UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	:	
	:	Docket Nos. 50-424-OLA-3
GEORGIA POWER COMPANY, et al.	:	50-425-OLA-3
	:	
	:	Re: License Amendment
(Vogtle Electric Generating Plant,	:	(Transfer to
Units 1 and 2)	:	Southern Nuclear)
	:	
	:	ASLBP NO. 93-671-OLA-3

AFFIDAVIT OF GEORGE BOCKHOLD, JR.

I, George Bockhold, Jr., having been duly sworn, state as follows:

1. I am over the age of 18 years and am competent to execute this Affidavit. I have testified previously in this proceeding and my professional qualifications were attached to my prefiled testimony as Exhibit A (GPC Exh. II-20).

2. In March and April of 1990, I was the General Manager of Plant Vogtle. Following the March 20, 1990 Site Area Emergency ("SAE"), I oversaw the efforts of the Plant Vogtle staff to investigate the March 20 SAE, including the establishment of an Event Review Team, pursuant to Vogtle Procedure 00057-C, the revision of which that was in effect in March 1990 is attached hereto as Exhibit A.

3. The accompanying affidavit by Mr. Ken Holmes, the Event Review Team Leader, describes the evolution of the diesel testing plan implemented following the March 20, 1990 SAE in order to determine the root cause of the 1A diesel failure.

4. By April 9, 1990, following the completion of diesel testing, I was satisfied that the Vogtle diesels could be declared "operable," as that term was defined in Plant Vogtle Technical Specifications, and that there was reasonable assurance the diesels were capable of performing their intended safety function.[1]

5. Typically, the diesel generators are determined to be, or are verified, operable pursuant to the provision of Tech. Spec. § 3/4.8.1, the March 1990 version of which is attached hereto as Exhibit B. The Diesel Operability (surveillance) Test Procedure, No. 14980, attached hereto as Exhibit C, was used to satisfy the monthly and semiannual surveillance requirements of Tech. Spec. § 4.8.1.1.2.a, b., and g and could also be performed in order to verify operability of the diesel when it was returned to service following modification work or maintenance (see Operations Procedure 10000-C, Section 3.10, a copy of which is attached hereto as Exhibit D). Tech. Spec. Section 4.8.1.1.2.h also requires that Engineered Safety Features Actuation System ("ESFAS") testing be performed before declaring the diesel operable following an 18-month maintenance outage of the diesel. During the March 1990 outage, the ESFAS test of the 1A diesel was completed prior to March 20. In addition, before declaring a diesel operable from a maintenance outage, Operations Department personnel also verify that there are no outstanding unresolved items (e.g., Maintenance

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[1] Testing of the Calcon sensors continued after April 9, 1990 at Wyle Laboratories with the approval and involvement of the NRC. See March 1, 1995 Affidavit of Milton D. Hunt, filed with Georgia Power Company's Motion for Summary Disposition of Intervenor's Air Quality Statements Allegation (March 3, 1995), at ¶ 36.

Work Orders, Deficiency Cards, or Clearances) that adversely affect the diesel's operability. See Operations Procedure 10008-C, Section 3.1.3.1.b, attached hereto as Exhibit E.

6. My determination on April 9, 1990 concerning the diesels was based on all the testing performed on the diesels following the March 20 SAE, and not solely on the diesel operability test, Procedure No. 14980.[2] I was satisfied that they could be declared operable based on consultation with Operations Department personnel, who were responsible for determining that equipment was "operable" in accordance with the Tech. Specs., Engineering Department personnel, who were responsible for supervising and evaluating the various tests on the diesels, and the Event Review Team, which was responsible for the overall test plan for the diesels.

I hereby certify that the foregoing statements are true and correct to the best of my personal knowledge and belief.

George Bockhold, Jr.

Sworn to and subscribed before me this 11th day of May, 1995.

Mary N. Bentley
Notary Public

My commission expires:
May 16, 1999

[2] The Operability Test was performed on April 1, 1990 and again on April 7, 1990 (following additional testing) as a functional test, to confirm that the testing which had been undertaken on the diesel did not adversely affect its operability, and as a final confirmation of the Company's belief that the diesel was operable.

DATA SHEET 1 Event Report No._____
Report: Page ___ of ___

INVESTIGATION QUESTIONS (CONT'D)

12. WAS SUPERVISION INVOLVEMENT ADEQUATE FOR THE EVOLUTION BEING CONDUCTED? YES/NO

13. WERE THE PERSONNEL THAT INITIATED OR ADVERSELY CONTRIBUTED TO THE EVENT QUALIFIED TO PERFORM THEIR ACTIVITIES PRIOR TO AND DURING THE EVENT? YES/NO

14. IF QUESTIONS 1, 4 OR 7 ARE ANSWERED YES, DESCRIBE IN DETAIL IN THE EVENT REPORT.

15. IF QUESTIONS 2, 3, 5, 6, 8, 9, 10, 11, 12 OR 13 ARE ANSWERED NO, DESCRIBE IN DETAIL IN THE EVENT REPORT.

EVENT INVESTIGATION

VOID

1.0 PURPOSE

This procedure provides instructions for event investigations. It is to be performed for, but not limited to, the following events:

a. Unplanned Reactor Trips,

b. Unplanned Turbine Trips,

c. Unplanned Engineered Safety Features (ESF) actuations,

d. Significant Radiological events,

e. Events identified by site management (Office of the General Manager)

NOTE

Security related event investigations will be handled in accordance with procedure 90142-C, "Security Report Procedure".

2.0 DEFINITION

EVENT

A definite and separate occurrence that happens as a result of, or in connection with, a planned evolution. Reactor trips, engineered safeguard feature actuations and challenges, and other events deemed significant are examples.

3.0 RESPONSIBILITIES

3.1 OFFICE OF THE GENERAL MANAGER

The General Manager - Nuclear Plant (GMNP), Assistant General Manager - Plant Operations (AGM-Ops), Assistant General Manager - Plant Support (AGM-SPT) as appropriate, is responsible for the following:

3.1.1 Ensuring the Event Investigations are properly conducted.

3.1.2 Directing appropriate departments to provide necessary support to the ERTL.

3.1.3 Reviewing the results of event investigations.

3.1.4 Recommending a review, as appropriate, by the Plant Review Board (PRB) of any reports.

3.1.5 Extending the seven day completion period for the investigation review, when appropriate.

3.2 MANAGER TECHNICAL SUPPORT

The Manager Technical Support (MTS) will ensure:

3.2.1 Corrective actions resulting from Event Investigations are assigned and tracked to completion.

3.2.2 Appropriate processing of the completed event investigation report.

3.2.3 Providing information concerning similar in-house and related industry events.

3.3 MANAGER OPERATIONS

3.3.1 The Manager Operations, or designee, determines if Operations shift personnel involved/associated with the Event should be relieved by additional personnel to participate in the the Event Investigation.

3.3.2 The Manager Operations is responsible for ensuring the event data is collected and provided to the ERTL.

3.4 ON SHIFT OPERATIONS SUPERVISOR

The On Shift Operations Supervisor (OSOS) has the following responsibilities:

3.4.1 Informing the Vogtle Duty Manager of events described in 1.0.

3.4.2 Ensuring a Deficiency Card is initiated for the event in accordance with Procedure 00150-C, "Deficiency Control".

3.4.3 Initially determining hardcopy data to be collected.

3.4.4 Designating the individual responsible for the collection of appropriate hard copy information listed in Data Sheet 1.

3.4.5 Ensuring each appropriate individual involved in the Event initiates an Event Personal Statement.

3.4.6 Providing the event data to the Manager Operations for the Event Review Team.

3.5 DEPARTMENT MANAGERS

Department Managers are responsible for the following:

3.5.1 Supporting a thorough review of events and providing personnel to perform the Event Investigation.

3.5.2 Ensuring corrective actions are sufficient to preclude recurrence of events of the same nature.

3.5.3 Providing additional personnel to relieve shift personnel to allow the investigation to occur while the information is fresh.

3.5.4 Review and approve/disapprove recommended corrective actions. Disapprovals should be accompanied by an explanation.

3.6 VOGTLE DUTY MANAGER

The Vogtle Duty Manager (in accordance with procedure 00007-C, "Vogtle Duty Manager/Response Team") is responsible for the following:

3.6.1 Assignment of the ERTL (Critique Leader) for events listed in Section 1.0.

3.6.2 Determination if event review is required (and assignment of an ERTL) for those events not listed in Section 1.0.

3.6.3 Calling out the Event Review Team.

3.7 EVENT REVIEW TEAM LEADER

The Event Review Team Leader (ERTL) has the following responsibilities:

3.7.1 Designating an individual for Event Data Collection, if the data has not already been compiled.

3.7.2 Ensuring personnel involved/associated with the Event fill out an Event Personal Statement, when not already completed.

3.7.3 Obtaining Event Review Team members from other departments including, as necessary, representation from Operations, and an Engineer to ensure an overall plant perspective. For some events HPES, NSAC, or QA representation may be appropriate.

3.7.4 Assigning specific duties and responsibilities to Event Review Team members in order to complete the review and report.

3.7.5 Providing recommendations to the GMNP, AGM-OPS, AGM-SPT for consideration in determining readiness to restarting the work or the reactor, unless a restart decision has already been made per step 4.1.4.

3.7.6 Informing the GMNP, AGM-OPS, AGM-SPT, Manager Operations and the Manager Engineering Support when an Event is classified as being of unknown cause or when safety- related equipment did not function properly during the event.

3.7.7 Completing the Event Report per Data Sheet 1 (Data Sheet 2 for security events). The ERTL will designate someone to coordinate completion of required forms.

3.7.8 Determining root cause(s) per Procedure 00058-C, "Root Cause Determination".

3.7.9 Recommending corrective actions.

3.7.10 Reviewing investigation results with responsible department managers and site management within seven days of the event.

3.7.11 Obtain approvals and expected completion dates for corrective actions to be performed.

3.7.12 Requesting, by memo, an extension of the seven day requirement, when appropriate, from the Office of the General Manager. Documentation of extention is to be retained as part of the Event Report.

3.7.13 Ensuring a copy of the full report is sent to the Technical Support Department within 3 days of submission to the GMNP/AGM-OPS/AGM-SPT so that necessary NRC reports can be completed, when applicable.

3.8 EVENT REVIEW TEAM

3.8.1 The Event Review Team is responsible for conducting and documenting Event Investigation, Root Cause Determination, Recommended Corrective Actions, and preparing final report for the General Manager-Nuclear Plant.

3.8.2 For reactor trips, the POST-TRIP REVIEW TEAM (Event Review Team) consists of the following:

Team Leader: Management or Supervision, (D)

Member: ISEG Supervisor or Alternate (D)

Member: An I&C Supervisor or Superintendent (D)

Member: An Engineering Supervisor (D)

Member: Operations Supervisor or Shift Supervisor (D)

Member: Maintenance Supervisor or Superintendent (D)

Member: Other members as requested by the Team Leader (e.g., HPES, Outage & Planning, Technical Support or SAER)

(D) = designated

3.8.3 For other events the Event Review Team composition will be designated by the Event Review Team Leader as appropriate. An Engineering representative will participate in all event investigations. A Maintenance representative will normally participate in event investigations when abnormal component operation was a cause of the event.

3.8.4 For other events identified by site management, the department manager responsible in the event or for the procedure involved, will be designated the ERTL, unless otherwise specified by site management.

3.8.5 Event Review team members should be someone who will be available for the duration of the Event Review.

3.8.6 Team members are responsible for action plan items assigned to their department, as well as other duties assigned by ERTL.

3.8.7 Outage & Planning is responsible for checking the mode deferred binder to ensure required surveillances have not been missed.

3.9 MANAGER PLANT TRAINING AND EMERGENCY PREPAREDNESS

The Manager Plant Training and Emergency Preparedness reviews the event report to determine what aspects of the even may impact training programs.

3.10 PLANT PERSONNEL

Plant Personnel are responsible for the following:

3.10.1 Completing an Event Personal Statement when involved/associated with an event, prior to leaving the site.

3.10.2 Providing information to the Event Review Team during the Data Collection.

3.10.3 Participating in any critique or post event review as requested.

3.11 ISEG

3.11.1 Maintain an Event Report Log to include the event number, event date, ERTL name and description of the event.

3.11.2 Support a thorough review of events by providing personnel to participate in Event Investigations.

4.0 INSTRUCTIONS

4.1 GENERAL

4.1.1 The event investigation process is a six-step process.

Step	Responsibility
Initial Data Collection	OSOS
Event Investigation & Report	Event Review Team Leader
Restart Decision	GMNP/AGM-OPS
Event Investigation Review	AGM-OPS/PRB
Identification of Corrective Actions	Event Review Team Leader
Follow-up	Technical Support

Duty Manager for reactor trips as stated in step 4.1.5

4.1.2 The initial objective of an investigation is to determine the acceptability of performing a reactor restart or operational work resumption. An investigation should determine root cause(s), and recommend corrective actions(s).

4.1.3 The OSOS informs the Vogtle Duty Manager of events.

4.1.4 For unplanned reactor trips where the direct cause is known, plant conditions have stabilized and emergency systems have appropriately operated, a restart decision may be made in accordance with Procedure 00300-C "Authority To Startup And Shutdown Reactors", prior to the event investigation and report performed by the ERTL. The initial data collection step and procedure 10006-C, "Reactor Trip Review" will be followed prior to determining a reactor restart.

4.1.5 The Vogtle Duty Manager determines if an Event warrants callout of an Event Review Team.

4.1.6 The Vogtle Duty Manager assigns an ERTL for events requiring further evaluation.

4.1.7 The Event Investigation and evaluation will be initiated by the Event Review Team after plant conditions have stabilized.

4.1.8 The Event Investigation must not distract the OSOS or operating personnel from their primary responsibility of monitoring plant parameters and maintaining the plant in a safe condition.

4.1.9 If deemed necessary by the Vogtle Duty Manager or respective department management, additional personnel will relieve shift personnel to allow the investigation to occur while the information is fresh.

4.1.10 The Vogtle Duty Manager/ERTL can modify the team size or scope of effort when revealed facts show that the Event Investigation can be modified.

4.2 DATA COLLECTION

4.2.1 The purpose of the data collection-phase of the event review is to gather sufficient data to reconstruct the event from a point prior to the initiating event until plant parameters have stabilized after the event

NOTE

Procedure 10006-C, "Reactor Trip Review" will be used to supplement Data Sheet 1 for reactor trips.

