of the first word capitalized followed by text.
- When a desired action or response is not obtained, the operator looks to the right-hand column for further direction.

3.2 The right hand column is entitled RESPONSE NOT OBTAINED (RNO).

- The RNO text contains the contingency action steps to be taken if an ACTION/EXPECTED RESPONSE is not obtained. The need for contingency action occurs in conjunction with tasks involving verification, observation and confirmation.
- RNO's should be specified for each circumstance in which the A/ER might not be achieved. RNO's should provide appropriate directions to override automatic controls and to initiate manually what is normally initiated automatically.
- At the completion of the RNO step or substep, the operator returns to the A/ER column and proceeds with the next step or substep, as appropriate, unless specifically directed to another point.

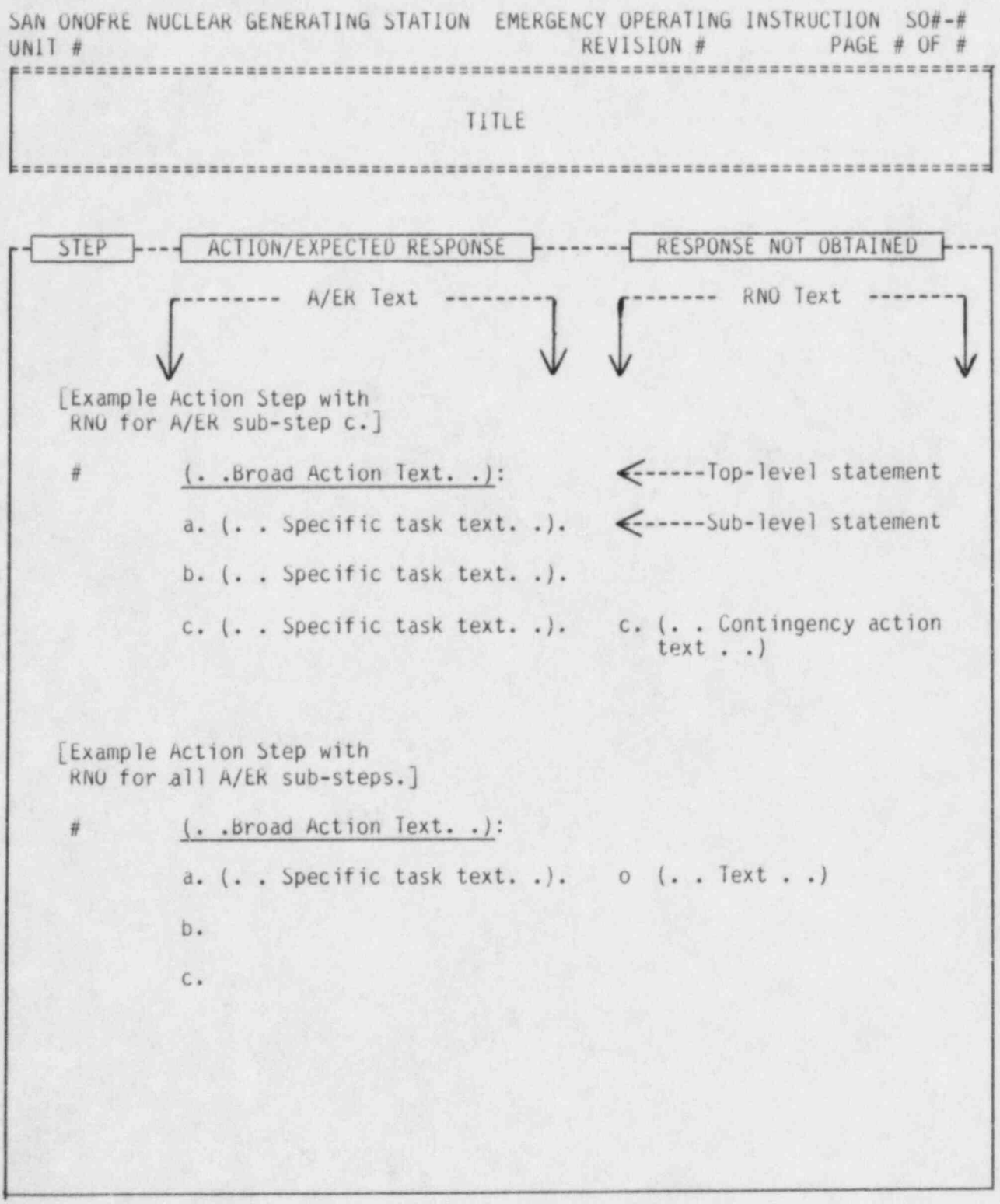
3.3 Action steps are identified by Arabic numerals aligned under the STEP heading.

- o Sub-level statements are identified by lower case letters, aligned under the top-level statement. The same lower case letters identify corresponding sub-steps in both columns. For example, sub-step "c." in the right hand column is the contingency action for sub-step "c." in the left hand column.

- o When multiple left hand column, A/ER sub-steps exist, and the right hand column, RNO sub-step(s) are applicable to all the A/ER sub-steps, the RNO sub-step is not rewritten for each A/ER sub-step, but is written only once, and identified with a bullet (o).

FIGURE 2

EXAMPLE INSTRUCTION PAGE



4.0 WRITING INSTRUCTIONAL STEPS

4.1 General

Instruction steps should be short and exact. The following general rules should be used to meet these objectives:

- Instruction steps should deal with only one idea.
- Short, simple sentences should be used in preference to long, compound, or complex sentences.
- Complex evolutions should be prescribed in a series of steps, with each step made as simple as practicable.
- Objectives of operator actions should be specifically stated, that is, identify exactly that which needs to be done, and to what.
- The objects should be listed for instructional steps that involve an action verb relating to three or more objects.
- Limits should be expressed quantitatively whenever possible.
- Expected results of routine tasks need not be stated.
- When actions are required based upon receipt of an annunciated alarm, the alarm setpoint should be listed for ease of verification.
- When directing an operator to any type of signal, the expected results from reset of the signal should be listed if it would be beneficial to the operator.
- When system response dictates a time frame within which the instruction must be accomplished, prescribe that time frame. However, when possible, avoid using time to initiate operator actions. Operator actions should be related to plant parameters.
- When additional confirmation of system response is considered necessary, required backup readings should be prescribed.

