

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

EDWARD G. BAUER, JR.

VICE PRESIDENT
AND GENERAL COUNSEL

(215) 841-4000

EUGENE J. BRADLEY

ASSOCIATE GENERAL COUNSEL

DONALD BLANKEN

RUDOLPH A. CHILLEM

E. C. KIRK HALL

T. H. MAHER CORNELL

PAUL AUERBACH

ASSISTANT GENERAL COUNSEL

EDWARD J. CULLEN, JR.

THOMAS H. MILLER, JR.

IRENE A. McKENNA

ASSISTANT COUNSEL

May 18, 1983

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Limerick Generating Station, Units 1 and 2
Responses to Procedures and Test Review Branch
Draft Safety Evaluation Report (DSER)

REFERENCE: A. Schwencer to E. G. Bauer, Jr. letter
dated March 11, 1983

FILE: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

The attached documents are FSAR page changes and draft responses prepared as a result of the following Procedures and Test Review Branch Draft Safety Evaluation Report open items:

- 1) Operating and Maintenance Procedures and ATWS, Section I, items 1 and 2.
- 2) Test Review, Section II, items 1, 3, 4 and 6

The responses and FSAR page changes will be formally incorporated into the FSAR revision scheduled for June, 1983.

Sincerely,

8305200615 830518
PDR ADOCK 05000352
E PDR

Eugene J. Bradley

RJS/cam c/7

Copy to: See attached service list

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CHAPTER 13

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13.6

INDUSTRIAL SECURITY

Control Room

additional operations and

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I. # 1, 2.

frequency of no less than 5 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. This procedure shall also require that maintenance procedures be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

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13.5.1.14 Procedure for Preparation of ~~Emergency~~ Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation ~~and control of emergency~~ procedures. ~~The following criteria for individual emergency procedures shall be addressed in this procedure:~~

- a. Emergency procedures shall be provided to guide operations during identified potential emergencies and shall be written so that a trained operator knows in advance the expected course of events that identifies an emergency and knows the immediate action to be taken.
- b. Emphasis shall be placed on operator responses to observations and indications in the control room and the requirement that specified immediate action procedures be implemented promptly.
- c. Because initially available intelligence provided to operating personnel via instrument readings, physical conditions, and personal observations may not clearly indicate the difference between operational transients or between simple problems and a more serious emergency, the actions outlined in emergency procedures shall be based on a conservative course of action by the operating shift.

This procedure shall establish the format and content of emergency procedures as follows:

- a. Descriptive title, revision number, and date
- b. Symptoms. This section shall include the symptoms to aid in identification of the emergency. Alarm conditions, parameter changes including magnitudes, and other observations to assist the operator shall be considered.
- c. Automatic actions. The automatic actions that are expected to occur as a result of the emergency shall be identified.

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TRIP procedures are symptom oriented decision tree flowcharts for operator actions based on recognition of critical symptoms and definition of actions to maintain key plant parameters within predetermined ranges. The TRIP procedures have been developed from the BWR Owners Group Emergency Procedure Guidelines (EPG).

- c. Immediate operator actions. This section shall specify immediate actions for operation of controls or confirmation of automatic actions that are required to stop the degradation of conditions and mitigate their consequences.
- e. Subsequent operator actions. This section shall include steps to return the reactor to a normal condition or to provide for a safe extended shutdown period under abnormal or emergency conditions.

To ensure systematic review and feedback, this procedure shall require that ~~emergency~~ procedures be reviewed at a specified frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures.

TRIP

~~Emergency~~ procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.15 Procedure for Preparation of Emergency Plan Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of emergency plan procedures that implement the emergency plan. This procedure shall establish the format and content of emergency plan procedures as follows:

- a. Descriptive title, revision number, and date
- b. Statement of applicability or purpose
- c. References, including technical specifications, emergency plan, drawings, and procedures as applicable
- d. Prerequisites. When applicable, this section shall define or explain the conditions that should exist prior to performing the procedure or certain procedural steps.
- e. Symptoms. When applicable to the scope of the procedure, this section shall contain symptoms and observations, including a description of alarm signals, that aid operating personnel and others in determining procedures and actions to be implemented.
- f. Protective action levels. Criteria for performing specific actions shall be provided when applicable to the scope of the procedure.