4.2.2 The OSOS, or OSOS designate, is responsible for determining information and records to be collected. The OSOS designates the individual to conduct data collection of appropriate hard copy information listed in Data Sheet 1. Strip chart recordings must accurately reflect real time to have meaningful information. If this is not the case, the OSOS designate will ensure that the chart paper is annotated with a time mark, chart speed (chart speed may change during transient), and time scale. Appropriate computer tapes should be retained until released by the ERTL.

Prior to resetting annunciators and flags not on the alarm printer, they should be recorded (i.e., generator LEDS or common alarm lockouts).

4.2.3 After the plant is in a safe, stable condition, the ERTL will ensure appropriate individuals involved in the event (e.g., plant operator, mechanic, technician, shift supervision etc.) have provided a statement concerning his/her involvement in the event prior to leaving the site. These statements may be obtained in any one or combination of the following ways.

a. Written personal statements

b. Event Review Team interviews with personnel involved in the event

c. Critique with all involved personnel

4.2.4 If either of the last two techniques is used, the information should be recorded to ensure future availability of the information. The event personal statements will be restricted to facts personally observed concerning the event, and the facts should be stated chronologically, if possible. Conjecture and opinions stated should be annotated as such.

The statement will include the following:

a. Plant conditions prior to the event (for maintenance personnel, this will include the status of maintenance or testing).

b. First indication that a problem existed (e.g., #2 S/G decreasing level at 30% or radiation monitor RE-006 increasing),

c. Individual's specific actions as a result of the indications (e.g., opened B/F FRV or started a leak rate determination).

d. Subsequent indications and plant response, including manual actions.

e. Noted equipment malfunctions or inadequacies.

f. Procedure deficiencies identified during the situation.

g. Recommendations to prevent recurrence.

The written statements or tape recordings will be included in the Event Report to assist in event reconstruction.

4.2.5 As part of the investigation the Investigation Questions, listed in Data Sheet 1, as appropriate, will be answered by the Event Review Team at the completion of interviews.

4.2.6 The OSOS designate assembles the initial hard copy information and personal statements for the Event Report. This information will be submitted to the Manager Operations to be used during the event investigation.

4.2.7 The Manager Operations ensures the event report data is is provided to the ERTL

4.3 EVENT INVESTIGATION

4.3.1 The Event Review Team, under the direction of the ERTL, is responsible for the investigation and analysis. The Event Review Team will complete the requirements of, and answer the questions on, Data Sheet 1, as appropriate.

4.3.2 The Event Review Team will chronologically reconstruct the transient in the event investigation, using the collected data. A chronological description of the event will be developed using all available data. Pertinent alarms, trips, actuations, and isolations will be listed, or marked on, the sequence-of-events or alarm-type printout. Pertinent plant parameters should be incorporated into the chronological list of events during the reconstruction.

4.3.2.1 For plant transients, a comparison of the reconstruction with past experience should be made by the Event Review Team based on their training and experiences.

A review will be conducted of the in-house Operating Experience Report (OER) to identify similar industry OERs and similar previous in-house Event Review Reports available on the Operating Experience Program data base. This review may be conducted by Technical Support or ISEG and should be provided to the Event Review Team for evaluation. This will assist in identifying indications of abnormal or degraded conditions, identify trends and indicate whether past corrective actions have been effective.

The event reconstruction will also be compared with the required procedure actions to determine the effect of those actions on the plant response. In some cases it may be worthwhile to compare the transient with a similar transient described in the Final Safety Analysis Report (FSAR). However, it should be noted that FSAR transients are "Worst case" or limiting conditions and it should not be assumed that, because a transient did not result in peak parameters exceeding the FSAR values, the plant response was acceptable. A review will also be conducted, as necessary, to evaluate susceptibility of other systems or components to a similar occurrence.

4.3.2.2 The Event Review Team will analyze and evaluate the event reconstruction and event comparison. They will determine the cause(s) of the event and will provide operational recommendations to the Assistant General Manager-Plant Operations.

The Event Review Team will look beyond the obvious indications to diagnose the root and contributory causes of the event and evaluate the plant response. They will review the available information thoroughly, looking for (1) abnormal indications or degraded trends performance, (2) events occurring out of the normal or anticipated sequence, (3) failed or degraded response of equipment to control signals, (4) unusual chemistry results or radiation readings, and (5) unanticipated alarms. The actual or suspected cause of the event and any abnormal or degraded indication identified during the transient will be documented in the Event Report.

4.3.3 A preliminary safety assessment of the event and subsequent plant response will be performed by the Event Review Team. The maximum and minimum values of selected parameters will be compared with their established specifications. The Event Report will document this safety assessment.

4.3.4 A root cause determination is to be conducted per Procedure 00058-C, "Root Cause Determination". The root cause worksheet and the recommended corrective actions with actions to prevent recurrence are attached to the Event Review and presented to management for approval.

4.3.5 Corrective actions assigned by the Event Review Team must have the receiving departments concurrence. This may be achieved by having the Event Team members contact their department manager directly or having the ERTL obtaining concurrence at the daily status meeting. If concurrence is not obtained the affected department manager(s) will attend the presentation to management. Their concerns will be resolved by management at this meeting.

4.3.6 The Event classification guidelines in section 4.10 should be used for event classification. The statements following the identified classification(s) should be addressed in the Event Report.

Once the event is classified, the Event Review Team Leader (ERTL) will inform the GMNP/AGM-OPS/AGM-SPT. If the event is classified as being of unknown cause or safety-related equipment did not function properly during the event, the ERTL will also inform the OSOS, Manager Operations and the Manager Engineering Support.

4.4 RESTARTING WORK/OPERATIONS

4.4.1 The OSOS and ERTL may recommend a restart of the reactor or work, whenever the cause of the event is known, corrected, and all associated safety-related equipment operated satisfactorily during the event.

4.4.2 The ERTL will inform the GMNP/AGM-OPS/AGM-SPT when an event cause is unknown. At the request of the ERTL, appropriate management or personnel will report to the plant site to assist in further investigation of the event and to determine necessary corrective action before restart.
In some cases restarting work or the reactor is appropriate without the investigation being complete. The reactor may only be restarted as allowed by Procedure 10006-C, "Reactor Trip Review" and Procedure 00300-C, "Authority To Startup And Shutdown Reactors".

Operations and Engineering management will analyze the event reconstruction, emphasizing the root cause(s) of the event and the resolution of abnormal or degraded indications. They will use available expertise to resolve questions concerning the cause and plant response. Sources of expertise that should be considered include nuclear steam supply vendors, vendor engineers, on-site engineering staff, corporate engineering staff, and other experienced operations and maintenance personnel. The following information will be presented to management:

a. The actual or most probable cause of the event

b. The maintenance and testing necessary before restart including additional measures to verify the most probable cause

c. Additional monitoring or trending required during and/or after reactor restart

d. Necessary briefings to Operations and/or Maintenance personnel concerning specific equipment indications or possible malfunctions

e. The conditions necessary for resumption of work or for a reactor restart

4.5 REPORT NUMBERING

Each Event Report will be assigned a sequential number with the unit number and last two digits of the current year preceding the assigned number (e.g. 1-89-XXX). The sequence will begin at X-XX-001 (e.g. 1-89-001) at the beginning of each year. An Event Report log will be kept by ISEG and updated as each event occurs.

4.6 EVENT REPORT

The following basic information should be included by the ERTL in an Event Report. The ERTL may delete non-applicable sections.

4.6.1 Unit(s) Status at Time of Event

List the plant operating conditions prior to the event for each unit involved. These include: 1) megawatts thermal, 2) percent of rated thermal power, and 3) mode. The information may be augmented by reactor pressure, reactor coolant temperature, or other applicable information.

This section should also include any inoperable equipment, structures or components that contributed to the event. The status of these systems must be stated.

This section will have two major subheadings:

1. Power Level/Mode and
2. Inoperable Equipment.

The sections should be in the form:

1. Power Level/Mode
   Unit 1 was in steady state operation at an approximate power of 3411 MWt (100 percent of rated thermal power). The reactor was in mode 1.

2. Inoperable Equipment
   The TD AFW system was tagged out of service for maintenance.

4.6.2 Description of Event

This section has 6 subsections. These are: 1) Event, 2) Dates/Times, 3) Other Systems Affected, 4) Method of Discovery, 5) Operator Actions, and 6) Auto/Manual Safety System Response. This section of the report may be written in a narrative fashion where possible.

4.6.2.1 Event

The description of the event shall be written in sufficient depth so that knowledgeable readers conversant with the design of commercial nuclear power plants, but not familiar with the details of a particular plant, can understand the complete event. Characteristics of a plant that are unique and that influenced the event, favorable or unfavorable should be described. Also, describe how system, component, and operating personnel performance affected the course of the event. The description of the event should also describe the event from the perspective of the operator, for example, what the operator saw, did, perceived, understood, or misunderstood during the event.

4.6.2.2 Dates/Times

This section may be done in a serial (list) fashion. However, every attempt should be made to maintain each item in the list in a narrative form.

Include the dates and approximate time for all major occurrences (e.g., discoveries, immediate corrective actions, systems/components declared inoperable/operable, reactor trip, stable conditions achieved). Include an estimate of the time and date of failure of components, trains, and systems if different than the time and date of discovery. For failure that rendered a train of a safety system inoperable, provide an estimate of the elapsed time from the discovery of the failure until the train was returned to service.

4.6.2.3 Other Systems Affected

Provide a list of other systems or secondary functions that were also affected by each component failure or fault, if the component had multiple functions (if none, so state).

4.6.2.4 Method of Discovery

Describe the method of discovery of each component failure, system failure, personnel error or procedural deficiency (e.g., while reviewing surveillance procedures or results . . . , during a pre-startup valve lineup check . . ., while performing quarterly maintenance on . . ., during a plant walkdown . . .).

4.6.2.5 Operator Actions

Describe all major operator action that affected the course of the event (including immediate corrective actions, operator errors, etc.) and any procedural deficiencies that contributed to the event (if none, so state).

4.6.2.6 Auto/Manual Safety System Response

List all automatic and manually initiated safety system responses that occurred including those necessary to place the plant in a safe and stable condition. ("All systems responded as designed" is not sufficient. If none, so state.)

4.6.3 Cause of Event

This section has two subsections: 1) Direct Cause, and 2) Root Cause(s). Both of these sections should be written in as close as possible to a narrative format. Each subsection is more fully described below.

4.6.3.1 Direct Cause

Describe the cause of the event per section 4.10 and include the failure mode, mechanism (direct cause), and effect (consequence) of each failed component (e.g. valve failed to open because the stem broke resulting in no flow to the reactor).

4.6.3.2 Root Cause (Perform per Procedure 00058-C, "Root Cause Determination" and attach a copy of the root cause determination worksheets).

If the event involved personnel error, the cause discussion must also include:

- Information as to whether the personnel error was the result of a cognitive error or the result of a procedural error. Also, information as to whether the personnel error was a result of not adequately following an approved procedure, was a direct result of an error in an approved procedure, or was a result of the activity or task not being covered by an approved procedure.

- The type of personnel involved in the event (e.g., contractor maintenance personnel, utility-licensed operator, utility-nonlicensed operator, utility maintenance personnel).

- Any unusual characteristics of the work location (e.g., heat, noise, smoke, poor lighting) that directly contributed to the personnel error.

If the cause of a failure cannot be readily determined and the investigation is to continue, state: (a) the steps planned to continue the investigation, and (b) that a supplemental report will be submitted that discusses the results of the investigation and includes the cause and all planned corrective actions.

4.6.4 Analysis of Event

An assessment of the safety consequences and implications of the event should be made. This assessment must include the availability of other systems or components that could have performed the same function as the systems or components that failed (or otherwise became inoperable) during the event. The assessment should also include the safety consequences and implications had it been possible for the event to have occurred under a more severe set of initial conditions (e.g., at power rather than shutdown, at 100% power rather than 20%). If it is concluded that no safety consequences resulted from the event, state how this conclusion was reached.

As general guidance, when an event involves the loss of a system, the analysis should focus on the other systems available to mitigate the event. If the event involves a hardware breakdown or design deficiency/inadequacy the analysis can focus on the administrative controls (procedural guidance that are in effect and which can mitigate the event). Where the event involves an administrative problem, the analysis can focus on the hardware and design that mitigate the consequences of the event.

4.6.5 Corrective Actions

A description of any corrective action planned or taken as a result of the event should be provided. This should include a discussion of repair or replacement actions as well as those actions that will reduce the probability of a similar event occurring in the future (e.g., "the valve was replaced and the personnel involved in the event were counseled," "the pump was repaired and a discussion of the event was included in the training lectures," "no modification to the instrument was deemed necessary but a Caution Notice was inserted into its calibration procedure just prior to the step that initiated the event").

This section should address the four elements of the corrective action program: 1) correction of the deficiency, 2) investigation of similar conditions, 3) determination of root cause of the event, and 4) development of long term corrective action to prevent recurrence. 1

4.7 INVESTIGATION REVIEW

4.7.1 The Event Review Team Leader is to have completed the Event Report within 7 days of the event and present it to appropriate management for approval. The ERTL will ensure that a minority opinion is attached to the report whenever a team member does not agree with finding of the team and request his opinion be included. 1

4.7.2 Department managers who have not provided approval to corrective actions assigned by the Event Review Team will be present at the presentation to management. Department managers will approve of corrective actions or provide alternative corrective actions. Differences will be resolved by plant management. 1

4.7.3 Events with known causes and proper system response will be reviewed by management. If deemed appropriate by the, AGM-OPS, as a result of safety significance or potential generic aspects, the AGM-OPS will forward the report to the PRB for review.

4.7.4 Events with unknown causes or with significant systems not responding properly during the event, if directed by the GMNP/AGM-OPS/AGM-SPT, will be reviewed by the PRB before a reactor or work restart is commenced. In any case, the GMNF/AGM-OPS/AGM-SPT will forward the Event report to the PRB for review.

4.8 FOLLOW-UP

4.8.1 Complete and incomplete corrective actions will be forwarded to the Technical Support Department as part of the original Event Report for input to the Open Item/Commitment Tracking Program. At this point the Event Report Log should be marked with the Investigation report completion date.

4.8.2 When all corrective actions have been implemented and action items closed the Technical Support Department will transmit the completed report to Document Control for retention as a lifetime record.

4.9 EVENT CLASSIFICATION GUIDE

Each Event Report will be classified according to the direct cause of the event. Root and contributory causes are to be classified in the Root Cause Determination . This is to aid in finding problem areas, indicating trends, clarifying administrative controls, and improving the operational reliability of the plant.