4.2 Level of Detail

Too much detail in the EOI's should be avoided in the interest of being able to effectively execute the instructions in a timely manner. The level of detail desired is that amount a newly trained and licensed operator would need during an emergency condition. The following general rules should be used to meet this objective:

- For control circuitry that executes an entire function upon initiation by the control switch, use the action verb appropriate to the component without further amplification of how to manipulate the control device. Recommended action verbs are as follows:
  - -- For power-driven rotating equipment, use Start, Stop
  - -- For valves, use Open, Close, Throttle Open, Throttle Close, Throttle.
  - -- For power distribution breakers, use Close and Trip.
- For control switches, use the verb "Select" along with the engraved name of the desired position fully capitalized.

  EXAMPLE: Select LOCAL on the diesel generator Mode Selector Switch.

- Standard practices used to observe abnormal results need not be prescribed within procedural steps. For example, observation of noise, vibration, erratic flow, or discharge pressure need not be specified in steps that start pumps.
- Equipment, controls, and displays should be identified in operator language (common usage) terms. These terms should be the same as the panel engraved names.
  - -- If the component is seldom used, or if the component would be difficult to find, location information should be given in parentheses following the identification or represented in a plant arrangement drawing.

4.3 Action Step Classifications and Sequencing

4.3.1 Action steps are classified as either immediate or subsequent as follows:

- o Immediate action steps are those taken without delay when there are indications of an emergency. These actions are taken to: 1) ensure automatic systems are stabilizing the plant and mitigating degraded events, and 2) as a means to evaluate the situation. Operators normally memorize these actions and refer to an EOI to confirm that they were performed. These steps should neither direct the operator to, nor reference another procedure. Immediate actions are found only in the "Standard Post Trip Actions" EOI.

- o Subsequent action steps form the major body of instructional steps within the EOI set. These actions are taken to return the plant to a stable or safe steady-state condition.

4.3.2 Action steps should be sequenced according to CEOG Guidelines. The physical layout and staffing organization of the control room is an important consideration in sequencing tasks for optimal staff movement and monitoring when performing action steps. The administrative controls associated with operator staffing and movement as contained in Station Order S023-0-4, "Station Operation," and Administrative Operating Instruction S023-0-14, "Shift Manning," should be considered in the action step development process. In developing instructional direction, the writer should utilize the following types of steps and associated rules to meet the objectives:

- o Action steps may contain conditional statements that consist of condition word(s) with a specific parameter or object. These steps specify appropriate plant conditions that permit the operator to assess the effectiveness of action steps and their tasks as well as to determine the progress in mitigating the emergency. The condition word(s) are highlighted for operator recognition with emphasis achieved by hyphenation, spacing and capitalization.

  EXAMPLE: Check CET's - LESS THAN 700°F.

  The volume of conditional statement words should be limited so as to obtain uniformity in their usage and meaning as well as action step execution. See Table 4-1 at the end of this section for a list of preferred conditional statement word(s) that should be used.

- Nonsequential steps are those performed strategically anytime the specified condition(s) exist. Within the CEOG guideline system, these steps are termed floating steps. For ease of access and use, these steps are positioned together with a unique step identification, e.g., FS-1, FS-2, etc. These steps should conform to the formatting of other action steps. Direction for the use of floating steps should be contained within the body of the EOI.

  EXAMPLE: Implement floating steps as applicable.

- Recurrent steps are those that require the operator to repeatedly perform a given action, typically, monitoring or controlling some plant parameters. For these steps, the operator should be told when or how often the steps are to be performed, be reminded to perform the steps, and be told what conditions for which the steps should no longer be carried out.

  To implement this activity, consideration should be given to existing forms of recordation for the parameter of interest, e.g., plant computer, control room recorders, etc. To ensure timely monitoring, computer entry information should be provided, e.g., page number, point identification number, etc. Trending activity results should be provided in an attachment.

  To obtain uniformity in usage and meaning as well as action step execution, the word "monitor" should be used in the step.

  EXAMPLE: Monitor Safety Function status per Attachment 1.

- Time-dependent steps are those that are required of the operator at some specified time interval, or some time after another action has taken place. Development of these steps should consider the control room staff capabilities to execute them and should only be used as required.

  Upon entering the EOI set, selected timing information should be recorded in the Standard Post Trip Actions EOI for future use throughout the event. Space for recordation of timing information should be provided with the action step.

  EXAMPLE: Record The Time: [ ]

  The use of operator aids such as checklists or graphs should also be considered when developing these steps.

- Concurrent steps are those which should be performed in parallel with other actions. The text should explicitly indicate which steps are concurrent so that operators can easily refer to both (or all) sets of steps. Development of these steps should consider the control room staff capabilities to execute them.

  To obtain uniformity in usage and meaning as well as action step execution, the word "implement" should be used in the step.

  EXAMPLE: Implement FS-5.

- Diagnostic steps are those which should assist the operator in diagnosis, and provide clear and unambiguous guidance leading to the diagnostic decision, as well as clear and unambiguous referencing to the appropriate section of the EOI or to another EOI. These steps may include the use of flow diagrams, graphs or other operator aids.

  Consideration should be given to the development of diagnostic steps similar in style and content to the format examples illustrated in the CEOG Guidelines and in the current EOI set. The step aid(s) should be sized such that it conforms to the space limitations of an instruction page. However, the fold-out page may also be used as necessary for the display of this type of aid.

- The development of action steps should not be directive by job title. However, when the need arises to provide this type of direction, the job title should be incorporated into the action step.

  EXAMPLE: Direct the Common Control Operator to start the diesel generators.

4.4 Cross-Referencing Within and Among Procedures

Information necessary to perform a task should be consolidated in one place, if possible. The need to go from one procedure (or part) to another during a sequence of actions is disruptive and can cause errors or unnecessary delays. Consequently, once the sequence of actions has begun they should continue without interruption. When the expected sequence of actions in the A/ER column is disrupted, the operator enters the RNO column for additional direction. Therefore, the bulk of cross-referencing occurs here in an effort to fully apprise the operator of alternative actions. The cross-referencing actions may require the operator to skip steps, return to an earlier step, go to another instruction, or perform a step or instruction in parallel with the step being performed. The following rules should be utilized when the need for cross-referencing occurs:

- o Cross-referencing to other steps or instructions from the A/ER column should be avoided unless the direction to do so appears as the last A/ER step.