- g. Procedure, including immediate actions and subsequent actions. The procedure shall specify the steps to be taken including, as appropriate: assignment of specific responsibilities and authorities for performance of specific tasks to individuals and support groups; methods for coordinating the activities of offsite agencies; precautions applicable to specific steps; protective measures outlined for the identified emergency; instructions for medical treatment and handling of contaminated personnel; special equipment requirements; identification of emergency communication methods among participating organizations; and instructions for returning the plant to normal conditions or to provide safe, stabilized conditions following the emergency.

This procedure shall also establish appropriate requirements and responsibilities for preparation of operating instructions for special equipment. Inspection and maintenance of special equipment and testing of procedures, communications, and alarms to ensure that they function properly shall be within the scope of surveillance tests or preventive maintenance as appropriate. To ensure systematic review and feedback, this procedure shall require that emergency procedures be reviewed at a frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures.

Emergency plan procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.16 Procedure for Preparation of General Plant Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of general plant procedures that are written to provide integrated instructions for major plant evolutions such as plant startup or shutdown. This procedure shall establish the criteria for general plant procedures, such as:

- a. Preparation of startup procedures including reactor startup from cold and hot conditions, generator synchronization, and recovery from reactor trips. These procedures shall implement the authority and responsibilities of reactor operators as defined in other administrative procedures.
- b. Preparation of shutdown procedures including controlled shutdown and reactor trips to the establishment and maintenance of hot or cold shutdown conditions

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- c. Preparation of procedures covering steady state and load changing conditions and operations such as use of control rods, coolant flow control, and adjusting operating parameters

This procedure shall establish the format and content of general plant procedures as follows:

- a. Descriptive title, revision number, and date
- b. Statement of applicability or purpose
- c. References, including technical specifications, drawings, or procedures as applicable
- d. Prerequisites, including those independent actions or procedures that must be completed and plant conditions that must exist prior to use of the procedure. Prerequisites applicable to only certain sections of the procedure shall be so identified. Startup procedures shall require documentation of completion of prerequisites such as confirmation that necessary instruments are operable and properly set; that necessary valves are properly aligned; that necessary procedures, tests, and calibrations have been completed; and that required approvals have been obtained. Checkoff lists can be used for the purpose of defining and documenting completion of prerequisites.
- e. Precautions, where necessary to alert the individual performing the task to those important measures that should be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation
- f. Procedure section. The procedure shall provide the sequence and steps needed to perform the task in the degree of detail necessary to ensure safety and correct performance without undue reliance on memory or direct supervision. Cautionary notes applicable to specific steps shall be identified and included. System procedures or other detailed instructions not contained in the general plant procedure shall be referenced at the applicable steps. Where appropriate, check off lists shall be included in or appended to the procedure for the purpose of assisting the operator and/or confirming completion of major steps in the proper sequence. Limitations on parameters being controlled and appropriate corrective measures to return the parameter to the proper value shall be specified where appropriate.

To ensure systematic review and feedback, this procedure shall require that general plant procedures be reviewed at a specified frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. When determined necessary by the Plant Operations Review Committee, tests shall be performed to confirm that significant changes to general plant procedures produce the expected results. General plant procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.17 Procedure for Preparation of System Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of system procedures for safety-related systems. The procedure shall require system procedures to address normally expected operations such as energizing, filling, venting, draining, starting up, shutting down, and changing modes of operation as applicable to the system. It is not the intent of these procedures to cover actions, operations, or system conditions that would be unique to a special operation, such as maintenance, and would be covered in a special procedure written at the time the operation is needed.

This procedure shall establish the format and content of system procedures as follows:

- a. Descriptive title, revision number, and date
- b. Statement of applicability or purpose
- c. References including technical specifications, drawings, procedures, equipment manuals, and vendor documents as applicable
- d. Prerequisites, including those independent actions or procedures that must be completed and plant conditions that must exist prior to use of the procedure. Prerequisites applicable to only certain sections of the procedure shall be so identified.
- e. Procedure section. This section shall provide the steps to perform the various operations in the degree of detail necessary to ensure safety and correct performance without undue reliance on memory or direct supervision, and in consideration of the skills possessed by trained operators. Cautionary notes applicable to specific steps shall be identified or included. Limitations on parameters being controlled and appropriate corrective measures to return the

parameter to the proper value shall be specified where appropriate. Where appropriate, check off lists shall be included in or appended to the procedure.