DIRECT CAUSE CODES

Cause Code	Meaning
A	Personnel error
B	Design, Manufacturing, Construction/Installation
C	External Cause
D	Defective Procedure

E — Management/Quality Assurance Deficiency

X — Other

The general definitions of these classification are as follows:

A. Personnel Error - This classification is assigned to failures attributed to human errors. When errors were made as a result of following incorrect written procedures, the occurrence should be entered under defective procedure (see Paragraph D below). When errors were made because written procedures were not followed or because personnel did not perform in accordance with accepted or approved practice, the occurrence should be classified under personnel error. For example: failure to use an approved procedure, failure to properly identify equipment, failure to observe radiation protection rules, failure of qualified personnel to perform in accordance with accepted or approved practices. In addition, personnel errors may be due to lack of or insufficient training, experience, supervision, environmental conditions, proper tools, poor health, etc. An event classified as A. Personnel Error should include the following:

   a. A description of the personnel error as well as a concise statement of the personnel error (i.e., Tech "A" did not follow procedure).

   b. A discussion of the procedural involvement as well as employee qualification to perform the indicated task.

   c. An evaluation of the corrective action taken pursuant to the personnel error.

B. Design, Manufacturing, Construction/Installation - This classification is assigned to failures reasonably attributed to design, manufacture, construction or installation of a system, component or structure. For example, failures that were traced to such things as defective materials, significant breakdown in the quality assurance program or components otherwise unable to meet the specified functional requirements or performance specification should be included in this classification.

1. Design Deficiency

An event classified as B. Design Deficiency should include the following:

a. Describe in detail the deficiency and how it related to or contributed to the event. Provide sketches as appropriate.

b. Address the same or similar design deficiency as it may exist elsewhere at the station.

c. Discuss how long the existence of the deficiency has been known and describe any action taken previously to correct it.

2. Manufacturing Deficiency - This classification is assigned to events attributed to a manufacturer's fabrication activities. Generally it will cover a component or system that fails to perform its intended function as specified in design or procurement documents, manufacturer's technical manuals, etc. For example: failures traced to defective material, incorrect materials, abnormal wear or other degradation under normally anticipated plant conditions.

An event classified as B. Manufacturing Deficiency should include the following:

a. Describe in detail the deficiency and how it related to or contributed to the event. Provide sketches as appropriate.

b. Provide manufacturer data such as make, model or part number, sufficient to uniquely identify the deficient item.

c. Indicate whether or not the manufacturer has been notified.

d. Review NPRDS for industry experience.

3. Construction/Installation Deficiency - This classification is assigned to events attributed to field construction and/or installation errors. For example: location of components different from that shown on drawings; not following inspection or cleanliness specifications or installing valves backwards.

   An event classified as a B. Construction/Installation Deficiency should include the following:

   a. Describe in detail the deficiency and how it related to or contributed to the event. Provide sketches as appropriate.

   b. Does the same or similar deficiency exist elsewhere in the plant? Where?

   c. How did the deficiency occur? (if able to determine)

   d. If the deficiency was previously known, describe any action taken to correct the deficiency.

4. Component Failure/Malfunction - This classification is assigned to events whenever the cause of equipment failure cannot reasonably be attributed to inadequate design, manufacturing, construction, or installation.

   An event classified as B. Component Failure/Malfunction should include the following:

   a. Describe in detail the failure and how it occurred.

   b. Describe previous failure of a similar nature and previous corrective actions taken.

   c. Discuss how the failure relates to or contributed to the event.

   d. Address potential generic concerns if applicable.

e. Discuss any relevant preventive maintenance or surveillance testing concerning the item.

f. Review NPRDS for similar items.

C. External Cause - This classification is assigned to failures attributed to natural phenomena. A typical example includes failure resulting from a lightning strike, tornado, or flood. This classification is also assigned to man-made external causes that originate off-site (e.g., an industrial accident at a near-by industrial facility).

An event classified as C. External Cause should include the following:

a. Describe in detail the unusual service condition and what created it.

b. Describe how the condition related to or contributed to the event.

c. Address the same or similar condition which has been identified during the investigation.

d. Address how long the condition had existed and what previous action(s) had been taken to correct the condition.

e. Review industry experience for similar events and corrective action.

D. Defective Procedure - This classification is assigned to failures caused by inadequate or incomplete written procedures (see Paragraph A above) or instruction. The absence of good judgement or good engineering practice generally should be classified as A. Personnel Error. All circumstance cannot be covered by procedures.

An event classified as D. Defective Procedure should include the following:

a. Describe in detail the deficiency and how it related to or contributed to the event. Attach procedures, directives, etc., clearly marked as to problem areas if appropriate.

b. Address the same or similar deficiencies which have been identified during the investigation process.

c. Discuss procedural involvement, if any, as well as personnel qualifications to perform the procedure.

E. Management/Quality Assurance Deficiency - This classification is assigned to a failure of management or management systems (e.g., major breakdowns in the administrative controls, preventive maintenance program, surveillance program, or quality assurance controls).

An event classified ad E. Management/Quality Assurance Deficiency should include the following:

a. Describe in detail the deficiency and how it related to or contributed to the event. Attach procedure or directives clearly marked as to problem areas if appropriate.

b. Address the same or similar deficiencies which have been identified during the investigation process.

c. Discuss procedural involvement, if any, as well as personnel qualifications to perform the procedure.

X. Other - This classification will be assigned to failures for which the approximate cause cannot be identified or which cannot be assigned to one of the classifications noted above.

An event classified as X. Other should include the following:

a. Describe in detail the event and how it was discovered.

b. Discuss previous occurrences of similar nature.

c. Discuss what possible causes have been considered as well as any reasonable postulated cause.

5.0 REFERENCES

5.1 PROCEDURES

5.1.1 00007-C, "Vogtle Duty Manager/Response Team" |

5.1.2 00058-C, "Root Cause Determination"

5.1.3 00150-C, "Deficiency Control"

5.1.4 00300-C, "Authority To Startup And Shutdown Reactors"

5.1.5 10006-C, "Reactor Trip Review"

5.1.6 90142-C, "Security Report Procedure" |

END OF PROCEDURE TEXT

EVENT INVESTIGATION GUIDELINES

1. COLLECT DATA PACKAGE FROM MANAGER OPERATIONS OR OSOS, OR DESIGNEE, AND REVIEW.
2. PREPARE AN INTERVIEW SUMMARY OF QUESTIONS AND ANSWERS FOR EACH INTERVIEW CONDUCTED.
3. REQUEST AND KEEP HARD COPIES OF ALL PERTINENT RECORDS (MWO'S, SECTIONS OF VENDOR MANUALS, PRINT, ETC.)
4. ANSWER QUESTIONS ON SHEETS 8, 9 AND 10.
5. DETERMINE THE SEQUENCE OF EVENTS AND LIST ON SHEET 7.
6. KEEP TRACK OF ACTIONS AND SOLUTIONS FOR USE IN THE EVENT REPORT.
7. WHEN ALL CONCERNS ARE ANSWERED, PERFORM A ROOT CAUSE DETERMINATION PER PROCEDURE 00058-C.
8. DETERMINE THE EVENT CLASSIFICATION AS DESCRIBED IN THE CLASSIFICATION GUIDE, SECTION 4.9.
9. DETERMINE AND DOCUMENT ANY ADDITIONAL RECOMMENDED CORRECTIVE ACTION ON ROOT CAUSE DETERMINATION SHEETS.
10. COMPLETE AN EVENT REVIEW REPORT BASED UPON THE REQUIREMENTS OF SECTION 4.6.
11. PERFORM A SAFETY ASSESSMENT PER 4.3.3 and 4.6.4.
12. DEPARTMENT MANAGER REVIEW AND APPROVAL OF RECOMMENDED CORRECTIVE ACTION AND EXPECTED COMPLETION DATES GIVEN ON THE ROOT CAUSE DETERMINATION SHEETS.
13. PRESENT INVESTIGATION RESULTS TO RESPONSIBLE DEPARTMENT MANAGERS AND SITE MANAGEMENT WITHIN 7 DAYS OF THE EVENT.
14. PROVIDE TRAINING A COPY OF EVENT REPORT FOR REVIEW AND USE IN CONTINUING TRAINING.
15. FORWARD THE EVENT REVIEW PACKAGE TO TECHNICAL SUPPORT DEPARTMENT FOR INPUT TO OPEN ITEM/COMMITMENT TRACKING.
16. TECHNICAL SUPPORT FORWARDS THE EVENT REVIEW PACKAGE TO DOCUMENT CONTROL OR RETAINS AS A HISTORICAL DOCUMENT PER OTHER INSTRUCTIONS.

FIGURE 1 EXAMPLE

Event Report No._____
Report: Page ___ of ___

EVENT PERSONAL STATEMENT*

1. FOR THE PERIOD PRIOR TO, DURING, AND AFTER THE EVENT, SUMMARIZE THE SEQUENCE OF EVENTS THAT YOU OBSERVED, AND YOUR SPECIFIC ACTIONS TAKEN BASED ON INDICATIONS.

2. DID ANY AUTOMATIC SYSTEMS OR EQUIPMENT MALFUNCTION REQUIRE ANY OPERATOR INTERVENTION? (Describe)

3. DID THIS EVENT REVEAL ANY PROCEDURAL INADEQUACIES? (Describe)

FIGURE 2 EXAMPLE

Event Report No. _____
Report: Page ___ of ___

4. IF THIS EVENT OCCURRED AGAIN, WHAT WOULD YOU DIFFERENTLY?

5. ARE THERE ANY LESSONS LEARNED FROM THIS EVENT THAT YOU BELIEVE SHOULD BE INCLUDED IN TRAINING? (Describe)

6. COMMENTS:

SIGNATURE TITLE DATE

* For reactor trips the personnel statement form in Procedure 10006-C may be used in lieu of this form.

FIGURE 2 (CONT'D) EXAMPLE

DATA SHEET 1

Report: Page ___ of ___

EVENT REPORT

EVENT TITLE: _____

REPORT NUMBER: _____

DATE(S) OF EVENT: _____

EVENT CLASSIFICATION: _____

Names of
EVENT REVIEW TEAM MEMBERS _____

Signature of
EVENT REVIEW TEAM LEADER _____

DATE COMPLETED _____

MANAGEMENT REVIEW AND APPROVAL _____

PRB Review Required YES [] NO []

_____ _____

PRB Chairman Meeting No./ Date

Sheet 2 of 10

DATA SHEET 1

Report: Page ___ of ___

TABLE OF CONTENTS FOR

EVENT REPORT NO. _____

* ERTL TO NUMBER EACH PAGE OF THE REPORT AND ENTER APPROPRIATE PAGE NUMBERS. ADDITIONALLY, THE ERTL WILL ENSURE THE EVENT REPORT NUMBER APPEARS ON EACH PAGE OF THE REPORT.

** INFORMATION WILL BE PRESENTED ON THE INDICATED FIGURE.

Sheet 3 of 10

DATA SHEET 1
EVENT DATA COLLECTION

Event Report No. _____
Report: Page ___ of ___

1. EVENT DESCRIPTION _____
EVENT DATE _____ UNIT _____ EVENT TIME _____
DEFICIENCY CARD NUMBER _____
(IF REQUIRED)

2. TYPE OF EVENT

A.	REACTOR TRIP	( )	F.	RADIOACTIVE SPILL/ UNCONTROLLED RELEASE	( )
B.	FORCED REDUCTION	( )	G.	LIQUID INVENTORY LOSS	( )
C.	PLANT TRANSIENT	( )	H.	OTHER SIGNIFICANT EVENT	( )
D.	ESFAS	( )			
E.	PERSONNEL CONTAMIN	( )			

3. EVENT REVIEW TEAM CALLED OUT: TIME _____
SAER INFORMED: TIME _____
CORPORATE DUTY MANAGER INFORMED: TIME _____

4. DATA COLLECTION ASSIGNMENT _____

5. DATA: FOR REACTOR TRIPS COMPLETE 10006-C, AND GIVE A COPY TO THE EVENT REVIEW TEAM. FOR ALL OTHER EVENTS, COMPLETE THE SECTION 5 THROUGH 16 AND PERSONAL STATEMENTS.

SHIFT PERSONNEL	ACTIVITY PERFORMED AT THE TIME OF THE EVENT	STATEMENT ATTACHED YES OR NA
OSOS		
SS		
SS		
RO		
PO		
STA		
OTHERS INVOLVED		

6. DATA TO BE COLLECTED (OSOS TO CHECK ITEMS)
NOTE: REMOVE THE DISK PACK AFTER A TRIP/SI.

PLANT COMPUTER ALARM PRINTOUT	( )	PLANT COMPUTER EVENT LOGS	( )
ATSI PRINTOUT	( )	ERF COMPUTER EVENT LOGS	( )
FAULT RECORDER PRINTOUT	( )	ERF COMPUTER TREND PRINTS	( )

CHART RECORDERS (LIST) _____

COPIES OF:			
		NRC-OC NOTIFICATION WORKSHEET	( )
SS LOGS	( )	AUX BLDG OPERATOR LOG	( )
TURBINE BLDG LOG	( )	RWO LOG	( )
CONTROL BLDG OPERATOR LOG	( )	ELECTRICAL LOG	( )
OUTSIDE OPERATOR LOG	( )	UNIT CONTROL	( )

CHEMISTRY _____
HP _____
RWO'S _____

DATA SHEET 1 Event Report No. _____
Report: Page ___ of ___

7. PLANT CONDITION WHEN APPROPRIATE

		PRE-EVENT	MAXIMUM/MINIMUM VALUE	POST EVENT
MODE			/	
REACTOR POWER			/	%
BORON CONCENTRATION			/	
STEAM GENERATOR LEVEL	1*		/	
* Use NR or WR, whichever is indicating	2*		/	
	3*		/	
	4*		/	
GENERATOR OUTPUT			/	MWE
PRESSURIZER LEVEL			/	

8. PLANT CONFIGURATION

8.1 OFF NORMAL STATUS OF PLANT SYSTEMS _____

8.2 TESTS AND SURVEILLANCES IN PROCESS _____

8.3 OTHER OPERATIONS IN PROGRESS AT THE TIME OF THE EVENT _____

9. FOR ESFAS ACTUATION OR FAILURE AUTOMATIC ( ) MANUAL ( ) N/A ( )

9.1 LIST CHANNEL ACTUATED/FAILED _____

EXPLAIN SYSTEM RESPONSE _____

9.2 DID THE ESFAS COMPONENTS OPERATE CORRECTLY? YES ( ) NO ( )
WITHOUT UNDUE DELAY? YES ( ) NO ( )

9.3 EXPLAIN ANY ABNORMAL SYSTEM ESFAS RESPONSES. WHY? _____

DATA SHEET 1 Event Report No. _____
Report: Page ___ of ___

9.4 DESCRIBE ANY OTHER MALFUNCTIONS NOTICED: _____

9.5 APPARENT EVENT CAUSE WAS _____

10. CORRECTIVE ACTIONS

10.1 WHAT IMMEDIATE CORRECTIVE ACTIONS WERE TAKEN AS A RESULT OF THE EVENT?

10.2 WHAT SUBSEQUENT CORRECTIVE ACTIONS ARE IN PROGRESS AS A RESULT OF THE EVENT? _____

10.3 WHAT FURTHER CORRECTIVE ACTIONS ARE RECOMMENDED? _____

11. LIST CORRECTIVE ACTION TAKEN FOR EACH ABNORMAL OCCURRENCE OR EQUIPMENT MALFUNCTION THAT ACCOMPANIED THE EVENT (STATE WHETHER COMPLETED, IN PROGRESS, OR PROPOSED).