- o The RNO cross-referencing direction should be positioned in the last line of text.

- o When cross-referencing to another step within the EOI, it is not necessary to utilize the term "of this instruction."

- o Direction to a step should be positioned such that the word step and corresponding identification information are on the same line of text.

- o Direction to another instruction should contain the document identification information as well as the title fully capitalized.

- o Immediate action steps should neither direct the operator to, nor reference another procedure.

4.5 Logic Statements

4.5.1 The logic terms AND, OR, NOT, IF, WHEN, and THEN are often necessary to describe precisely a set of conditions or sequence of actions. When logic statements are used, the logic terms should be highlighted so that the conditions are clear to the operator. Emphasis is achieved by capitalization, underlining, and positioning.

EXAMPLE: IF (. . text . . NOT . . text . .),

THEN (. . text . .).

4.5.2 When action steps are contingent upon certain conditions or combinations of conditions, the step should begin with the words IF or WHEN followed by a description of the condition followed by the action to be taken.

- o IF is used for an unexpected but possible condition.

- o WHEN is used for an expected condition.

- o The logic word THEN should not be used at the end of an action to instruct the operator to perform another action within the same step, because it runs actions together. Actions which are embedded in this way (1) may be overlooked and not be performed, (2) make it difficult to verify the performance of each action step and, (3) can be confused with a logic statement.

EXAMPLE: (Bad Practice) Verify all SI accumulators are isolated, THEN cooldown pressurizer with auxiliary spray.

4.5.3 When attention should be called to combinations of conditions, the word AND should be centered between the description of each condition.

EXAMPLE: (. . . Description Text . . .)

AND

(. . . Description Text . . .)

- In order to simplify a long sequence of conditions, the word AND should not be used to join more than four conditions. If more than four conditions need to be joined, a list format should be used.

  EXAMPLE: IF all of the following conditions are met,

  (. . Condition 1 Text . .)
  (. . Condition 2 Text . .)
  (. . Condition 3 Text . .)
  (. . Condition 4 Text . .)
  (. . Condition 5 Text . .)
  :
  :

  THEN (. . . Action Text . . .)

- When used as a simple or compound conjunction, the word "and" need not be emphasized (e.g., to connect actions in a step, as in: "stop low-head SI pumps and place them in standby").

4.5.4 When attention should be called to alternative combinations of conditions, the word OR should be centered between the description of each condition.

- The use of the word OR, for conditions, should be in the inclusive sense, i.e., any one or all conditions may be present.

- For alternative actions, the use of OR should be minimized and priorities should be established where possible. If priorities cannot be established, and alternative actions are equally acceptable, then it is necessary to specify the exclusive "or".

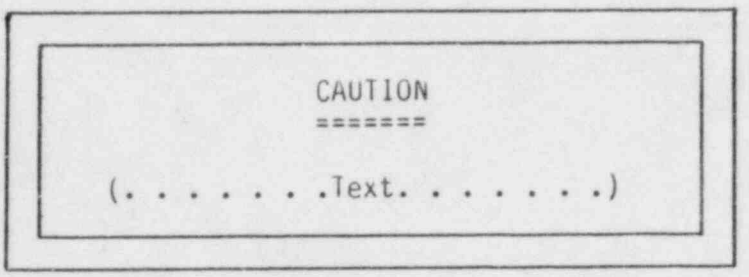
  EXAMPLE: Start either A pump OR B pump, but not both.

4.6 Caution and Note Statements

4.6.1 Cautions

- Caution statements should contain information used to prevent actions which could injure plant personnel, damage equipment, or endanger public health and safety. The following general rules should be considered in developing cautions:
  - -- The text should be accurate and concise.
  - -- The text should contain only information relevant to the caution.
  - -- The text should not contain operator actions.
- Highlighting the caution statements ensures the operator will observe the caution before performing the step(s). The following general rules for formatting should be used to meet this objective:
  - -- Cautions which apply to the entire instruction should be positioned on the first instruction page before the first action step.
  - -- Cautions that refer to action step(s) should be positioned immediately before the step(s) and on the same page.
  - -- The caution text is positioned within a double lined box, centered on the page. The left and right box borders should be approximately one inch from the page borders. The top and bottom box border dimension is determined by the text volume.
  - -- The word "CAUTION" is positioned within the box, centered, capitalized and underlined with two broken lines.

EXAMPLE:



4.6.2 Note Statements

- o Note statements remind operator(s) of supplemental information such as correct sequence. The following general rules should be considered in developing notes:
  - -- The text should be accurate and concise.
  - -- The text should contain only information relevant to the note.
  - -- The text should not contain operator actions.
- o Highlighting the note statements ensures the operator will observe the note before performing the step(s). The following general rules for formatting should be used to meet this objective:
  - -- Notes which apply to the entire instruction should be positioned on the first instruction page before the first action step.
  - -- Notes that refer to action step(s) should be positioned immediately before the step(s) and on the same page.
  - -- The note text is positioned within a single-lined box, centered on the page. The box border dimensions are determined by the text volume.
  - -- The word "NOTE" is positioned within the box to the left of the first line of text, capitalized and followed with a colon.

    EXAMPLE:

NOTE: (. . . Text . . .)

TABLE 4-1

PREFERRED CONDITIONAL STATEMENT WORD(S)

PREFERRED WORD(S)		DEFINITION
AT PRESET POSITION	-	pre-established position, e.g., AFW control valves positioned for automatic operation.
AUTO	-	system functions without manual action.
AVAILABLE	-	a system, subsystem, train, component, or device will operate and can be used as desired; however, it need not be operating.
BYPASS	-	a switch position to defeat a signal from initiating some further action, or the condition which results from manipulation of the switch.
CLEAR	-	annunciator is not alarming, or is able to be reset.
CLOSED	-	fully shut; for a breaker, means power is going to the component.
GREATER THAN	-	of larger magnitude.
INITIATED	-	system or component is functioning as a result of meeting some start criteria.
INSERTED	-	fully in place, e.g., control rods fully inserted.
LESS THAN	-	of less magnitude.
LOWERING	-	becoming less in magnitude.
OFF/ON	-	switch positions to supply or remove power.
OPENED	-	fully open; for a breaker, means no power going to the component.