To ensure systematic review and feedback, this procedure shall require that system procedures be reviewed at a specified frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. When determined necessary by the Plant Operations Review Committee, tests shall be performed to confirm that significant changes to system procedures produce the expected results. System procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures shall be not used.

13.5.1.18 Procedure for Preparation of Operational Transient Procedures

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This procedure shall establish the administrative requirements and responsibilities for the preparation of operational transient procedures for safety-related systems in which system complexities and interrelationships or the severity of the off-normal conditions necessitate such procedures to assist the operator or to ensure proper sequential operation. This procedure shall establish the format and content of operational transient procedures as follows:

- a. Descriptive title, revision number, and date
- b. Statement of applicability or purpose
- c. References, as appropriate
- d. Symptoms. This section shall include the symptoms to aid in identification of the off-normal condition. Alarm conditions, parameter changes including magnitudes, and other observations to assist the operator shall be considered.
- e. Automatic actions. The automatic actions that are expected to occur as a result of the condition shall be identified.
- f. Immediate operator actions. This section shall specify immediate actions for operation of controls or confirmation of automatic actions that are required to stop the degradation of conditions and mitigate their consequences.

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This procedure shall establish the administrative requirements and responsibilities for the preparation of operational transient procedures for the restoration of normal operating conditions following a perturbation. This procedure shall establish the format and content of operational transient procedures as follows:

- a. Descriptive Title, revision number, and date
- b. Entry Conditions
- c. Immediate operator actions. This section shall specify immediate actions for operation of controls to restore normal operating conditions
- d. Follow-Up actions.
- e. Verification of Automatic actions. The automatic action that are expected to occur as a result of the condition shall be identified.

INSERT (B) pg 13.5 - 25

- g. ~~Subsequent operator actions. This section shall include steps to return the reactor and/or systems to the proper conditions.~~

To ensure systematic review and feedback, this procedure shall require that operational transient procedures be reviewed at a specified frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. Operational transient procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.19 Procedure for Preparation of Alarm Response Cards

This procedure shall establish the administrative requirements and responsibilities for the preparation of individual alarm response cards. The procedure shall provide for preparation of individual alarm response cards to which operators refer. Alarm response cards shall be maintained in the control room and shall contain the following information:

- a. Identification of the alarm
- b. Alarm setpoint
- c. Identification of the signal source instrument
- d. Automatic actions that are expected to occur
- e. Operator response (immediate and long term)

To ensure systematic review and feedback, this procedure shall require that safety-related alarm response cards be reviewed at a specified frequency of no less than 2 years (a revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of the alarm response card.

13.5.1.20 Procedure for Preparation of Fuel Handling Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of fuel handling procedures that shall specify actions for core alterations, accountability for fuel, partial or complete refueling operations, receipt and shipment of fuel, and such specific procedures for each refueling outage as necessary to accomplish the required actions in a safe, efficient manner. This procedure shall establish the format and content of fuel handling procedures as follows:

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Unique numbers have been assigned to each control room alarm based on a sequential number for each annunciator window within a specific panel. Alarm response information is retrieved by identifying the alarm number and referring to the corresponding alarm card or procedure number.

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- a. Descriptive title, revision number, and date
- b. Statement of applicability or purpose
- c. References, including technical specifications, drawings, or procedures as applicable
- d. Prerequisites, including those independent actions or procedures that must be completed and plant conditions that must exist prior to use of the procedure. Prerequisites applicable to only certain sections of the procedure shall be so identified.
- e. Precautions, where necessary, to alert the individual(s) performing the task to those important measures that should be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation.
- f. Limitations and actions. Limitations on appropriate parameters and corrective action to return the parameter to the proper value or other appropriate action shall be specified.
- g. Procedure section. The procedure shall provide the needed steps and requirements to perform the refueling task in the degree of detail necessary to ensure safety and correct performance without due reliance on memory or direct supervision. Cautionary notes and references applicable to specific steps shall be identified and included. Where appropriate, check off lists shall be included in or appended to the procedure for the purpose of assisting the operator and/or confirming completion of appropriate steps.