12. WERE PROCEDURES USED ADEQUATE? YES ( ) NO ( )
WHY NOT? _____

13. DID THE OPERATORS AND OTHER PERSONNEL HANDLE THE EVENT CORRECTLY? EXPLAIN. DISCUSS CORRECTIVE ACTION TO DATE. _____

DATA SHEET 1 Event Report No._____
Report: Page ___ of ___

14. WAS AN EMERGENCY PLAN EAL REACHED? DESCRIBE LEVEL INVOLVED (NOUE, ALERT, SITE AREA, GENERAL).

15. LIST LCO'S ENTERED

LCO NO.	DESCRIPTION	INITIALS

16. LIST ANY SAFETY LIMITS EXCEEDED. TECH SPEC AND DESCRIPTION

COMPLETED BY:_____
DATA COLLECTOR

Sheet 7 of 10

DATA SHEET 1 Event Report No.________
Report: Page ___ of ___

SEQUENCE OF EVENTS
CHRONOLOGY

DATE/TIME	EVENT
________	______________________________
________	______________________________
________	______________________________
________	______________________________
________	______________________________
________	______________________________
________	______________________________
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________	______________________________

DATA SHEET 1 Event Report No._____
Report: Page ___ of ___

INVESTIGATION QUESTIONS

A. GENERAL

1. DOES THE EVENT REPRESENT A PREVIOUSLY UNFORESEEN ACCIDENT SEQUENCE? YES/NO

2. DOES THE FAILURE DIRECTLY OR THROUGH INTERACTION WITH OTHER SYSTEMS DEGRADE THE PERFORMANCE OF ANY SAFETY-RELATED EQUIPMENT? YES/NO

3. DOES THE FAILURE DIRECTLY OR THROUGH INTERACTION WITH OTHER SYSTEMS INCREASE THE PROBABILITY OF AN ACCIDENT? YES/NO

4. DOES THIS FAILURE CHALLENGE OR ACTIVATE SAFETY SYSTEMS? YES/NO

5. DOES THE EVENT INCREASE THE PROBABILITY OF TRANSIENT OCCURRENCES AND/OR REACTOR TRIPS? YES/NO

6. DURING THE EVENT, DID THE OPERATIONS STAFF RESPOND CORRECTLY? YES/NO

7. ARE TRAINING KNOWLEDGE OBJECTIVES, PERFORMANCE TASKS AND CONTROLS ADEQUATE TO PROMOTE THE PROPER PERFORMANCE OF THE OPERATIONS STAFF UNDER SIMILAR CIRCUMSTANCES? YES/NO

8. BASED ON A COMPARISON OF THIS EVENT WITH PREVIOUS EVENT REPORTS AND/OR FSAR ANALYSES, WERE THERE ANY ABNORMAL OR DEGRADED INDICATIONS? YES/NO

9. BASED ON COMPARISON OF RELATED SIMILAR INDUSTRY AND IN-HOUSE EVENTS, IS THIS EVENT A REOCCURRENCE OF A PREVIOUS EVENT: YES/NO

10. DURING THIS EVENT, DID ALL AFFECTED SYSTEMS RESPOND AS EXPECTED? YES/NO

11. DID THE INITIAL EVENT PRODUCE UNANTICIPATED SECONDARY EFFECTS WHICH COMPLICATED OR INCREASED THE CONSEQUENCES OF THE EVENT? YES/NO

Sheet 9 of 10

DATA SHEET 1 Event Report No._____
Report: Page ___ of ___

INVESTIGATION QUESTIONS (CONT'D)

12. BASED ON COMPARISON OF SIMILAR INDUSTRY AND IN-HOUSE EVENTS WERE PREVIOUS CORRECTIVE ACTIONS/IMPLEMENTATION EFFECTIVE? YES/NO

13. IF QUESTIONS 1, 2, 3, 4, 5, 8, 9, OR 11 ARE ANSWERED YES, DESCRIBE THE REASON IN DETAIL IN THE EVENT REPORT.

14. IF QUESTION 6, 7, 10, or 12 ARE ANSWERED NO, DESCRIBE THE REASON IN DETAIL IN THE EVENT REPORT.

B. PERSONNEL ERRORS

1. WERE JOB ENVIRONMENT CONDITIONS SUCH AS LIGHTING, VENTILATION, EXTREME TEMPERATURE OF PHYSICAL ACCESS TO THE TASK CONTRIBUTING FACTORS? YES/NO

2. WERE PROPER TOOLS AVAILABLE AND USED? YES/NO

3. WERE WRITTEN, APPROVED PROCEDURE AVAILABLE AND PROPERLY FOLLOWED? YES/NO

4. IF THE PROCEDURE WERE FOLLOWED, WAS PROCEDURE COMPLIANCE A CONTRIBUTORY CAUSE? YES/NO

5. WERE ADEQUATE INSTRUCTIONS GIVEN AND COMPREHENSION VERIFIED? YES/NO

6. WERE THE PERSONNEL INVOLVED IN THE PROPER PHYSICAL CONDITION? YES/NO

7. DID THE PERSONNEL INVOLVED HAVE ERRONEOUS IDEAS AND/OR CONCEPTS ABOUT THE SYSTEM INVOLVED? YES/NO

8. DID THE PERSONNEL INVOLVED HAVE PREVIOUS EXPERIENCE AND/OR TRAINING ON THE SYSTEM INVOLVED? YES/NO

9. DID THE PERSONNEL RECEIVE A BRIEFING OF THE EVOLUTION PRIOR TO STARTING? YES/NO

10. WERE COMMUNICATIONS ADEQUATE FOR THE EVOLUTION? YES/NO

11. WERE COMMUNICATIONS TESTED PRIOR TO STARTING? YES/NO

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E Distribution System, and

b. Two separate and independent diesel generators, each with:

1) A day tank containing a minimum volume of 650 gallons of fuel (52% of instrument span) (LI-9018, LI-9019),

2) A separate Fuel Storage System containing a minimum volume of 68,000 gallons of fuel (76% of instrument span) (LI-9024, LI-9025), and

3) A separate fuel transfer pump,

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one offsite circuit of the above-required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If either diesel generator has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 for each such diesel generator, separately, within 24 hours unless the diesel generator is already operating. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With either diesel generator inoperable, demonstrate the OPERABILITY of the above required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 24 hours*#. Restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

---

*This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

#The diesel shall not be rendered inoperable by activities performed to support testing pursuant to the ACTION Statement (e.g., an air roll).

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and, if the diesel generator became inoperable due to any cause other than preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 8 hours*, unless the OPERABLE diesel generator is already operating#. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite circuit or diesel generator) to OPERABLE status in accordance with the provisions of 3.8.1.1, ACTION Statement a or b, as appropriate, with the time requirement of that ACTION Statement based on the time of initial loss of the remaining inoperable A.C. power source. A successful test of diesel generator OPERABILITY per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under the ACTION Statement for an OPERABLE diesel generator or a restored to OPERABLE diesel generator satisfies the diesel generator test requirement of ACTION Statement a or b.

d. With one diesel generator inoperable in addition to ACTION b. or c. above, verify that:

   1. All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

   2. When in MODE 1, 2, or 3, the steam-driven auxiliary feedwater pump is OPERABLE.

   If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators separately by performing the requirements of Specification 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 within 8 hours*, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow ACTION Statement a with the time requirement of that ACTION Statement based

*This test is required to be completed regardless of when the inoperable EDG is restored to OPERABILITY.

#The diesel shall not be rendered inoperable by activities performed to support testing pursuant to the ACTION Statement (e.g., an air roll).

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

on the time of the initial loss of the remaining inoperable offsite a.c. circuit. A successful test(s) of diesel OPERABILITY per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under this ACTION Statement for the OPERABLE diesels satisfies the diesel generator test requirement for ACTION Statement a.

f. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing the requirements of Specification 4.8.1.1.1.a. within 1 hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Following restoration of one diesel generator unit, follow ACTION Statement b with the time requirement of that ACTION Statement based on the time of initial loss of the remaining inoperable diesel generator. A successful test of diesel OPERABILITY per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under this ACTION Statement for a restored to OPERABLE diesel satisfies the diesel generator test requirements of ACTION Statement b.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the Onsite Class 1E Distribution System shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, and indicated power availability.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1) Verifying the fuel level in the day tank (LI-9018, LI-9019),

2) Verifying the fuel level in the fuel storage tank (LI-9024, LI-9025),

3) Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank,

4) Verifying the diesel starts and that the generator voltage and frequency are 4160 + 170, -135 volts and 60 + 1.2 Hz within 11.4 seconds* after the start signal. The diesel generator shall be started for this test by using one of the following signals:

*All diesel generator starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

a) Manual, or

b) Simulated loss-of-offsite power by itself, or

c) Simulated loss-of-offsite power in conjunction with an ESF Actuation test signal, or

d) An ESF Actuation test signal by itself.

5) Verifying the generator is synchronized, loaded to an indicated 6800-7000 kW*, and operates at this loaded condition for at least 60 minutes, and

6) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

7) Verifying the pressure in at least one diesel generator airstart receiver (PI-9060, PI-9061, PI-9064, PI-9065) to be greater than or equal to 210 psig.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day fuel tank;

c. At least once per 31 days by checking for and removing accumulated water from the fuel oil storage tanks;

d. By sampling new fuel oil in accordance with ASTM-D4057 prior to addition to storage tanks and:

1) By verifying in accordance with the tests specified in ASTM-D975-81 prior to addition to the storage tanks that the sample has:

a) An API Gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89, or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees:

---

*This band is meant as guidance to avoid routine overloading of the diesel generator. Loads in excess of the band or momentary variations due to changing bus loads shall not invalidate the test.

#All diesel generator starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

b) A kinematic viscosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes, if gravity was not determined by comparison with supplier's certification;

c) A flash point equal to or greater than 125°F; and

d) A clear and bright appearance with proper color when tested in accordance with ASTM-D4176-82.

2) By verifying within 30 days of obtaining the sample that the other properties specified in Table 1 of ASTM-D975-81 are met when tested in accordance with ASTM-D975-81 except that the analysis for sulfur may be performed in accordance with ASTM-D1552-79 or ASTM-D2622-82.

e. At least once every 31 days by obtaining a sample of fuel oil in accordance with ASTM-D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM-D2276-78 Method A;

f. At least once per 92 days and from new fuel prior to addition to the storage tank obtain a sample and verify that the neutralization number is less than 0.2 and the mercaptan content is less than 0.01% #.

g. At least once per 184 days by:

1) Verifying the diesel starts* from ambient conditions and the generator voltage and frequency are 4160 + 170, -135 volts and 60 ± 1.2 Hz within 11.4 seconds after the start signal. The diesel generator shall be started for this test by using one of the signals listed in Surveillance Requirement 4.8.1.1.2.a.4. This test, if it is performed so it concides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

---

*All engine starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer to minimize mechanical stress on the diesel engine.

#Mercaptan content shall not be required to be verified within specification for new fuel prior to its addition, for up to 15,000 gallons of fuel added to the tank, if the last tank sample had a mercaptan content of less than 0.007%. All subsequent new fuel addition will require mercaptan content verification prior to its addition until the tank contents are verified to be less than 0.007%.

2) Verifying the generator is synchronized, loaded to an indicated value of 6100 - 7000 kW*** in less than or equal to 60 seconds, and operates with a load of 6800-7000 kW*** for at least 60 minutes. This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.5, may also serve to concurrently meet those requirements as well.

h. At least once per 18 months,** during shutdown, by:

1) Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturers' recommendations for this class of standby service;

2) Verifying the diesel generator capability to reject a load of greater than or equal to 671 kW (motor-driven auxiliary feedwater pump) while maintaining voltage at 4160 + 240, -410 volts and speed of less than 484 rpm (less than nominal speed plus 75% of the difference between nominal speed and the Overspeed Trip Setpoint); and recovering voltage to within 4160 + 170, -410 volts within 3 seconds.

3) Verifying the diesel generator capability to reject a load of 7000 kW without tripping. The generator voltage shall not exceed 5000 volts during and following the load rejection;

4) Simulating a loss-of-offsite power by itself, and:

a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and

b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11.5 seconds,* energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 +170, -410 volts and 60 $\pm$ 1.2 Hz during this test.

5) Verifying that on an ESF Actuation test signal, without loss-of-offsite power, the diesel generator starts* on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be 4160 +170, -135 volts and 60 $\pm$ 1.2 Hz within 11.4 seconds after the

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*All engine starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer to minimize mechanical stress and wear on the diesel engine.

**For any start of a diesel, the diesel must be operated with a load in accordance with the manufacturer's recommendations.

***This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band or momentary variations due to changing bus loads shall not invalidate this test.

auto-start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test;

6) Simulating a loss-of-offsite power in conjunction with an ESF Actuation test signal, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses;

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11.5 seconds,* energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 +170, -410 volts and 60 + 1.2 Hz during this test; and

   c) Verifying that all automatic diesel generator trips, except engine overspeed, low lube oil pressure, high jacket water temperatures and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a Safety Injection Actuation signal.

7) Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated 7600 to 7700 kW,** and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 6800-7000 kW.** The generator voltage and frequency shall be 4160 + 170, - 135 volts and 60 ± 1.2 Hz within 11.4 seconds after the start signal; the steady-state generator voltage and frequency shall be 4160 + 170, -410 volts and 60 ± 1.2 Hz during this test.# Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2h.6)b);##

8) Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 7000 kW;

9) Verifying the diesel generator's capability to:

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*All engines starts for the purpose of surveillance testing as required by Specification 4.8.1.1.2 may be preceded by an engine prelube period as recommended by the manufacturer to minimize mechanical stress and wear on the diesel engine.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band or momentary variations due to changing bus loads shall not invalidate the test.