TABLE 4-1
(Continued)

PREFERRED CONDITIONAL STATEMENT WORD(S)

PREFERRED WORD(S)		DEFINITION
OPERABLE	-	a system, subsystem, train, component, or device is capable of performing its specified function(s) in the intended manner. Implicit in this definition is the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing related support function(s).
OPERATING	-	a system, subsystem, train, component, or device is in operation and is performing its specified function(s).
OVERRIDE	-	a switch position which results in signal interruption to a component, thereby permitting manual operation of that component, or the condition which results from manipulation of that switch.
POWERED	-	energized electrically.
RESET	-	breaker or control circuit repositioned to prepare for future operation.
RISING	-	raising or becoming greater in magnitude.
STABLE	-	condition that is not deviating significantly.
TRENDING TO	-	parameter rising or lowering in a controlled manner to a stated value.

5.0 MECHANICS OF STYLE

5.1 Vocabulary

The simplest, most familiar, and most specific words that accurately convey the intended meaning should be used. Operators should understand all words used in the procedures. To achieve this overall objective, the following guidance should be followed:

- Use short words that are common in ordinary conversation.
- Use simple well-defined words.
- Use words and meanings consistently throughout the instructions.
- Use words with unambiguous meanings.
- Use concrete and specific words that describe precisely what the operator is to do or observe.
- Use nomenclature and idioms that the operator is trained to use and which are standard in the nuclear power industry.
- Use words which are familiar to control room operators.
- Use units of measure that are familiar to the operator. The operator should be able to relate the units to those referenced on plant instrumentation without conversion, translation or mental manipulation.
- Avoid using adverbs that are difficult to define in a precise manner (e.g., frequently, slowly).
- See Table 5-1 at the end of this section for a list of preferred verbs that should be used.

5.2 Abbreviations And Acronyms

The use of abbreviations and acronyms should be minimized as they may be confusing to those who are not thoroughly familiar with them. They may be used where necesary for time and space considerations provided their meaning is clear to the operator without the use of a glossary. The following general rules should be used to meet this objective:

- Where applicable, use the same abbreviations and acronyms as marked on equipment.

5.2 Abbreviations And Acronyms (continued)

- Uniformly capitalize abbreviations and acronyms. Omit the periods except in cases where the omission might result in confusion.
- Pluralization of abbreviations/acronyms should be accomplished by following the last letter with an apostrophe and then a lower case letter "s".
- See Table 5-2 at the end of this section for a list of preferred abbreviations and acronyms.

5.3 Spelling And Hyphenation

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

5.3.2 The following rules should be used for hyphenation:

- Hyphens should be used between elements of a compound word when usage calls for it. When doubt exists, restructure the compound word to avoid hyphenation.
- In compound numerals from twenty-one to ninety-nine
- In fractions; e.g., one-half, two-thirds
- In compounds with "self"; e.g., self-contained, self-lubricated
- When the last letter of the first word is the same vowel as the first letter of the second word. As an alternative, use two words; e.g., fire-escape or fire escape
- When misleading or awkward consonants result by joining the words; e.g., bell-like
- To avoid confusion with another word; e.g., re-cover to avoid confusion with recover, pre-position to avoid confusion with preposition
- When a letter is linked with a noun; e.g., X-ray, O-ring, U-bolt, I-beam
- To separate chemical elements and their atomic weight; e.g., Uranium-235, U-235

5.3.2 (continued)

- o A hyphen with a space on both sides is utilized for emphasis in conditional statements (See 4.3.2).
- o A hyphen should not be used in front of a number where it could be confused as a minus sign, e.g., -5°

5.4 Punctuation

The rules of punctuation for standard American English should be used as necessary to aid reading and to prevent misunderstanding. Punctuation helps to reveal the precise relationship among thoughts and communicate the writer's intention. Accordingly, consistent and proper use of punctuation will lessen the chances that operators might misinterpret what the writer intended to say. The following general rules should be used to meet this objective:

- o Text should be selected to require a minimum of punctuation. When extensive punctuation is necessary for clarity, the text should be rewritten.
- o A colon should be used to end all top-level statements, and to indicate that a list of items follows.
- o Commas should be used to separate instruction designators from the instruction title.

  EXAMPLE: SO2-#, LOSS OF COOLANT ACCIDENT.

- o A hyphen with a space on both sides is utilized for emphasis in conditional statements (See 4.3.2).
- o A hyphen should not be used in front of a number where it could be confused as a minus sign, e.g., -5%.

5.5 Numerical Values

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

- o Arabic numerals should be used.
- o For numbers less than one, the decimal point should be preceded by a zero.
- o The number of significant digits should be equal to the number of significant digits available from the display and the reading precision of the operator.

5.5 Numerical Values (continued)

- Units of measure should be specified for numerical values of process variables. They should be the same units used on the control room displays, e.g., use PSIA instead of PSI.

- References to partial-hour time limits in time dependent steps should be expressed in fractional from. Write out fractions as hyphenated numbers.

  EXAMPLE: 1-1/2 Hours, NOT 1.5 Hours

- Acceptance values should be specified in such a way that addition and subtraction by the user is avoided if possible. This can generally be done by stating acceptance values as limits, thereby avoiding use of the symbol $\pm$.

  EXAMPLE: Between 31% AND 35%

- Numerical values from twenty-one to ninety-nine as well as fractions should be hyphenated when written out.

- The numerical value and associated unit of measure should be positioned on the same line of text.

- A hyphen should not be used in front of a number where it could be confused as a minus sign, e.g., -5%.

5.6 Calculations

The operator's use of formulas and need for calculations within the EOI's should be minimized because of the time they require and because they increase the possibility of operator error. The following general rules should be used to meet this objective:

- When calculations are required they should be as simple as possible, and space should be provided for the calculations.

- Consideration should be given to utilizing a chart or graph in lieu of a calculation.