This procedure shall require documentation of final fuel and component serial numbers and locations to be developed and maintained.

To ensure systematic review and feedback, this procedure shall require that fuel handling procedures be reviewed at a specified frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. Fuel handling procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.21 Procedure for Preparation of Health Physics Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of health physics procedures that implement the radiation protection program. This procedure shall require preparation of health physics procedures in the following areas:

- a. Monitoring external and internal exposures of appropriate employees utilizing accepted techniques
- b. Routine radiation surveys of work areas
- c. Environmental monitoring within the scope of the operating staff responsibility
- d. Radiation monitoring of maintenance and special work activities
- e. Maintenance of records demonstrating the adequacy of measures taken to control radiation exposures of employees and other appropriate personnel
- f. Control, management, and surveys of radioactive wastes

This procedure shall establish the format and content of health physics procedures as follows:

- a. Descriptive title, revision number, and date
- b. Statement of applicability or purpose
- c. References, including technical specifications, drawings, procedures, and operating manuals as applicable
- d. Apparatus, such as instruments or special equipment, as applicable
- e. Precautions, where necessary, to alert the individual performing the task to those important measures that should be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation. Routine precautions that a trained technician is expected to take need not be listed.
- f. Procedure section. The procedure shall provide the needed steps to perform the task in the degree of detail necessary to ensure safety and correct performance without undue reliance on memory or direct supervision. Precautions and references important to specific steps

in the procedure shall be identified and included at those steps. When appropriate, check off lists shall be included in or appended to health physics procedures.

To ensure systematic review and feedback, this procedure shall require that health physics procedures be reviewed at a specified frequency of no less than 5 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. Health physics procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.22 Procedure for Preparation of Chemistry Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of chemistry procedures that include chemical and radiochemical control activities and controls for radioactive calibration sources. This procedure shall establish the format, content, distribution, and periodic review requirements for chemistry procedures as described for health physics procedures.

13.5.1.23 Procedure for Temporary Changes to Approved Procedures

This procedure shall establish the administrative requirements and responsibilities for making temporary changes to approved procedures. The procedure shall provide that temporary changes, clearly not changing the intent of the approved procedure, shall be documented and approved by two members of the plant staff knowledgeable in the area(s) affected by the procedure. At least one of these individuals shall be a shift superintendent or shift supervisor (a senior reactor operator on the unit affected). Temporary changes shall be incorporated in the next procedure revision if appropriate.

13.5.2 OPERATING AND MAINTENANCE PROCEDURES

13.5.2.1 Operating Procedures

Operating procedures ~~shall~~ include general plant procedures, system procedures, operational transient procedures, alarm response cards, ~~emergency~~ procedures, and ~~emergency plan~~ procedures. The format and content of these classes of procedures are described in Section 13.5.1. The types of activities covered by operating procedures are listed below:

General Plant Procedures: Reactor startup from cold conditions; reactor startup from hot conditions; turbine-generator startup; power operation and monitoring; plant shutdown to hot standby;

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which are primarily performed by licensed operators in the control room

off-normal procedures

Examples of the types of procedures on the anticipated procedures

event procedures, and special event

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13.5.1.24 Procedure for Preparation of Off-Normal Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of off-normal procedures that are written to specify operator actions following an operator observation of an off-normal (non-transient) condition which does require immediate action to prevent degeneration of the existing condition. This procedure shall establish the format and content of off-normal procedures as follows:

- a. Descriptive Title, revision number, and date
- b. Symptoms. This section shall include symptoms to aid in identifying or confirming the off-normal condition. Alarm conditions, parameter changes, and other observations shall be considered.
- c. Operator actions. This section shall specify actions to be taken to identify, confirm, or correct the cause of the off-normal condition.