#Failure to maintain voltage and frequency requirements due to grid disturbances does not render a 24-hour test as a failure.

##If Specification 4.8.1.1.2h.6)b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at the load required by Surveillance Requirement 4.8.1.1.2.a5 kW for 1 hour or until operating temperature has stabilized.

SURVEILLANCE REQUIREMENTS (Continued)

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

10) Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;

11) Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines;

12) Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval;

i. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 440 rpm in less than or equal to 11.4 seconds; and

j. At least once per 10 years by:

1) Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution, or equivalent, and

2) Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110% of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or nonvalid, shall be reported to the Commission in a Special Report pursuant to Specification 6.8.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests on a per nuclear unit basis is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Number of Failures in Last 100 Valid Tests*	Test Frequency
≤ 1	≤ 4	Once per 31 days
≥ 2**	≥ 5	Once per 7 days

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, but determined on a per diesel generator basis.

For the purposes of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul, including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive tests in a single series. Ten of these tests shall be in accordance with the routine Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 and four tests in accordance with the 184-day testing requirement of Surveillance Requirement 4.8.1.1.2.f. If this criterion is not satisfied during the first series of tests, any alternate criterion to be used to transvalue the failure count to zero requires NRC approval.

**The associated test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one.

VOID

DIESEL GENERATOR OPERABILITY TEST

1.0 PURPOSE

1.1 This surveillance procedure is used to demonstrate the operability of the Emergency Diesel Generators. This procedure should not be used for maintenance troubleshooting or testing.

1.2 This surveillance satisfies these Technical Specification Requirements:

4.8.1.1.2.a
4.8.1.1.2.b
4.8.1.1.2.g

1.3 The frequency of this test is given by Technical Specification Table 4.8-1.

2.0 APPLICABILITY

2.1 This surveillance is applicable in Modes 1, 2, 3 and 4.

2.2 Portions of this surveillance are applicable in Modes 5 and 6.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 The Unit Shift Supervisor (USS) shall be notified immediately if a subsystem or component malfunctions or test data indicate a potential problem during a surveillance test.

3.2 The rated capacity of a Diesel Generator is 7000 kW. Load should not be permitted to exceed this limit during testing. The Diesel Generator should not be operated at less than 30% load (2100 kW) for prolonged periods of time.

3.3 During Diesel Generator load testing, loads in excess of 7000 kW or momentary variations due to changing bus loads shall not invalidate the test.

3.4 If during a Diesel Engine start the Fail To Start alarm comes in but the engine keeps running, the support systems will operate as if the engine was shut down. To reset these systems the START pushbutton must be pressed. This will stop the Keep Warm Pumps, turn off the Keep Warm Heaters, stop the Crankcase Fans and place the alarms in service that are bypassed when shut down.

3.5 Once initiated, the Diesel Generator shutdown signals remain in effect for 90 seconds. During this period, the Diesel Generator will only respond to an emergency start signal. To prevent the depletion of starting air, wait until the local red stopping light is OFF (approximately 90 seconds) after a normal stop before attempting to start the diesel.

3.6 All start attempts, including those from bona fide start signals, shall be logged in the USS and/or the Control Room logbook. The log entry shall include the following information:

a. Start time,

b. Reason for start,

c. Success or failure of the start attempt.

3.7 The Emergency Diesel Generators shall not be used for peaking service.

3.8 Diesel Generator surveillance tests shall be initiated only from the Control Room.

3.9 During surveillance testing, only one Diesel Generator shall be paralleled at a time to the off-site power source.

3.10 The Diesel Generator has been aligned for standby per 13145-1, "Diesel Generators" and a current copy of 11145-1, "Diesel Generator Alignment" and 11146-1, "Diesel Generator Fuel Oil Transfer System Alignment" are on file.

3.11 If any unusual grid disturbances occur while the Diesel Generator is operating, start the Fault Recorder in the Control Room and notify the System Engineer for an evaluation of the problem.

3.12 Testing of a Diesel Generator for troubleshooting (i.e., first engine run following major maintenance, etc.) should be performed using 13145-1, "Diesel Generators". If necessary, testing for operability should follow using this procedure.

INITIALS

3.13 A cylinder moisture check shall not be performed if in an action statement of Technical Specification 3.8.1.1 or 3.8.1.2.

4.0 PREREQUISITES OR INITIAL CONDITIONS

4.1 The USS shall ensure this surveillance test does not affect other tests presently in progress or jeopardize plant operation prior to granting approval to perform this surveillance test.

USS APPROVAL

4.2 OBTAIN the following test equipment:

a. Two stop watches.

No. 1 serial number _____

No. 2 serial number _____

b. A clear container 1 liter size or larger.

4.3 NOTIFY the System Operator and the Unit 2 Control Room of the Diesel Generator Test.

4.4 The NSCW System is in service to provide cooling water to the Diesel Generator Jacket Water Heat Exchangers.

INITIALS

5.0 INSTRUCTIONS

TEST STARTED _____ DATE _____ TIME _____ MODE _____

Diesel Generator Being Tested _____

NOTE

Once begun, the appropriate portions of this procedure should be completed if possible and the system subsystem or component returned to service or committed to repair as required.

5.1 DIESEL GENERATOR STARTUP

NOTE

Prior to performing the six month surveillance, the diesel should remain in standby for several hours to allow temperatures to stabilize.

5.1.1 If this test is being performed as the six-month (184 day) surveillance per Technical Specification 4.8.1.1.2.g VERIFY the Diesel Generator has been shutdown for more than 4 hours. _____

NOTE

While the Diesel Generator is in operation check for rubbing or excessive vibration of small diameter tubing supporting Diesel Generator operation, e.g., fuel lines, instrument tubing, or instrument air tubing.

5.1.2 STATION an operator in the Diesel Generator Building to monitor the Diesel Generator operation and maintain headset or radio communication with the Control Room throughout the duration of the test. _____

INITIALS

CAUTION

The cylinder moisture check shall not be performed if this test is performed as an action item of Technical Specification 3.8.1.1 for 3.8.1.2.

5.1.3 If it has not been performed within the preceding 4 hours, PERFORM a Cylinder Moisture Check per 13145-1, "Diesel Generators". _____

5.1.4 RECORD the Diesel Generator pre-startup readings on Section A of 11885-C, "Diesel Generator Operating Log".

5.1.5 RECORD the Engine Hours on Data Sheet 1. _____

5.1.6 TEST the annunciator lights at the alarm panel at PDG2 (PDG4), and VERIFY that all annunciator lights are operable. _____

5.1.7 If this test is performed as the regular monthly surveillance, ALIGN the starting air system as follows:

5.1.7.1 If the month is January, April, July or October, UNLOCK and CLOSE the Air Start Receiver 1 Discharge Isolation 1-2403-U4-765(722). _____

5.1.7.2 If the month is February, May, August or November, UNLOCK and CLOSE the Air Start Receiver 2 Discharge Isolation 1-2403-U4-769(729). _____

5.1.7.3 RECORD the valve which was closed on Data Sheet 1. If both valves were left open, RECORD "Both Valves Open" on Data Sheet 1.

INITIALS

CAUTION

The Turbo Lube Oil Orifice Bypass Valve should be opened (Step 5.1.8) 1 to 2 minutes prior to diesel start and should be promptly closed (Step 5.1.12) after the start. Steps 5.1.8 through 5.1.12 should be performed expeditiously. Excess prelubrication may result in oil accumulation in the exhaust piping and an exhaust fire upon engine start.

5.1.8 OPEN the Turbo Lube Oil Orifice Bypass Valve 1-2403-U4-130(131). _____

5.1.9 PLACE the DSL GEN 1A(1B) VM SW Switch to A-B. _____

5.1.10 When starting the Diesel Generator, TIME the following:

5.1.10.1 The time from depressing the Diesel Generator START Pushbutton until voltage reaches 4025 to 4330 volts.

5.1.10.2 The time from depressing the Diesel Generator START Pushbutton until frequency reaches 58.8 to 61.2 Hz.

NOTES

a. While the diesel engine is starting the operator in the Diesel Room should listen for the escape of air from the Starting Air Manifold Vent to verify the manifold vent is open and unobstructed.

b. When the Diesel Generator is started in the next step, the Generator Trouble Alarm may annunciate due to a spurious Generator Field Ground relay actuation. This is a normal startup alarm and relay

5.1.11 At Panel QEAR, DEPRESS the DIESEL GENERATOR START Pushbutton [redacted] _____

INITIALS

5.1.12 CLOSE the Turbo Lube Oil Orifice Bypass Valve 1-2403-U4-130(131). _____

5.1.13 RECORD the time to voltage and frequency on Data Sheet 1.

5.1.14 RECORD the Diesel Generator voltage and frequency on Data Sheet 1.

5.1.15 If the Generator Field Ground relay flag is visible, then PERFORM the following at Generator Control Panel PDG1 (PDG3).

a. RESET the DG1A (DG1B) Generator Field Ground relay flag by placing the Generator Field Ground Relay Test Switch to the RESET position. _____

b. DEPRESS the Relay Target Reset Pushbutton. _____

5.1.16 LOCK OPEN the Air Start Receiver Discharge Isolation which was closed in Step 5.1.7. _____

5.1.17 If the Diesel Generator is to be paralleled to the 4160V AC bus, PROCEED to Subsection 5.2.

5.1.18 If the Diesel Generator is to be shut down, immediately PROCEED to Subsection 5.3.

INITIALS

5.2 DIESEL GENERATOR LOADING

CAUTION

If the Diesel Generator is being operated in the Parallel mode never transfer the LOCAL-REMOTE Switch 1-HS-4516 (4517) on PDG1 (3) to LOCAL as this will take governor and voltage regulator out of the droop mode.

NOTE

If this test is to perform the 6 month surveillance, then the Diesel Generator should not be allowed to idle prior to paralleling and loading.

5.2.1 If this test is not performed as the six month surveillance, then IDLE the diesel for 5-10 minutes until temperatures stabilize. _____

5.2.2 ENSURE the Diesel Generator 1A(1B) SYNC MODE SELECTOR Switch TS-DG1A (DG1B) is in AUTO. _____

CAUTION

Never place two sync-switches to the ON position at the same time. A blown PT fuse may result.

5.2.3 PLACE the breaker 1AA0219 (1BA0319) Sychronization Switch to ON. _____

5.2.4 Momentarily PLACE the DSL GEN 1A(1B) UNIT/PARALLEL Switch 1HS-4414B (HS-4452B) to PARALLEL and OBSERVE the red DSL GEN 1A(1B) DROOP MODE light is on. _____

		INITIALS
5.2.5	OBSERVE 4160V Bus 1AA02 (1BA03) voltage on the QEAB RUNNING Voltmeter via BUS 1AA02 NORM INCM VM SW (BUS 1BA03 NORM INCM VM SW) and Diesel Generator 1A(1B) voltage on the QEAB INCOMING Voltmeter via DSL GEN 1A VM SW (DSL GEN 1B MV SW).	[redacted]
5.2.6	VERIFY that the Sync Scope Meter is rotating and that the Synchronizing Lights are bright at the 6 o'clock position and dark at the 12 o'clock position and that the SYNC PERMISSIVE red light comes on near the 12 o'clock position.	[redacted]
5.2.7	ADJUST generator voltage as necessary to slightly lead the bus voltage (Generator voltage less than 50V above the lowest phase of bus voltage).	[redacted]
5.2.8	While observing the Sync Scope, ADJUST the generator speed until the Sync Scope needle is rotating slowly in the clockwise (FAST) direction (8 to 10 seconds rotation).	[redacted]
5.2.9	If this surveillance is being performed as the regularly monthly test, or as an action item of Technical Specification 3.8.1.1, PERFORM Step 5.2.11 and MARK Step 5.2.12 as N/A.	[redacted]
5.2.10	If this surveillance is being performed as the six-month (184 day) test per Technical Specification 4.8.1.1.2.g, PERFORM Step 5.2.12 and MARK Step 5.2.11 as N/A.	[redacted]
5.2.11	PARALLEL the Diesel Generator to the bus.	[redacted]
5.2.11.1	When the Sync Scope needle reaches the 11 o'clock position, DEPRESS and HOLD the Diesel Generator 1A(1B) AUTO SYNC PERMISSIVE Pushbutton PB-DG1A (PB-DG1B).	[redacted]
5.2.11.2	When the DG1A (DG1B) OUTPUT BRKR 1AA0219 (1BA0319) closes, RELEASE the Auto Sync Permissive Pushbutton.	[redacted]

INITIALS

NOTE

To perform the six-month test, the Diesel Generators load must be raised to greater than 6100 kW within 60 seconds of closing the Diesel Generator Output Breaker.

5.2.12 Parallel the Diesel Generator to the bus.

5.2.12.1 When paralleling the Diesel Generator, TIME the interval from closing the Diesel Generator Output Breaker until load exceeds 6100kW. _____

5.2.12.2 When the Sync Scope needle reaches the 11 o'clock position, DEPRESS and HOLD the Diesel Generator 1A(1B) AUTO SYNC PERMISSIVE Pushbutton PB-DG1A (PB-DG1B). _____

5.2.12.3 When the DG1A (DG1B) OUTPUT BRKR 1AA0219 (1AB0319) closes, RELEASE the Auto Sync Permissive Pushbutton. _____

5.2.12.4 RAISE generator load to 6100-7000 KW. _____

5.2.12.5 RECORD the time required to raise Diesel Generator load above 6100kW on Data Sheet 1.

NOTES

a. When not performing the six-month test, the Generator should be step loaded in increments of approximately 1000 kW and 500 kVAR with 3 - 4 minutes between load changes.

b. As the generator voltage is adjusted, the kVAR should be maintained positive and no more than half of the kW load.

5.2.13 PLACE the breaker 1AA0219 (1BA0319) Synchronization Switch to OFF. _____

INITIALS

5.2.14 ADJUST generator load to 6800-7000kW. _____

5.2.15 ADJUST generator voltage to maintain generator kVARS between 2500 and 3000 OUT. _____

5.2.16 RECORD the time at which Diesel Generator load exceeded 6800kW on Data Sheet 1.

5.2.17 When the Diesel Generator has been loaded for 30 minutes, INITIATE 11885-C, "Diesel Generator Operating Log." _____

NOTE

Subsection 5.4, Fuel Oil Transfer Pump Testing and 5.5, Air Compressor Test may be completed during the Diesel Generator loaded run if desired.