TABLE 5-1

PREFERRED VERBS

PREFERRED VERB	DEFINITION
ALIGN	- To arrange a system for operation, or to adjust an electronic system to a set of standards.
ATTEMPT TO	- To make an effort to do.
CHECK	- To determine what condition exists. Implies any of the conditions described could be expected.
CLOSE	- For valves, to position fully shut; for electrical devices, to make a connection to a power supply.
DEPRESS	- To press down.
ENSURE	- To verify a specified condition exists, and if it does not, to manually take the necessary steps to establish the condition.
ESTABLISH	- To take the necessary steps to obtain the desired condition.
EVALUATE	- To assess conditions based upon observations, outside inputs, and experience.
GO TO	- To leave this instruction step and follow referenced instruction until directed back to this or another instruction.
IMPLEMENT	- To place an instruction into effect in parallel with this instruction.
ISOLATE	- To set apart or separate from a system in use.
LOCALLY	- To take an action outside the control room.
LOWER	- To reduce in magnitude.
MAINTAIN	- To keep in a certain condition or position.

TABLE 5-1
(continued)

PREFERRED VERBS

PREFERRED VERB	DEFINITION
MONITOR	- To observe for conditions or trends.
OPEN	- For valves, to position for full flow.
RAISE	- To increase in magnitude.
RECORD	- To write down manually or via an automatic device.
RE-EVALUATE	- To evaluate again.
RESET	- To reposition a breaker or control circuit for future operations.
SELECT	- To manipulate controls or switches to a desired condition.
START	- To perform actions necessary to set into operation.
STOP	- To cause to cease operating.
TERMINATE	- To bring to an end; to stop.
THROTTLE	- To position so as to limit flow to less than full.
TRANSFER	- To shift electrical or fluid supply from one source to another.
TRIP	- To bring to an abrupt and complete ceasation; to manually activate a semi-automatic feature, or to open an electrical breaker.
VERIFY	- To confirm that an expected condition exists.

TABLE 5-2

PREFERRED ABBREVIATIONS AND ACRONYMS

ABBREVIATION/ACRONYM	DEFINITION
ADV	- Atmospheric Dump Valve
AFW	- Auxiliary Feedwater
CET	- Core Exit Thermocouple
CIAS	- Containment Isolation Actuation Signal
CSAS	- Containment Spray Actuation Signal
EFAS	- Emergency Feedwater Actuation Signal
^{o}F	- Degrees Fahrenheit
FR	- Functional Recovery
FS	- Floating Step
GPM	- Gallons Per Minute
HPSI	- High Pressure Safety Injection
LOCA	- Loss of Coolant Accident
LOF	- Loss of Feedwater
LOFC	- Loss of Forced Circulation
LVL	- Level
MFIV	- Main Feedwater Isolation Valve
MSIS	- Main Steam Isolation System
MSIV	- Main Steam Isolation Valve
PSIA	- Pounds Per Square Inch Absolute
PSIG	- Pounds Per Square Inch Gauge
PZR	- Pressurizer

TABLE 5-2
(continued)

PREFERRED ABBREVIATIONS AND ACRONYMS

ABBREVIATION/ACRONYM	DEFINITION
RAS	- Recirculation Actuation Signal
RCP	- Reactor Coolant Pump
RCS	- Reactor Coolant System
RTR	- Reactor Trip Recovery
RWST	- Refueling Water Storage Tank
SBCS	- Steam Bypass Control System
SDC	- Shutdown Cooling
S/G	- Steam Generator
SGTR	- Steam Generator Tube Rupture
SI	- Safety Injection
SIAS	- Safety Injection Actuation Signal
SIT	- Safety Injection Tank
SLB	- Steam Line Break
SO	- San Onofre
SPTA	- Standard Post Trip Actions
T	- Temperature - as used in Delta T
Tave	- Average Temperature
TSC	- Technical Support Center

6.0 OPERATOR AIDS

6.1 Figure Development

Figures may include graphs, drawings, diagrams, illustrations, flowcharts and decision aids. These aids should be self-explanatory, legible, and readable under the expected conditions of use and within the reading precision of the operator. The following rules should be considered in figure development.

- Capitalization should be used for references to figures and their titles within text material.
- Sequential arabic numbers should be assigned to figures. The sequence should correspond with the order of their reference in the text. The symbol "#" and abbreviation "No." are unnecessary and should not be used. The number alone suffices.

  EXAMPLE: Figure 1, Figure 2, etc.

- Figures should be located on the page following their reference where practicable. Commonly used figures should be located following the end of the action steps.
- The figure number and title should be centered above the figure using standard station word processing equipment.
- The figure should be positioned within the page margins.
- The figure should be of sufficient size to offer good readability.
- The figure presentation should be clear and simple.
- Typed labels with arrows should be used to identify items within the figure. Handwritten labels should be printed, using all capitals, with letters and numbers at least 1/8-inch high.
- Figure elements should be oriented naturally. For example, height on a graph should be along the vertical axis.

6.2 Table Development

The following rules should be considered in table development.

- Capitalization should be used for references to tables and their titles within text material.

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

  EXAMPLE: Table 1, Table 2, etc.

- Tables should be located on the page following their reference where practicable. Commonly used tables should be located following the end of the action steps.

- The table number and title should be centered above the figure using standard station word processing equipment.

- Standard station word processing equipment should be used for entering table text.

- Each column should contain a centered heading. The first letter of each word in the column headings should be capitalized.

- Horizontal lines should be placed above and below the column headings; vertical lines, while desirable, are not required.

- Tabular headings should be aligned as follows:

  --horizontally by related entries.

  --vertically by decimal point for numerical entries.

  --vertically by first letter for word entries.

- Double spacing should be used between horizontal entries to separate them. Use horizontal lines also, if desired, but if used, draw double horizontal lines above and below the column headings.

- Table cells should not be vacant. If no entry is necessary, "N.A." should be entered to indicate not applicable.

6.3 Fold-Out Pages

The fold-out page should follow the last instruction page. The fold-out page is intended for the display of information that would be appropriate to have available throughout the EOI usage period. The format and spacing of the contents on the fold-out page vary according to the quantity of information required on the page.

6.4 Place-Keeping Aids

It is important that operators have a means of keeping track of the current step while they are performing the designated actions. Various recordation needs associated with monitoring and timing activity steps also demonstrate the need to write on the EOI's. To satisfy these needs, EOI pages should be placed in sheet protectors that can be marked on with a grease pencil.