To ensure systematic review and feedback, this procedure shall require that off-normal procedures be reviewed at a specified frequency of no less than 2 years (a procedure revision constitutes a review) and following unusual incidents that reflect adversely on the adequacy of these procedures. Off-normal procedures shall be distributed to appropriate personnel in accordance with current distribution lists to ensure that outdated or inappropriate procedures are not used.

13.5.1.25 Procedure for Preparation of Event Procedures and Special Event Procedures

This procedure shall establish the administrative requirements and responsibilities for the preparation of event procedures and special event procedures that are written to specify operator actions following an operator observation of event of an emergency or unusual nature. This procedure shall establish the format and content of off-normal procedures as follows:

- a. Descriptive Title, revision number, and date
- b. Purpose
- c. Symptoms. Symptoms shall be included to aid in the identification of the plant condition.
- d. Immediate Operator Action. This section shall specify action to be taken as a result of the identified condition.
- e. Followup Action

INSERT (D) pg 13.5-29

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General plant procedures and system procedures will be developed to cover the activities listed in Sections 2 and 4, respectively, of Appendix A to Regulatory Guide 1.33, Revision 2.

INSERT (E) pg 13.5-29

shutdown from hot standby to cold conditions; preparation for refueling operations

System Procedures: Recirculation system; reactor water cleanup system; residual heat removal system; high pressure coolant injection system; core spray system; reactor core isolation cooling system; standby liquid control system; fuel pool cooling system; containment; control rod drive systems; reactor protection system; main steam system; turbine-generator; condensate and feedwater systems; circulating water system; cooling towers; cooling water systems; main generator; plant electrical systems; dc systems; diesel-generators; radwaste systems; solid radwaste processing; standby gas treatment system; heating, ventilation, and air conditioning systems; fire protection systems; nuclear instrumentation

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Operational Transient Procedures: Reactor low water level; reactor high water level; high drywell pressure; reactor vessel high pressure; main steam line high radiation; APRM high power level; IRM high power level; scram discharge volume high level; main condenser low vacuum; turbine trip; main steam isolation valve closure; loss of reactor feedpump; loss of condensate pump; recirculation pump trip; stuck control rod; loss of circulating water pump; loss of containment integrity; loss of flux instrumentation; high radiation offgas; high radiation ventilation stack; loss of component cooling water

Emergency Procedures: Loss of coolant; main steam line break; loss of electrical power; loss of shutdown cooling; loss of reactor protection system channel; conditions requiring use of standby liquid control system; fire; reactivity control system failure; reactor trip; refueling/fuel handling accidents; abnormal releases of radioactivity

Emergency Plan Procedures: Radiological surveys and monitoring; rescue operations; fire fighting; first aid; decontamination; personnel accountability; communications; repairs and damage control; record keeping; organization, duties

Licensed reactor operators and senior reactor operators are required to know the immediate operator actions in operational transient procedures, ~~and emergency~~ procedures.

and the
entry condition
of TRIP
procedures.

13.5.2.2 Maintenance and Other Procedures

In addition to operating procedures related primarily to control room operations, procedures shall be issued to control other plant activities. These procedures shall include fuel handling procedures, chemistry procedures, health physics procedures, maintenance procedures, security procedures, surveillance test procedures, and preventive maintenance procedures. The types of

emergency plan
procedures

event procedures, and special event

Additional
operating and

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Operational Transient Procedures: It is presently anticipated that the following operational transient procedures will be generated: Reactor Low Level; High Drywell Pressure; Reactor High Pressure; Main Steam Line High Radiation; Positive Reactivity Insertion; Scram Discharge Volume High Level; Condenser Low Vacuum; Reactor High Level; Reactor Low Pressure; Recirculation Pump Trip; Loss of Stator Cooling; and Inadvertent Opening of a Relief Valve.

Off-Normal Procedures: It is presently anticipated that the following off-normal procedures will be generated: Failure of a Jet Pump; Loss of Isolated Phase Bus Cooling; Air Ejector Discharge High Radiation; Off Gas Stack High Radiation; Control Rod Uncoupled; Stuck Control Rod; Loss of CRD Regulating Function; Low Scram Air Header Pressure; Total Loss of the SRM, IRM, or APRM Systems; Loss of Primary Containment; Loss of Secondary Containment; and Loss of Uninterruptable A.C. Power

TRIP Procedures: The following TRIP procedures have been generated: Post Scram Restoration; Scram; Reactor Pressure Vessel Control; Containment Control; Level Restoration; Emergency Blowdown; Blowdown Cooling; Spray Cooling; Alternate Shutdown Cooling; Reactor Pressure Vessel Flooding; and Level/Power Control.