5.2.18 While the diesel is loaded, EXAMINE the following and NOTE any problems:

5.2.18.1 Generator Slipring and Brushes, _____

5.2.18.2 Generator Bearing Oil Rings, _____

5.2.18.3 Jacket Water System, _____

5.2.18.4 Lube Oil System, _____

5.2.18.5 Fuel Oil System, _____

5.2.18.6 Diesel engine intake and exhaust piping, _____

5.2.18.7 Combustion Air Header Drains (4), One valve at each end of both manifolds. _____

INITIALS

NOTES

a. As generator load is adjusted, generator voltage should be adjusted concurrently to maintain kVAR load OUT (positive) and no more than one-half of the kW load.

b. The Generator should be unloaded in increments of approximately 1000 kW and 500 kVAR with 3 to 4 minutes between load change.

5.2.19 When the Diesel Generator has been loaded to greater than 6800 kW for at least 1 hour.

5.2.19.1 RECORD the time load was reduced to less than 6800kW on Data Sheet 1. _____

5.2.19.2 REDUCE Diesel Generator load to 100-200 kW and 50-100 kVAR. _____

5.2.19.3 TRIP the DG1A (DG1B) OUTPUT BRKR 1AA0219 (1BA0319). _____

5.2.19.4 IDLE the Diesel Generator unloaded for 4-5 minutes. _____

5.2.20 SHUT DOWN the Diesel Generator per Subsection 5.3.

INITIALS

5.3 DIESEL GENERATOR SHUTDOWN

CAUTION

If an SI signal is received during engine coastdown, monitor lube oil pressure and trip the Diesel Generator if pressure falls below the trip setpoint of 30 psi.

5.3.1 At Panel QEAB, DEPRESS the DIESEL GENERATOR 1A(1B) STOP Pushbutton 1-HS-4571B (4572B). _____

5.3.2 RECORD the time the Diesel Generator was shut down on Data Sheet 1. _____

5.3.3 At 480V AC MCC 1NB1 (1NB0), VERIFY the Generator Space Heater is energized. _____

5.3.4 VERIFY the Jacket Water Keep-Warm Pump starts. _____

5.3.5 VERIFY the Lube Oil Keep-Warm Pump starts. _____

5.3.6 After approximately two minutes, VERIFY the red stopping light at Panel PDG2 (PDG4) is off. _____

INITIALS

5.3.7 If after approximately 2 minutes, the red STOPPING light is NOT off, RESET as follows:

NOTE

Handswitch is found on the front of the engine auxiliary skid.

a. PLACE the pushbutton 1-HS-4688 (4689), DG1A (DG1B) RUN/STOP, in the PUSH-TO-STOP position for approximately 10 seconds. _____

b. PLACE the pushbutton 1-HS-4688 (4689), DG1A (DG1B) RUN/STOP, in the PULL-TO-RUN position. _____

c. VERIFY the red STOPPING light is off, and the blue UNIT AVAILABLE light is ON. _____

5.3.8 RECORD the engine hours on Data Sheet 1.

5.3.9 ALIGN the Diesel Generator Building HVAC System for automatic operation per 13325-1, "Auxiliary Feedwater Pumphouse And Diesel Generator Building HVAC Systems". _____

INITIALS

NOTE

Accumulated water must be drained from the Fuel Oil Day Tank per Technical Specification 4.8.1.1.2.b.

5.3.10 If this test was performed as a regular monthly surveillance test or, if the Diesel Generator was operated for a period of one hour or greater, SAMPLE the Diesel Generator Diesel Fuel Oil (DFO) Day Tank for water:

5.3.10.1 OBTAIN a clear container one liter size or larger. _____

5.3.10.2 DRAIN a small amount of fuel oil into the container from the Day Tank Drain 1-2403-U4-035(036). _____

5.3.10.3 EXAMINE the sample for water on the bottom of the container. _____

5.3.10.4 If water detected, REPEAT the sample until no water is found. _____

5.3.10.5 CLOSE, LOCK and CAP the Day Tank Drain Valve 1-2403-U4-035(036). _____

5.4 DIESEL GENERATOR FUEL OIL TRANSFER SYSTEM TEST

NOTE

This section of the procedure will verify the operability of the Diesel Generator Fuel Oil Transfer Pumps.

5.4.1 START the DFO STOR TANK PUMP-1 (-3), 1-HS-9044(9045). _____

5.4.2 VERIFY the pump starts and transfers fuel oil to the DFO Day Tank. _____

5.4.3 STOP the DFO STOR TANK PUMP-1 (-3), 1-HS-9044(9045). _____

5.4.4 START the DFO STOR TANK PUMP-2 (-4), 1-HS-9046(9047). _____

INITIALS

5.4.5 VERIFY the pump starts and transfers fuel oil to the DFO Day Tank. _____

5.4.6 STOP the DFO STOR TANK PUMP-2 (-4), 1-HS-9046(9047). _____

5.5 DIESEL GENERATOR AIR START COMPRESSOR TEST

CAUTIONS

a. Only one Air Compressor should be tested at a time.

b. At least one air start receiver must be pressurized to greater than 210 psig at all times.

NOTE

These instructions are written for the Train A Air Compressors. The Train B components are indicated by parentheses.

5.5.1 NOTIFY the Control Room that QEAB annunciator ALB35F02 DG1A LOW PRESS STARTING AIR (ALB38F02 DG1B LOW PRESS STARTING AIR) will energize in the following step. _____

5.5.2 CRACK-OPEN the Air Start Receiver 1 Drain, 1-2403-X4-762(723), and slowly REDUCE air receiver pressure to 145-155 psig. _____

CAUTION

If the Air Compressor fails to start automatically do not reduce air receiver pressure below 210 psig.

5.5.3 VERIFY the Air Start Compressor, 1-2403-G4-001-C01 (002-C01) starts automatically when the air receiver pressure is between 215 and 235 psig. _____

INITIALS

5.5.4 If the Air Compressor fails to start automatically:

a. CLOSE the Air Receiver Drain 1-2403-X4-762(723). _____

b. INITIATE maintenance on the compressor to correct the problem. _____

5.5.5 NOTIFY the Control Room that QEAB annunciator ALB35F06 DG1A SWITCH NOT IN AUTO (ALB38F06 DG1B SWITCH NOT IN AUTO) will energize in the following step. _____

5.5.6 PLACE the Control Switch for the Air Compressor 1, 03-C4-001-C01(002-C01) in OFF. _____

5.5.7 When the Air Start Receiver Pressure has been reduced to 145-155 psig, CLOSE 1-2403-X4-762(723). _____

5.5.8 START the Air Compressor by placing the Control Switch in AUTO. _____

5.5.9 RECORD the Air Compressor start time on Data Sheet 1.

5.5.10 VERIFY the Air Compressor stops automatically when air receiver pressure is between 245 and 255 psig. _____

5.5.11 RECORD the time the Air Compressor stops on Data Sheet 1.

5.5.12 NOTIFY the Control Room that QEAB annunciator ALB35F02 DG1A LOW PRESS STARTING AIR (ALB38F02 DG1B LOW PRESS STARTING AIR) will energize in the following step. _____

5.5.13 CRACK-OPEN the Air Start Receiver 2 Drain 1-2403-X4-772(728) and slowly REDUCE air receiver pressure to 145-155 psig. _____

INITIALS

CAUTION

If the Air Compressor fails to start automatically do not reduce air receiver pressure below 210 psig.

5.5.14 VERIFY the Air Start Compressor 1-2403-G4-001-C02(002-C02) starts automatically when the air receiver pressure is between 215 and 235 psig. _____

5.5.15 If the Air Compressor fails to start automatically:

a. CLOSE the Air Receiver Drain 1-2403-X4-772(728), _____

b. INITIATE maintenance on the compressor to correct the problem. _____

5.5.16 NOTIFY the Control Room that QEAB annunciator ALB35F06 DG1A SWITCH NOT IN AUTO (ALB38F06 DG1B SWITCH NOT IN AUTO) will energize in the following step. _____

5.5.17 PLACE the Control Switch for the Air Compressor 2, 1-2403-G4-001-C02(002-C02) in OFF. _____

5.5.18 When the Air Start Receiver Pressure has been reduced to 145-155 psig, CLOSE 1-2403-X4-772(728). _____

5.5.19 START the Air Compressor 2 by placing the Control Switch in AUTO. _____

5.5.20 RECORD the Air Compressor start time on Data Sheet 1.

5.5.21 VERIFY the Air Compressor stops automatically when air receiver pressure is between 245 and 255 psig. _____

5.5.22 RECORD the time the Air Compressor stops on Data Sheet 1.

INITIALS

5.6 SYSTEM RESTORATION

5.6.1 PERFORM Checklist 1, Diesel Generator Standby Mode Status Check, for the Diesel Generator which was tested. _____

5.6.2 RECORD DFO Storage Tank level 1-LI-9024(9025) on Data Sheet 1.

5.6.3 RECORD DFO Day Tank level 1-LI-9018(9019) on Data Sheet 1.

5.6.4 RECORD Air Start Receiver 1 pressure 1-PI-9060(9061) on Data Sheet 1.

5.6.5 RECORD Air Start Receiver 2 pressure 1-PI-9064(9065) on Data Sheet 1.

5.7 INDEPENDENT VERIFICATION

5.7.1 Independently VERIFY LOCKED OPEN the Air Start Receiver Discharge Isolation which was opened in Step 5.1.16. _____

5.7.2 Independently VERIFY CLOSED 1-2403-U4-1 (41) which was closed in Step 5.1.12. _____

5.7.3 Independently VERIFY LOCKED CLOSED the DFO Day Tank Drain Valve 1-2403-U4-035(036) which was closed in Step 5.3.10.5. _____

5.7.4 Independently VERIFY CLOSED the Air Start Receiver 1 Drain 1-2403-X4-762(723) which was closed in Step 5.5.7. _____

5.7.5 Independently VERIFY CLOSED the Air Start Receiver 2 Drain 1-2403-X4-772(728) which was closed in Step 5.5.18. _____

5.7.6 Independently VERIFY OPEN the L.O. Keep-Warm Pump 1-PI-19145(19152) Root 1-2403-X4-798(797) which was operated in Step 5.1.4. _____

INITIALS

5.7.7 Independently VERIFY CLOSED the L.O. Keep-Warm Pump 1-PI-19145(19152) Root 1-2403-X4-796(795) which was operated in Step 5.1.4. _____

5.7.8 Independently VERIFY OPEN the J.W. Keep-Warm Pump 1-PI-19124(19134) Root 1-2403-X4-812(811) which was operated in Step 5.1.4. _____

5.7.9 Independently VERIFY CLOSED the J.W. Keep-Warm Pump 1-PI-19124(19134) Root 1-2403-X4-810(809) which was operated in Step 5.1.4. _____

6.0 ACCEPTANCE CRITERIA

6.1 The Diesel Generator starts and voltage and frequency are between 4025 to 4330 volts and 58.8 to 61.2 hertz within 11.4 seconds. _____

6.2 The Diesel Generator operates with a load of 6800 to 7000 kW for at least 60 minutes. Modes 1, 2, 3, or 4 only. _____

6.3 If this test was performed as the regularly scheduled 6 month surveillance, the Diesel Generator was loaded to greater than 6100 kW within 60 seconds. _____

6.4 At least one DFO Day Tank Transfer Pump started and transferred fuel to the DFO Day Tank. _____

6.5 The DFO Day Tank contains greater than 650 gallons of fuel, 52% on 1-LI-9018 (9019). _____

6.6 The DFO Storage Tank contains greater than 68,000 gallons of fuel, 76% on 1-LI-9024 (9025). _____

6.7 The pressure in at least one air start receiver is at least 210 psig. _____

6.8 If the Diesel was operated for 60 minutes or more, the DFO Day Tank was sampled for water, and all water removed. _____

7.0 EVALUATION AND REVIEW

7.1 TEST PROCEDURE

[ ] Surveillance: [ ] Monthly [ ] Semi-annual [ ] Both

[ ] Other (explain) _____

7.2 Results obtained through performance of this procedure meet Acceptance Criteria of Section 6.0

[ ] Yes [ ] No

7.2.1 NOTIFY the USS of the test results. REFER to Technical Specification 3.8.1.1 or 3.8.1.2.

7.2.2 If no was checked and the failure was due to a Diesel Generator fault, EVALUATE the reason for the failure per Table 1.

7.2.3 NOTIFY the Diesel Generator System Engineer of the Diesel Generator start. Provide the following information:

a. A copy of Completion Sheet 1,

b. A copy of the completed 11885-C, "Diesel Generator Operating Log".

7.3 If any parameter recorded on 11885-C was out of range, INITIATE maintenance to investigate and repair as necessary.

7.4 If either Air Compressor fails to:

a. Start automatically at the correct pressure, or

b. Fails to raise air receiver pressure from 150 to 250 psig in ½ hour or less

INITIATE maintenance to repair the Air Compressor.

7.2 Comments (include any abnormal conditions and corrective actions taken):

USS notified of Test Completion and Results

	Initials	Date	Time
Test Completed By:		/	/
	Signature	Date	Time
Supervisory Review:		/	/
	Signature	Date	Time

8.0 REFERENCES

8.1	FSAR	
8.1.1	Technical Specification 3/4.8.1.1	
8.1.2	Technical Specification 3/4.8.1.2	
8.1.3	FSAR 8.3.1.3	
8.1.4	FSAR 9.5.4.4	
8.1.5	FSAR 9.5.5.3	
8.1.6	FSAR 9.5.5.4	
8.1.7	FSAR 9.5.6.4	
8.1.8	FSAR 9.5.8.4	
8.1.9	FSAR 1.9.108	Reg Guide 1.108
8.2	PROCEDURES	
8.2.1	13145-1,	"Diesel Generators"
8.2.2	00404-C,	"Surveillance Test Tracking Program"
8.2.3	11885-C,	"Diesel Generator Operating Log"
8.2.4	13325-1,	"Auxiliary Feedwater Pumphouse And Diesel Generator Building HVAC Systems"
8.2.5	54169-1,	"Diesel Generator Miscellaneous Trending And Evaluation"

8.3	P&ID's	
8.3.1	1X4DB170-1	Diesel Generator - Train A
8.3.2	1X4DB170-2	Diesel Generator - Train B
8.4	ELECTRICAL DIAGRAMS	
8.4.1	1X3D-AA-K01A	Diesel Generator Relay And Metering Diagrams
8.4.2	1X3D-AA-D02A	Swgr 1AA02
8.4.3	1X3D-AA-D02B	Swgr 1AA02
8.4.4	1X3D-AA-D03A	Swgr 1BA03
8.4.5	1X3D-AA-D03B	Swgr 1BA03
8.5	ELEMENTARY DIAGRAMS	
8.5.1	1X3D-BA-D02G	Breaker 1AA02-19
8.5.2	1X3D-BA-D03D	Breaker 1BA03-19
8.6	LOGIC DIAGRAMS	
8.6.1	1X5DN107-1	Diesel Fuel Oil System
8.6.2	1X5DN107-2	Diesel Generator Engine
8.6.3	1X5DN107-3	Diesel Generator Excitation
8.6.4	1X5DN107-4	Diesel Generator Engine Auxiliaries
8.6.5	1X5DN107-5	Diesel Generator Engine Auxiliaries
8.7	TECHNICAL MANUALS	
8.7.1	AX4AK01-509	Diesel Engine Technical Manual
8.7.2	AX4AK01-563	Diesel Generator Associated Publications Manual Vol 1
8.7.3	AX4AK01-564	Diesel Generator Associated Publications Manual Vol 2

END OF PROCEDURE TEXT

TABLE 1

DIESEL GENERATOR VALID TEST AND FAILURE EVALUATION CRITERIA

Valid tests and failures (per Regulatory Guide 1.108, Section C.2.e and Technical Specification 4.8.1.1.3) shall be based on the following criteria:

1. All start attempts (automatic, including those from bona fide signals, or manual) that result in a failure to start, except as noted in (2) below, should be considered valid tests and failures.