6.5 Rotation of Pages

If pages need to be rotated (turned sideways), follow these rules:

- o Place the top of the rotated page at the normal lefthand edge.
- o Do not rotate the page margins.
- o Do not rotate page identification and numbering.

6.6 Reduced Pages

Avoid using reduced pages as they are more difficult to read. If used, the final size of reduced pages should be standard page size to improve readability.

6.7 Attachments

Attachments may be in the form of figures, tables, fold-out pages, amplifying task discrete action steps or other information determined to be necessary for proper EOI execution. The following rules should be considered in attachment preparation:

- o Sequencing of the attachments should consider their order of use within the EOI, their frequency of use as well as their useability.
- o Sequential arabic numbers should be assigned to the attachments. The symbol "#" and abbreviation "No." are unnecessary and should not be used. The number alone suffices.

  EXAMPLE: Attachment 1, Attachment 2, etc.

- o Attachment formatting should be consistent with the applicable writer's guide section(s) e.g., figures shculd be formatted in accordance with Section 6.1, etc.

7.0 TYPING FORMAT

The following general rules should be used to obtain uniformity in the presentation, clarity, and readability of EOI typed contents:

- o Text should be entered onto preprinted form SCE 50-20-1 and SCE 50-20-2 as applicable.

- Typing should be accomplished utilizing standard station word processing equipment.
- Breaking of words should be avoided.
- Steps should be completed on the same page they begin.
- Capitalization, underlining, positioning and punctuation are methods of highlighting instructional text and should therefore be typed as indicated by the author.

7.1 Page Arrangement

7.1.1 The contents of the cover page and instruction page should be positioned in accordance with the following:

- Cover Page Contents:

Line 1 SAN ONOFRE NUCLEAR GENERATING STATION
EMERGENCY OPERATING INSTRUCTION
SO#-#

Line 2 UNIT #
REVISION #
PAGE # OF #

Line 5 TITLE

Line 9 EFFECTIVE DATE_____ (Cover page only)

Line 12 PURPOSE

Line 14 Text Area

Line 21 SYMPTOMS

Line 23 Text area

Line 42 PAGES CHANGED WITH THIS REVISION: (NEW, ALL, #)

Line 46 PREPARED BY:_____ _____
AUTHOR DATE

Line 51 APPROVED BY:_____ _____
(NAME) DATE
MANAGER, OPERATIONS

Line 56 (Initials):(initials):(#)

7.1.1 (continued)

- Instruction Page Contents:

Line 1 SAN ONOFRE NUCLEAR GENERATING STATION
EMERGENCY OPERATING INSTRUCTION
SO#-#

Line 2 UNIT #
REVISION #
PAGE # OF #

Line 5 TITLE

Lines 12 thru 62 Action Step Text

7.1.2 Horizonal text positioning should be accomplished in accordance with the following rules:

- o Page margins are specified by the printed borders. Allow at least two typed spaces between the text and borders.
- o The step number should be aligned under the STEP column.
- o The A/ER and RNO text should be aligned under their respective column titles.

8.0 REPRODUCTION AND DOCUMENT CONTROL

8.1 Reproduction and document control should be in accordance with existing Station Administrative controls.

PROCEDURES GENERATION PACKAGE

PART C

VALIDATION PROGRAM DESCRIPTION

VALIDATION PROGRAM DESCRIPTION

TABLE OF CONTENTS

LIST OF FIGURES

VALIDATION PROGRAM DESCRIPTION

1.0 INTRODUCTION

1.1 Purpose

The purpose of the Validation Program is to verify that the EOI's can be accurately and efficiently carried out and are adequate to mitigate transients and accidents.

1.2 General

As discussed in Part A, Section 1.2.5 of this package, the contents of this part of the PGP will be incorporated into the station document system. The current identification of this forthcoming document is Administrative Procedure SOI23-VI-1.0.5, "Units 2 and 3 EOI's - Preparation, Revision and Validation."

1.3 Scope

The validation should verify that the following objectives are met:

a) The EOI's accurately reflect the CEOG Guidelines.

b) The EOI's accurately reflect the Writer's Guide.

c) The EOI's use language and level of information presentation that is compatible with the minimum number, qualifications, training, and experience of the licensed operators.

d) The EOI's reference controls, equipment, and hardware that are available. This equipment uses the same designation, units of measure, and operation that is specified in the EOI's.

e) The EOI's can be understood and followed without confusion, delays, or errors.

f) The EOI's are assured to guide the licensed operator in mitigating transients and accidents.

The validation will not verify the accuracy, efficiency, or adequacy of the CEOG Emergency Procedure Guidelines, as this was previously accomplished in CEN-152 Rev. 01 and submitted to the NRC in CEOG letter RWW-83-15 to D. G. Eisenhut, NRC, from R. W. Wells, Chairman C-E Owners Group, dated March 19, 1983.

2.0 VALIDATION PROCESS

The validation of EOI's should consist of two methods, desk top reviews and simulator exercises.

2.1 Desk Top Reviews

- The desk top reviews should be performed prior to simulator exercises and should meet the following criteria:

  a) The EOI's accurately reflect the CEOG Guidelines.

  b) The EOI's accurately reflect the Writer's Guide.

  c) The EOI's use language and level of information presentation that is compatible with the minimum number, qualifications, training, and experience of the licensed operators.

  d) The EOI's reference controls, equipment, and hardware that are available.

- The desk top reviewers should consist of licensed operators, design engineers, and other personnel familiar with the EOI subject matter and Writer's Guide. The author of an EOI should not perform the only desk top review of that EOI.

- The reviewer should compare the EOI's against the criteria provided in Figure 1. Role playing is not required for this effort. Identified discrepancies from this review should be documented as illustrated in Figure 2. Discrepancies should be resolved prior to the simulator exercises and must be resolved prior to the EOI's being issued.

- In addition to the desk top review, another documented EOI review and discrepancy resolution cycle will be performed in accordance with Station Administrative Procedure SO123-VI-1.0, "Station Orders, Procedures, and Instructions - Preparation, Revision, Review, Approval, and Publication."

- Also, Combustion Engineering will conduct a review of the upgraded EOI's. This review will be documented by letter from C-E to SCE. Resolution of any comments pursuant to the C-E letter should be accomplished by the EOI upgrade team and a C-E representative. A memorandum to file should be prepared indicating the resolution of the comments detailed in the C-E letter.