Event procedures and Special Event Procedures: It is presently anticipated that the following event procedures and special event procedures will be generated: Earthquake; Flood; Shutdown from Outside the Control Room, Control Room Enclosure Toxic Gas; and Oil Spills.

INSERT (F) pg 13.5-30

activities covered by these procedures are listed below. The format and content of these procedures are described in paragraph 13.5.1.

*INSERT
"Emergency Plan
Proc." FROM
13.5-30*

Fuel Handling Procedures: New fuel inspection; irradiated fuel inspection; installation, removal, and transfer of fuel assemblies; installation and removal of control rods; core shuffling; installation and removal of source holder; installation and removal of incore detectors

Health Physics Procedures: Radiation exposure limits; dosimetry requirements; personnel exposure records; radiation work permit; radiation control area classification; radiation/contamination surveys; decontamination; shipment of radioactive material; control and accountability of radioactive material; operation and calibration of radiation monitoring equipment; airborne radioactivity monitoring; various analytical procedures; laboratory calibration procedures

Security Procedures: Response to industrial security threats; civil disturbance; communications; security force duties and responsibilities; receipt control; key control; guard patrols; personnel identification; access control; vehicle traffic and parking; testing and maintenance of security systems; record keeping; visitor control

Chemistry Procedures: Sampling reactor water; sampling reactor steam; gaseous samples; sampling condensate storage tank; various analytical procedures; control of radioactive calibration sources; laboratory calibration procedures

Maintenance Procedures: Reactor recirculation pump seal overhaul; control rod drive repair; hydraulic control unit repair; control rod drive O-ring replacement; removal and replacement of drywell head; removal and replacement of reactor vessel head; removal and replacement of steam dryer; nuclear instrumentation removal and replacement; offgas filter maintenance; motor operator adjustment; standby liquid control explosive valve replacement

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TABLE 14.2-4 (Cont'd)

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(P-46.1) Extraction Steam and Feedwater Heater System

Test Objective - The test objective is to demonstrate operability of the extraction steam and feedwater heater level control and automatic isolation systems.

Prerequisites - To the extent necessary to perform this test, construction is completed, and instrumentation and controls are operable and calibrated.

Test Method - Turbine trip and pressure signals are simulated, and automatic isolation valve and bleeder trip check valve operation are verified. Feedwater heater level signals are simulated to verify proper response of drain valves, dump valves, bleeder trip valves, and extraction line drain valves. Feedwater heater dump and drain flow paths are verified. System alarms are actuated.

Acceptance Criteria

- a. Bleeder trip check valve closing time and extraction line drain valve opening times are within specified limits.
- b. Valve interlocks and logic are operable.
- c. System alarms operate properly.

(P-49.1) Residual Heat Removal System

Test Objective - The test objective is to demonstrate that the RHR system delivers cooling water for each of the following system modes of operation: shutdown cooling, low pressure coolant injection (LPCI), suppression pool cooling, and fuel pool cooling.

Prerequisites - To the extent necessary to perform this test, construction is completed, and instrumentation and controls are operable and calibrated. The reactor pressure vessel (RPV) is available and filled with water above the minimum level required to provide suction to the RHR pumps. The recirculation loops are complete to the extent required for system operation in the shutdown cooling mode. The emergency service water system is available to provide cooling water to the RHR pumps. The suppression pool is available and filled above the low water level to provide suction to the RHR pumps. The fuel pool and fuel pool skimmer surge tanks are full of water and available for fuel pool cooling mode operation.

→ Testing of relief and safety valves is completed

(P-93.2) Main Turbine Control System

Test Objective - The test objective is to demonstrate the ability of the electrical-hydraulic control (EHC) system to operate the turbine-generator.