2. Unsuccessful start and load attempts that can definitely be attributed to operating error; to spurious operation of a trip that is bypassed in the emergency operating mode, to malfunction of equipment that is not operative in the emergency operating mode (e.g., synchronizing circuitry) or is not part of the defined Diesel Generator unit design should not be considered valid tests or failures.

3. Successful starts, including those initiated by bona fide signals, followed by successful loading (sequential or manual) to at least 50% of continuous rating and continued operation for at least one hour should be considered valid successful tests. (Failures occurring after one hour are not considered valid failures.)

4. Successful starts that are terminated intentionally without loading, as defined in (3) above, should not be considered valid tests or failures.

5. Successful starts followed by an unsuccessful loading attempt should be considered valid tests and failures, except as noted in (2) above.

6. Tests that are terminated intentionally before completion as defined in (3) above because of an alarmed abnormal condition that would ultimately have resulted in Diesel Generator damage or failure should be considered valid tests and failures.

7. Tests performed in the process of troubleshooting should not be considered valid tests. Tests that are performed to verify correction of the problem should be considered valid tests and successes of failures, as appropriate.

8. Cranking and venting procedures that lead to the discovery of conditions (e.g., excessive water or oil in a cylinder) that would have resulted in the failure of the Diesel Generator unit during test or during response to a bona fide signal should be considered a valid test and failure.

Sheet 1 of 2

DATA SHEET 1

DIESEL GENERATOR SURVEILLANCE DATA

DG under test: _____ Date: _____ Mode: _____

5.1 Diesel Generator Startup

5.1.5 Engine Hours at Startup: _____

5.1.7.3 Air Start Receiver Valve Closed: _____

5.1.11 Time to voltage: _____

Time to frequency: _____

5.1.14 Voltage: A-B _____ B-C _____ C-A _____

Frequency: _____ Hz

5.2 Diesel Generator Loading

5.2.12.5 Diesel Generator Loading Time _____ seconds
(6 month surveillance only)

5.2.16 Time load exceeded 6800kW: _____

5.2.19.1 Time load reduced to less than 6800kW: _____

5.3 Diesel Generator Shutdown

5.3.2 Diesel Shutdown Time: _____

5.3.8 Diesel Engine Hours at Shutdown _____

5.5.9 Air Compressor 1 start time _____

5.5.11 Air Compressor 1 stop time _____

5.5.20 Air Compressor 2 start time _____

5.5.22 Air Compressor 2 stop time _____

Sheet 2 of 2

DATA SHEET 1

DIESEL GENERATOR SURVEILLANCE DATA

5.6	System Restoration	
5.6.2	DFO Storage Tank Level: 1-LI-9024(9025)	_____ %
5.6.3	DFO Day Tank Level: 1-LI-9018(9019)	_____ %
5.6.4	Air Start Receiver 1 Pressure: 1-PI-9060(9061)	_____ psig
5.6.5	Air Start Receiver 2 Pressure: 1-PI-9064(9065)	_____ psig

CHECKLIST 1

DIESEL GENERATOR STANDBY MODE STATUS CHECK

ENGINE CONTROL PANEL - PDG2(PDG4)	STATUS	INITIALS
1. All annunciator windows	No unexpected alarms.	
2. Control Air Pressure 1-PI-19174 (19175)	58-62 psig	
3. UNIT AVAILABLE Light	ON	
4. Thermocouple Selector:		
a. Lubricating Oil In	142-170°F	
b. Lubricating Oil Out	142-170°F	
c. Jacket Water In	142-170°F	
d. Jacket Water Out	142-170°F	
5. POWER AVAILABLE Lights:		
a. A	ON	
b. B	ON	
c. C	ON	
6. STOPPING light	OFF	

Sheet 2 of 4

CHECKLIST 1

		STATUS	INITIALS	IV
GENERATOR CONTROL PANEL - PDG1(PDG3)				
1.	Unit/Parallel Switch 1-HS-4414A(4452A)	Center After Unit	_____	__
2.	Local/Remote Switch 1-HS-4516(4517)	REMOTE	_____	__
3.	Lockout Relays:			
	a. 186A	RESET	_____	__
	b. 186B	RESET	_____	__
	c. 186C	RESET	_____	__
4.	Voltage Regulator	AUTO	_____	__
	a. Automatic Voltage Regulator Light	ON	_____	__
	b. Manual Voltage Regulator Light	OFF	_____	__
MOTOR CONTROL CENTER 1NB1(1NB0)				
1.	Air After Cooler Fan No. 1	AUTO	_____	
2.	Air Compressor No. 1	AUTO	_____	
3.	Air After Cooler Fan No. 2	AUTO	_____	
4.	Air Compressor No. 2	AUTO	_____	
5.	Jacket Water Circulating Pump	AUTO	_____	
6.	Jacket Water Heater	AUTO	_____	
7.	Lube Oil Circulating Pump	AUTO	_____	
8.	Lube Oil Heater	AUTO	_____	
9.	Generator Space Heater	AUTO	_____	

Sheet 3 of 4

CHECKLIST 1

		STATUS	INITIALS	IV
DIESEL GENERATOR SKID				
1.	Governor Settings			
	Speed Droop	A: 2.6 B: 2.6		
	Load Limit	MAX FUEL		
	Speed	A: 14.34 B: 12.2		
	Oil Level	Above centerline of sight glass		
2.	Overspeed Trip Air Press (located under right bank turbocharger)	58-62 psig		
3.	Lube Oil Level - Dipstick	MAX STATIC ±1"		
4.	Jacket Water Keep-Warm Pressure 1-PI-19134 (19134)	15-35 psig		
5.	Lube Oil Keep Warm Pressure 1-PI-19145 (19152)	25-50 psig		
6.	Run/Stop Switch 1-HS-4688(4689)	PULL-TO-RUN		
7.	Generator Bearing Oil Level	Centerline of sight glass or above		
8.	Turbocharger Bearings			
	a. Right Bank Sight Glass	Flowing		
	b. Left Bank Sight Glass	Flowing		
UPSTAIRS - DIESEL GENERATOR BLDG				
1.	Intake Air Filter			
	a. Screens	Unobstructed		
	b. Oil Level Sight Glass	Half Full		
2.	Exhaust Silencer	No Combustibles in Room		

Sheet 4 of 4

CHECKLIST 1

		INITIALS	IV
ELECTRICAL CONTROL PANEL QEAB - MAIN CONTROL ROOM	**STATUS**		
1. DSL GEN 1A(1B) UNIT/PARALLEL Switch 1-HS-4414B(4452B)	NORMAL AFTER UNIT	_____	__
2. SYNC MODE SELECTOR Switch 1-TS-DG1A (DG1B)	AUTO	_____	__
3. DG1A(DG1B) OUTPUT BRKR 1-HS-1AA0219 (1BA0319)	AUTO	_____	__
4160V AC SWGR 1AA02(1BA03) - CONTROL BLDG LVL A			
1. DIESEL GENERATOR BRKR CONT SELECT SWITCH 1-HS-1AA0219B(1BA0319B)	CONT RM	_____	__

REVIEWED BY _____ DATE _____
(OSOS, SS, or STA)

Sheet 1 of 1

COMPLETION SHEET 1

TO: DIESEL GENERATOR SYSTEM ENGINEER

FROM: UNIT SHIFT SUPERVISOR (UNIT 1)

Diesel Generator Tested: [ ] DG1A [ ] DG1B

Start Date: / / Shutdown Date: / /

Start Time: _____ Shutdown Time: _____

Start Engine Hours: _____ Shutdown Engine Hours: _____

Start preceded by turbocharger prelubrication: [ ] Yes [ ] No

Reason for start:

[ ] Surveillance Test

[ ] Other: _____

Reason for trip or failure to start:

[ ] Manual [ ] Equipment failure [ ] Trip signal [ ] Alarm Response

[ ] Other: _____

DR# (if known) _____ WRT # (If Known) _____

List any conditions that would have resulted in Diesel Generator failure to start: _____

Comments: _____

Completed By: _____ Date _____ Time _____

Reviewed By: _____ Date _____ Time _____

Diesel Generator Start Evaluation:

[ ] Successful Start [ ] Valid Test

[ ] Valid Failure [ ] Non-Valid Test

[ ] Non-Valid Failure

_____
Unit Shift Supervisor

Copy sent to
Diesel General System Engineer

_____ /
Shift Clerk Date

VOID

CONDUCT OF OPERATIONS

1.0 PURPOSE

This procedure establishes the responsibilities of Operations Department personnel and provides administrative instructions for conduct of plant operations.

2.0 ORGANIZATION AND RESPONSIBILITIES

Figure 1 gives a basic organization chart for the Operations Department. Specific responsibilities, duties and reporting relationships are as follows.

2.1 MANAGER OPERATIONS

The Manager Operations is responsible for the overall management of the Operations Department to ensure safe and efficient operation of Plant Vogtle. Specific duties and reporting relationships are described in Plant Administrative Procedure 00001-C, "Plant Organization: Managerial Staff Responsibilities And Authority".

2.2 ON-SHIFT OPERATIONS SUPERVISOR

The On-Shift Operations Supervisor (OSOS) reports to the Manager Operations. The OSOS is the senior management representative on each shift and is responsible for the safe and efficient operation of the plant. He has the following duties and responsibilities.

a. Functions as senior management representative for plant operations on shift,

b. Has authority and responsibility to declare emergencies in accordance with the VEGP Emergency Plan. Also, the OSOS functions as site Emergency Director until relieved by a higher ranking manager,

c. Ensures that plant operations are conducted in accordance with the Technical Specifications and approved procedures,

d. Reviews operations narrative logs and round sheets in accordance with 10001-C, "Logkeeping",

e. Ensures shift relief is conducted in accordance with 10004-C, "Shift Relief",

f. Ensures standing orders and night orders are carried out,

g. Ensures that the shift is properly manned, the Fire Team constituted and team captain designated in accordance with 10003-C, "Manning The Shift",

h. Ensures appropriate notifications of reportable occurrences are performed,

i. Maintains a broad perspective of operational conditions affecting the safety of the plant as a matter of highest priority at all times,

j. Does not become involved in any single operation that distracts him when multiple operations are required in the Control Room. During plant transients or an emergency he should not become totally involved in any single operation that distracts him from the rest of the operations required in the Control Room.

k. Ensures that shift activities are conducted in a manner that keeps personnel radiation exposures as low as reasonable achievable.

l. Ensures temporary procedure changes are properly administered on shift in accordance with 00052, "Temporary Changes To Procedures",

m. Tours plant areas on a routine basis, noting condition of the plant and equipment, and monitoring rounds performance.

2.3 SHIFT SUPERVISOR

One Unit Shift Supervisor (USS) is assigned to each operating unit on each shift. He is responsible for the safe and efficient operations of the assigned unit. The USS(s) reports to the OSOS and has the following specific duties and responsibilities:

a. Ensures that unit operations are conducted in accordance with Technical Specifications and approved procedures,

b. Directs reactor to be shut down when:

(1) Safety of the reactor is in jeopardy, or

(2) Operating parameters exceed any of the reactor protection system trip setpoints and automatic reactor trip does not occur, or

(3) Personnel or equipment safety require it, or

(4) Unusual circumstances warrant it.

c. Directs operational activities of the assigned unit from the Control Room unless relieved by a qualified licensed SRO,

d. Authorizes maintenance and/or testing activities to be performed on the assigned unit, and ensures plant conditions are suitable for performing such activities. Maintains status of equipment, and determines operability of equipment upon return to service,

e. Issues equipment clearances and ensures proper control of tags in accordance with Plant Administrative 00304-C, "Equipment Clearance And Tagging",

f. Ensures proper control of temporary jumpers, lifted wires, and pulled annunciator cards in accordance with 00306-C, "Temporary Jumper And Lifted Wire Control", and 10018-C, "Annunciator Status Control",

g. Explains plans, procedures, and safety precautions to shift operating personnel prior to infrequent or unusual activities,

h. Ensures shift relief is conducted in accordance with 10004-C, "Shift Relief",

i. Maintains the Shift Supervisor narrative log and administers logkeeping in accordance with 10001-C, "Logkeeping",

j. Supervises operators assigned to specific shift positions on the unit,

k. Maintains operating work spaces in a clean and orderly condition, and ensures good housekeeping practices by operators assigned to the unit,

l. Conducts periodic safety meetings for operators on-shift, enforces safe practices, ensures appropriate protective equipment is used, prepares accident reports, and obtains medical attention, when needed,

m. Limits access to the Control Room in accordance with Procedure 00301-C, "Main Control Room Access And Personnel Conduct",

n. Tours plant areas on a routine basis, noting condition of the plant and equipment, and monitoring rounds performance.

2.4 SUPPORT SHIFT SUPERVISOR

The Support Shift Supervisor (SSS) reports to the OSOS. He provides technical and administrative assistance to the USS. Specific duties and responsibilities include but are not limited to:

a. Coordinates clearance and tagging review for the USS,

b. Coordinates control of keys required for plant operation per Procedure 00008-C, "Plant Lock And Key Control",

c. Performs maintenance work order and deficiency card reviews for the USS,

d. Supervises shift operators who are not assigned a specific shift position.

e. Assists the OSOS in implementing work scheduled per the Plan-of-the-Day, and provides input to the POD work process,

f. May serve as Fire Team Leader if designated by the OSOS,

g. Tours plant areas on a routine basis, noting condition of the plant and equipment and monitoring rounds performance.