FIGURE 1

EXAMPLE DESK TOP REVIEW CRITERIA

I. PROCEDURE - GENERAL

A. Written Correctness

1. Legibility

a. Is the information visible and reproducible on all instruction pages?

b. Are the test, tables, graphs, figures, and charts legible to the reader?

2. EOI Format Consistency

a. Do the following sections exist in each EOI?

1) PURPOSE?

2) SYMPTOMS?

3) OPERATOR ACTIONS?

4) FIGURES?

b. Is the operator actions section presented in a dual column?

c. Is the page layout consistent with the Writer's Guide/examples?

3. Identification Information

a. Is the instruction title accurate and descriptive?

b. Is a cover sheet provided?

c. Does each page contain the correct:

1) instruction designator?

2) revision number?

3) page number?

d. Does the instruction have all its pages in the correct order?

II. STEPS, CAUTIONS, NOTES

A. Written Correctness

1. Information Presentation

a. Are instruction steps numbered correctly?

FIGURE 1

EXAMPLE DESK TOP REVIEW CRITERIA

(continued)

b. Are instruction steps constructed so that:
   1) Each step deals with only one idea?
   2) Sentences are short and simple?
   3) Operator actions are explicit?
   4) Objectives of operator action are specifically or adequately stated?
   5) If there are three or more objects, they are listed?
   6) Punctuation and capitalization is proper?
   7) Abbreviations are correct and understandable to the operator?

c. Do instruction steps make proper use of logic structure?

d. When an action instruction is based on receipt of an alarm, is the setpoint of the alarm identified?

e. Are cautions used appropriately?

f. Are cautions properly placed?

g. Are cautions constructed so that:
   1) they do not contain operator actions?
   2) they do not use extensive punctuation?
   3) they make proper use of highlighting?

h. Are notes properly used?

i. Are notes properly placed?

j. Are notes worded so that they do not contain operator actions?

k. Are numerical values properly written?

l. Are values in the instruction specified in such a way that mathematical operations are appropriate for the user? (Is a chart or graph provided in the instruction for necessary operator calculations?)

m. Are units of measurement in the EOI the same as those on instruments?

FIGURE 1
EXAMPLE DESK TOP REVIEW CRITERIA
(continued)

2. Procedure Referencing and Branching
   a. Do the referenced and branched procedures identified in the EOI's exist for operator use?
   b. Is the use of referencing minimized?
   c. Are referencing and branching instructions correctly worded?
      1) "go to"
      2) "implement"
   d. Do the instructions avoid routing users past important information such as cautions?
   e. Are the exit conditions compatible with the entry conditions of the referenced or branched procedure?

B. Technical Accuracy
   1. Entry Conditions
      a. Are the entry conditions of the EOI correct?
      b. If additional entry conditions have been added, are they:
         1) unique entry conditions?
         2) not excessive in number?

   2. Quantitative Information
      a. Do the quantitative values include tolerance bands?

   3. Plant Hardware Information
      a. Is the plant hardware specified in the EOI available for operator use?
         1) equipment?
         2) controls?
         3) indicators?
         4) instrumentation?

FIGURE 2

EXAMPLE DESK TOP REVIEW DOCUMENTATION

DISCREPANCY NUMBER: _____

TITLE _____
(EOI #/REV. #)

DISCREPANCY DESCRIPTION:

_____

_____

_____

_____

_____

REVIEWER: _____ DATE: _____
(Printed Name)

REVISION REQUIRED: _____NO _____YES:_____ Prior to implementation
_____ Future

RESOLUTION:

_____

_____

_____

_____

_____

_____

_____

EOI REVISED BY: _____ DATE: _____
(Printed Name)

cc: REVIEWER

2.2 Simulator Exercises

- The simulator exercises should meet the following criteria:

  a) The equipment referenced in the EOI's use the same designation, units of measure, and operation that is used in the EOI's.

  b) The EOI's can be understood and followed without confusion, delays, or errors.

  c) The EOI's are assured to guide the licensed operator in mitigating transients and accidents.

- Simultaneous, sequential multiple failures as well as uncomplicated events should be selected to exercise the maximum number of EOI's. The following scenario selection criteria should be used to meet this objective:

  a) exercise all EOI entrances, exits, and branches.

  b) exercise the EOI standard post trip actions for all optimal recovery instructions.

  c) exercise the EOI diagnostic for all optimal recovery instructions.

  d) exercise the safety function checks and functional recovery instruction usage.

  e) exercise the use of the functional recovery instruction for sequential or simultaneous failures.

  f) exercise the EOI's during time dependent operations.

  g) exercise the EOI's to assess the criteria in Figure 4.

  The simulator exercise scenarios should be documented as illustrated in Figure 3. The simulator event sequence should consist of applicable information tracking the event development from initiation to termination. The source of this information should be available automatic simulator recordation documentation. This documentation should be attached to the exercise form.

- The simulator exercise observation team should consist of licensed operators, design engineers, trainers, and simulator experts familiar with the EOI subject matter. The observation team should be familiar with the simulator, the exercise scenarios, and the observation criteria prior to running the exercises.

FIGURE 3

EXAMPLE SIMULATOR EXERCISE SCENARIO DOCUMENTATION

TITLE	EOI #/REV. #

DATE: _____

EOI FEATURES TO BE EXERCISED: _____

SCENARIO DESCRIPTION: _____

INITIAL PLANT CONDITIONS: _____

OBSERVATION TEAM MEMBERS

POSITION	NAME

CONTROL ROOM TEAM MEMBERS

POSITION	NAME

SIMULATOR EVENT SEQUENCE (AFTER EXERCISE):

- A minimum complement of control room staff should be used for the exercises. The control room team should be briefed on the EOI's and their use prior to the start of the simulator exercises. They should not be briefed on the scenarios to be run or the expected operator performance.

- The San Onofre plant specific simulator will be used. Any configuration differences should be reviewed by the observation team and control room team during exercise briefing and debriefing sessions.