Prerequisites - To the extent necessary to perform this test, construction is completed, and instrumentation and controls are operable and calibrated. The hydraulic fluid reservoir is filled with EHC fluid.

Test Method - The hydraulic system is placed in operation and alarms, trips, and control devices are actuated.

Acceptance Criteria

- a. Hydraulic system pressure meets acceptable values.
- b. Valves operate properly.
- c. System alarms operate properly.
- d. System trips operate properly.

(P-93.3) Main Turbine Supervisory System

Test Objective - The test objective is to demonstrate the ability of the turbine supervisory system to monitor the operation of the main turbine and the reactor feedpump turbines.

Prerequisites - To the extent necessary to perform this test, construction is completed, and instrumentation is operable and calibrated.

Test Method - Signal inputs are simulated in the turbine supervisory system, and recording equipment and alarms are actuated.

Acceptance Criteria

- a. Instrumentation operates properly.
- b. System alarms operate properly.

→ Turbine stop and bypass

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II. # 4)

DRAFTQUESTION 640.11

Revise your FSAR to describe additional testing and training discussed in your letter of March 6, 1981 to Robert L. Tedesco (NRR), in response to NUREG-0737 Item I.G.1. You should also provide a conditional commitment to the Simulated-Loss-of-All-A/C-Test requested in our letter to Mr. Bauer of January 14, 1981.

RESPONSE

Additional training is to be included in the certification program on the Limerick simulator which shall include total loss of offsite and onsite AC power.

In Section 1.12, issue A-44 addresses a station blackout.

Startup test descriptions SUT-12.1 and SUT-12.2 have been added. Test descriptions for RCIC (P-50.1), feedwater (P-45.1), and primary containment ILRT (P-59.2) have been expanded to include testing, loss of D.C. power to the RCIC, verification of containment pressure instrumentation, respectively.

→ as described in a letter from J. S. Kemper to R. L. Tedesco, dated March 6, 1981.

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II. # (6)

SUT-6." These procedures comply with the general guidelines and regulatory positions contained in Regulatory Guide 1.68 (Revision 2, August 1978). Test abstracts establishing the objectives, prerequisites, test method, and acceptance criteria for these procedures are presented in Table 14.2-3.

14.2.11 TEST PROGRAM SCHEDULE

The schedule, relative to the initial fuel loading date, for conducting each major test phase of the initial test program is presented in Figure 14.2-1. This figure illustrates that the preoperational test program is scheduled for 15 months duration for Unit 1, 12 months duration for Unit 2, and that the subsequent startup test programs are scheduled at 3 months duration for each unit. Since Unit 2 fuel load is scheduled at 18 months after Unit 1 fuel load, the test programs do not overlap. However, if schedule compression occurs, the staffing and organization of the groups responsible for the initial test programs preclude significant divisions or dilutions of responsibility. Approved test procedures are intended to be available for NRC review at least 60 days prior to scheduled implementation.

preoperational

The sequential schedules for conducting individual preoperational tests for each unit are presented in Figures 14.2-6 and Figure 14.2-7. These sequential schedules offer one possible plan for an orderly and efficient progression of testing. While these sequences may be preferred, numerous acceptable alternatives exist because few preoperational tests are dependent on performance of other preoperational tests. The actual test sequences are determined daily at the jobsite to reflect construction status, manpower availability, and test prerequisite status.

The sequential schedule for conducting Unit 1 and Unit 2 startup tests is presented in Figure 14.2-5. This schedule establishes the required order of startup testing as a function of test phase and power level. Even though this basic order of testing is required, there is still considerable flexibility in sequencing the startup testing specified to be conducted at each test phase or startup level. Detailed startup testing schedules, commensurate with the requirements of this schedule, are developed at the jobsite to schedule startup testing when operationally expedient.

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II. # 1

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Copies of draft test procedures for fuel loading, initial startup testing in Phase II of the Initial Test Program, and supporting activities are intended to be available for NRC examination not less than 60 days prior to the scheduled fuel load date. Copies of approved test procedures for fuel loading, initial startup testing in Phase II of the Initial Test Program, and supporting activities are intended to be available for NRC examination not less than 60 days prior to scheduled implementation.

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