- The observation and control room teams should be debriefed after the simulator exercise for the purpose of identifying and defining discrepancies. The observation team leader will moderate the discussion utilizing the following techniques to identify and define discrepancies:

  a) present problems and discrepancies -- verbal explanations may be augmented by videotape displays of problems

  b) present possible causes for problems

  c) present potential solutions to problems

  d) present explanations of possible causes and potential solutions

  Identified discrepancies from this debriefing should be documented as illustrated in Figure 5. Discrepancies must be resolved prior to the EOI's being issued.

FIGURE 4

EXAMPLE SIMULATOR EXERCISE CRITERIA

I. USABILITY

A. LEVEL OF DETAIL

1. Was there sufficient information to perform the specified actions at each step?

2. Were the alternatives adequately described at each decision point?

3. Could the operator use labeling, abbreviations, and location information as provided in the EOI's to find the needed equipment?

4. Were the EOI's missing information needed to manage the emergency condition?

5. Were the contingency actions sufficient to address the symptoms?

6. Could the operator use the titles and numbers to find referenced and branched procedures?

B. UNDERSTANDABILITY

1. Was the EOI read easily?

2. Were the figures and tables easily and accurately read?

3. Were the values on figures and charts easily determined?

4. Were caution and note statements complied with?

5. Were the EOI steps complied with?

II. WORKABILITY

A. PLANT COMPATIBILITY

1. Were the actions specified in the procedure able to be performed in the designated sequence?

2. Did the operator find alternate success paths not included in the EOI's?

3. As specified in the EOI's, could the operator obtain the necessary information from the plant instrumentation that is provided?

FIGURE 4

EXAMPLE SIMULATOR EXERCISE CRITERIA
(continued)

4. Did the diagnostic and symptoms provide adequate information for the operator to select the applicable EOI?

5. Were the EOI entry conditions appropriate for the plant symptoms seen by the operator?

6. Did the operator have to use information or equipment not specified in the EOI's to accomplish the task?

7. Did the plant responses agree with the EOI basis?

8. Were the instrument readings and tolerances consistent with the instrument values stated in the EOI?

9. Were the EOI's physically compatible with the work situation (too bulky to hold, binding wouldn't allow them to lie flat in work space, no place to lay the EOI's down to use)?

B. OPERATOR COMPATIBILITY

1. If time intervals are specified, were the procedure action steps able to be performed on the plant within or at the designated time intervals?

2. Were the procedure action steps able to be performed by the operators?

3. If specific actions were assigned to individual personnel, did the EOI's help coordinate the actions where necessary?

4. Were the operators able to follow the designated action step sequences?

5. Could the operator find the particular step or set of steps when required?

6. Could the operator return to the procedure exit point without omitting steps when required?

7. Could the operator enter the branched procedure at the correct point?

8. Could the operator exit from a given EOI at the correct point?

9. Were physical conflicts between operators minimized?

10. Were action steps sequenced to avoid unintentional duplication?

FIGURE 5

EXAMPLE DISCREPANCY DOCUMENTATION

DISCREPANCY NUMBER: _____

TITLE _____
(EOI #/REV. #)

DISCREPANCY DESCRIPTION:

_____

_____

_____

_____

_____

OBSERVER/OPERATOR: _____ DATE: _____
(Printed Name)

REVISION REQUIRED: ____NO ____YES:____ Prior to implementation
____ Future

RESOLUTION:

_____

_____

_____

_____

_____

_____

_____

EOI REVISED BY: _____ _____ DATE: _____
(Printed Name)

cc: OBSERVER/OPERATOR

PROCEDURES GENERATION PACKAGE

PART D

TRAINING PROGRAM DESCRIPTION

TRAINING PROGRAM DESCRIPTION

TABLE OF CONTENTS

TRAINING PROGRAM DESCRIPTION

1.0 INTRODUCTION

1.1 Purpose

The purposes of this program are to:

- o Enable the operators to understand the structure and format of the upgraded Emergency Operating Instructions (EOI's).
- o Enable the operators to understand the technical bases of the upgraded EOI's.
- o Provide the operator with a working knowledge of the technical content of the upgraded EOI's.
- o Enable the operators to use the upgraded EOI's under operational conditions.

1.2 General

As discussed in Part A, Section 1.2.5 of this package, the contents of this part of the PGP will be incorporated into the Nuclear Training Division document system. The current identification of this forthcoming document is Training Program Description OPT 2/3, "Upgraded Emergency Operating Instructions (EOI's) Program - Units 2/3."

1.3 Scope

Personnel licensed on San Onofre Units 2 and 3 shall receive training on the upgraded EOI's in accordance with Section 2.0 and prior to EOI implementation.

2.0 PROGRAM DESCRIPTION - INITIAL TRAINING

2.1 Classroom Training

Classroom training shall consist of a series of lectures and discussions. These should cover the logic behind development of the EOI's, the process used to develop EOI's, and the EOI's themselves, including supporting technical and human factors information.

2.2 Simulator Training

- o Training conducted on the plant-specific simulator shall consist of a combination of simulated events and walk-throughs to exercise the EOI's.
- o A wide variety of scenarios including multiple and sequential failures should be used to exercise the EOI's.

2.2 Simulator Training (continued)

- Training should be conducted with a full shift complement exercising each EOI to stress operator roles, interaction, and team training. Crew members should train by performing their normal, as well as alternate control room functions.

- Differences between Unit 2, Unit 3, and the plant-specific simulator should be addressed during training.

2.3 Operational Feedback

Operational feedback to improve EOI usage and content will be encouraged during the training described in Sections 2.1 and 2.2. Operation Instruction S023-0-35, "Use of Procedures," provides the necessary guidance for formalizing and processing these comments.

3.0 RETRAINING

Following the initial training described in Section 2.0, retraining on the upgraded EOI's will be conducted as part of the Operator Requalification Program in accordance with the Operator Requalification Program (Training Memorandum 19-81).

4.0 INITIAL TRAINING EVALUATION

The operators' knowledge and understanding of the EOI's shall be evaluated. This evaluation should be done in accordance with the following:

- A written examination should be conducted at the completion of the classroom training described in Section 2.1.

- The simulator instructors should evaluate both individual and team performance during each of the training scenarios performed on the simulator.

5.0 DOCUMENTATION

Documentation of operator training shall be maintained in accordance with the Training Division Records Control Center Procedures Manual.