2.5 REACTOR OPERATOR

The Reactor Operator (RO) reports to the USS. He is the licensed operator assigned to operate the reactor and related controls from the Control Room. The RO normally operates the Primary Plant Systems (located on Control Room Panels A2 and C). Specific duties and responsibilities include:

a. Maintains the unit in a safe condition, including shutting down the reactor when:

(1) Safety of the reactor is in jeopardy, or

(2) Operating parameters exceed any of the reactor protection circuit set points and automatic shutdown does not occur, or

(3) Required to protect personnel and equipment, or

(4) Unusual circumstances warrant it.

b. Initiates immediate actions necessary to maintain the unit in a safe condition during abnormal and emergency operations,

c. Performs shift operations and surveillance testing in accordance with approved procedures, standing orders, and the Technical Specifications,

d. Exercises continuous surveillance of unit conditions and system parameters. Remains in the "at the controls" area unless properly relieved. "At the controls" is defined in 10003-C, "Manning The Shift",

e. Instructs the Balance of Plant Operator and the plant equipment operators to perform prescribed plant operations,

f. Manipulates the controls and equipment to start up, operate, and shut down the unit as required by operating schedules and load demand,

g. Maintains the Unit Control Log and completes round sheets for his position. Maintains recorder charts for his work station,

h. Promptly notifies the USS of unusual conditions,

i. Remains alert and knowledgeable of all unit operations in progress that involve the functioning of equipment controlled from the Main Control Room,

j. Functions as a team member during initiation of the Site Emergency Plan,

k. Coordinates startup and shutdown operations of the nuclear reactor, turbine generator and auxiliary equipment,

l. Responds to the system operator requests at the direction of the USS.

2.6 BALANCE OF PLANT OPERATOR

The Balance of Plant Operator (BOP) is a second licensed operator assigned to each unit. He reports to the USS. He normally operates primary support and balance of plant systems and controls (located on Control Room Panels A1, B1, B2 and those panels not located in the at-the-controls area). Specific duties and responsibilities include:

a. Maintains the unit in a safe condition, including shutting down the reactor when:

(1) Safety of the reactor is in jeopardy, or

(2) Operating parameters exceed any of the reactor protection circuit set points and automatic shutdown does not occur, or

(3) Required to protect personnel and equipment, or

(4) Unusual circumstances warrant it,

b. Initiates the immediate actions necessary to maintain the unit in a safe condition during abnormal or emergency operations,

c. Performs shift operations and surveillance testing in accordance with approved procedures, standing orders, and Technical Specifications,

d. Exercises continuous surveillance of unit conditions and system parameters,

e. Receives instruction from the Reactor Operator,

f. Completes check lists for his position, maintains recorder charts for his work station, and assists the Reactor Operator in maintaining the Unit Control Log,

g. Promptly notifies the USS of unusual conditions,

h. Remains alert to and knowledgeable of all unit operations in progress that involve the functioning of equipment under his control,

i. Functions as a team member during initiation of the Site Emergency Plan,

j. Maintains the Control Room in a clean and orderly condition,

k. Directs activities of Plant Equipment Operators as required,

l. Relieves the RO when authorized by the USS,

m. Normally remains in the Control Room unless performing necessary duties elsewhere in the plant.

2.7 PLANT EQUIPMENT OPERATORS

There will normally be four Plant Equipment Operators (PEO) on shift for each unit: A Turbine Building Operator (TO), an Auxiliary Building Operator (AO), an Outside Area Operator (OAO) and a Control Building Operator (CBO).

The PEOs report to the USS, but may also receive direction from the RO or BOP. Specific duties and responsibilities include:

a. Performs rounds to ensure proper operation of equipment in assigned work area,

b. Executes routine shift duties as directed by the USS,

c. Removes equipment from service and executes clearance orders; restores equipment to service and removes clearances as directed by the USS,

d. Maintains clean and orderly work area,

e. Acts as Fire Team member when designated by the OSOS.

2.8 RADWASTE OPERATOR

The Radwaste Operator reports functionally to the USS and administratively to a Radwaste Foreman. Specific duties and responsibilities include:

a. Operates Radwaste Systems in accordance with approved procedures and Standing Orders,

b. Maintains round sheets and logs for his position,

c. Executes routine shift duties as directed by the Radwaste Foreman or USS,

d. Maintains clean and orderly work area.

2.9 SHIFT TECHNICAL ADVISOR

The Shift Technical Advisor (STA) provides engineering expertise during operational emergencies to assess plant status and assist in implementing EOPs.

An STA is not required on shift if the OSOS or a USS holds a bachelors degree in engineering or a related science. The SSS may also be designated to perform the STA function, if qualified.

If an STA is assigned on shift, he or she will report to the OSOS.

2.10 OPERATIONS SUPERINTENDENT (UNIT 1)

The Operations Superintendent (Unit 1) reports to the Manager Operations. He has the following duties and responsibilities:

a. Provides direction to OSOS for routine scheduling of Operations shift activities for Unit 1, including interfacing with other plant departments, when necessary,

b. Provides input to the Work Planning and Outage Planning Groups for Unit 1,

c. Reviews and approves operating procedures, as designated by the Manager Operations,

d. Provides technical and schedular direction to the OSOS for safe and efficient plant operation,

e. May function as Manager Operations when designated.

2.11 OPERATIONS SUPERINTENDENT (UNIT 2)

The Operations Superintendent (Unit 2) reports to the Manager Operations. He has the following duties and responsibilities:

a. Provides direction to OSOS for routine scheduling of Operations shift activities for Unit 2, including interfacing with other plant departments, when necessary,

b. Provides input to the Work Planning and Outage Planning Groups for Unit 2,

c. Reviews and approves operating procedures as designated by the Manager Operations,

d. Provides technical and schedular direction to the OSOS for safe and efficient plant operation,

e. May function as Manager Operations when designated.

2.12 OPERATIONS SUPERINTENDENT (SUPPORT)

The Operations Superintendent (Support) reports to the Manager Operations. He has the following duties and responsibilities:

a. Supervises the preparation and review of plant operating procedures,

b. Provides input to the Training Department for development and conduct of training and qualification of Operations Department personnel,

c. Develops and maintains personnel records such as shift schedules, vacation schedules, and seniority lists,

d. Provides interface between Operations and other departments on all administrative matters,

e. Serves on the Plant Review Board when designated,

f. May function as Manager Operations when specifically designated.

2.13 OPERATIONS SUPERVISOR (ENGINEERING)

The Operations Supervisor (Engineering) reports to the Operations Superintendent (Support) and has the following duties and responsibilities:

a. Coordinates Operational Experience Assessment Program activities pertaining to plant operation (with Nuclear Safety and Compliance Section),

b. Maintains plant operating procedures current and accurate,

c. Reviews plant design changes to ensure timely revisions to operating procedures when necessary,

d. Provides technical and administrative support to the Operations Superintendents and Manager Operations,

e. Supervises administration of the Operations Reading Book per Procedure 10017-C, "Operations Reading Books",

f. Coordinates operations responses to plant open items.

2.14 OPERATIONS SUPERVISOR (TRAINING COORDINATOR)

Operations Supervisor (Training Coordinator) reports to the Operations Superintendent (Support) and has the following duties and responsibilities:

a. Assures that each applicant has the knowledge and skills to competently perform the assigned position,

b. Monitors on-the-job-training (OJT) performance and Operations Department training needs,

c. Primarily and routinely interfaces with the Training Department,

d. Maintains Training Qualification Checklist and OJT documents,

e. Obtains and distributes training material,

f. Attends training course IN-001, "Instructor Development Program" within one year of being appointed to the position,

g. Establishes and maintains a list of approved Operations Department OJT Trainers/Evaluators,

h. Serves on the Operations Training Committee.

2.15 SHIFT SUPERVISOR (TRAINING COORDINATOR)

The Shift Supervisor (Training Coordinator) reports to the Operations Supervisor (Training Coordinator) and has the following duties:

a. Coordinates and schedules evaluations and training,

b. Performs evaluations and training,

c. Attends training course IN-001, "Instructor Development Program" within one year of being appointed to the position,

d. Identifies area of candidate's deficiencies and provides feedback to Training and operations management.

2.16 RADWASTE SUPERVISOR

The Radwaste Supervisor reports to the Operations Superintendent Support. He has the following duties and responsibilities:

a. Plans, directs, and supervises Operations Department liquid and gaseous radioactive wastes processing, and coordinates these activities with other plant departments as necessary,

b. Conducts routine administration and scheduling for radwaste personnel,

c. Advises the Training Department on requirements for developing and conducting training of radwaste personnel,

d. Ensures liquid and gaseous radwaste operations are conducted in accordance with state and federal regulations, and approved procedures,

e. Tracks and trends water usage in the plant and coordinates water management activities plant wide to ensure efficient safety operations.

2.17 RADWASTE FOREMAN

The Radwaste Foreman reports to the Radwaste Supervisor. He has the following duties and responsibilities:

a. Directs the activities of the Radwaste Operators,

b. Coordinates and schedules radwaste activities,

c. Reviews Radwaste Operator logs,

d. Initiates corrective actions for out-of-limit conditions and notifies the Radwaste Supervisor and the USS,

e. Coordinates and schedules Chemistry, Health Physics and Maintenance support,

f. Conducts the Radwaste Operator Qualification Program.

3.0 SHIFT OPERATION

3.1 SHIFT COMPLEM

The OSOS shall ensure that the operating shift is properly manned, in accordance with Procedure 10003-C, "Manning The Shift".

3.2 SHIFT WORK HOURS

3.2.1 Shift Hours

The shifts will be conducted on a 24-hour clock system, using Central Standard Time (or Central Daylight Savings Time). Specific shift schedules will be posted by the Operations Superintendent (Support).

3.2.2 Overtime

Overtime should not be routinely scheduled to meet the shift crew staffing requirements. In the event that overtime must be used, the overtime restrictions of Procedure 00005-C, "Overtime Authorization", will be followed.

3.2.3 Notification of Absences

Anyone expecting to be late or unable to report for shift duty at the scheduled time shall, at the earliest possible time, inform the OSOS or USS.

3.2.4 Call Out Authority

The OSOS is authorized to call out anyone required for the safe plant operation, per Plant Administrative Procedure 00006-C, "Recall Of Off-Duty Personnel".

3.3 GENERAL WORK PRACTICES

All personnel assigned to shift operations shall:

a. Be aware that the primary responsibility of the operating shift is to assure the safe operation of the plant under all conditions,

b. Protect plant personnel, the health and safety of the public and plant equipment,

c. Conduct plant operations in accordance with approved written procedures,

d. Be attentive to the condition of the plant at all times. They must be alert to ensure that the plant is operating safely and take action to prevent any progress toward a condition that might be unsafe,

e. Believe and respond to instrument indications until they are proven to be incorrect,

f. Not bypass, reset bypasses, defeat safety systems or interlocks or remove Category 1, 2, or 3 instrument channels from service, unless allowed to do so by an approved procedure.

3.3.1 Shift Conduct

3.3.1.1 Each member of the shift crew shall perform in a professional manner. Potentially distracting activities shall not be conducted in the Control Room area. Activities prohibited include loitering, listening to music, hobbies, non job-related reading material, and horseplay. The full focus of the shift complement's attention shall be the safe and efficient operation of the plant.

3.3.1.2 Operations personnel on shift must be aware of and responsible for the plant status at all times. This includes supervisors being responsible for the performance of personnel assigned to their shift who could affect plant safety.

3.3.1.3 All Operations personnel on shift must be alert and remain within their work areas until properly relieved. Operators are responsible for monitoring the instrumentation and controls located within their work areas. They are responsible for taking timely and proper actions to ensure safe operation of the facility.

3.3.1.4 Controls that directly affect the reactivity or power level of a reactor shall only be manipulated by licensed operators, except for training purposes.

3.3.1.5 Mechanisms and apparatus, other than controls, that may indirectly affect the power level or reactivity of a reactor shall only be operated with the knowledge and prior consent of a licensed operator.

3.3.2 Abnormal Indications

The OSOS, USS, and RO, and BOP have the authority and responsibility to perform the tasks necessary to limit plant operations or to shutdown the unit when such action is warranted by unit conditions or unusual circumstances. When analyzing such situations, shift operating personnel shall consider instrument readings and control indications to be true unless they are proven to be incorrect. When abnormal indications occur, operations personnel shall determine the cause of the abnormal indication and initiate appropriate corrective action.

3.3.3 Instrument Setpoints

Shift operating personnel shall not manipulate instrument, control or alarm setpoints, other than those available on the control console or those normally required during routine operation. Setpoint changes shall be entered in the Unit Control Log or the Shift Supervisor's Log.

Anyone performing a function that may affect a unit's operation or a Control Room indication shall notify the Control Room operators before initiating the function.

3.3.4 Control Room Access

Control Room access shall be limited to official business only in accordance with Plant Administrative Procedure 00301-C, "Main Control Room Access And Personnel Conduct".

3.3.5 Generator Load Changes

Normally generator load changes will be made as requested by the System Operator. If approved by the OSOS, and if plant operating conditions and operational orders permit, the Reactor Operator will comply with the request. The RO shall inform the USS when the requested load change is completed. Whenever plant conditions require a load change, the System Operator shall be notified as soon as possible of the proposed load and rate of change.

Scheduled outage requests shall be initiated by the Operations Manager and approved by the General Manager and System Operator prior to scheduled plant shutdown.

3.3.6 Control Room Housekeeping

The Control Room will be maintained in a clean and orderly condition in the interest of safe and efficient operations. Dusting and cleaning of control consoles, instrument panels, and computer consoles will be performed by shift operating personnel.

3.3.7 Manual Operation Of Motor Operated Valves

Avoid overtravel. Some MOV's are adjusted to stop while traveling open for less than 100% stroke due to pump or system flow restriction requirements.

NOTE

Excessive closing or opening force during manual operation can damage the limitorque operator.

If manual seating or backseating is required, the associated handswitch shall be caution tagged to indicate that the valve has been manually operated.

Safety related MOV's which receive an actuation signal or are required to be repositioned to fulfill a safety related function shall be considered inoperable.

The valve shall be manually unseated and then stroked using the motor operator prior to returning the MOV to remote service or for the case of safety related MOV's, declaring the MOV operable.

3.4 NOTIFICATION REQUIREMENTS

The OSOS is responsible for the notification of the NRC, plant management and staff in special situations. Notifications required during day shift, Monday thru Friday, should be to the Manager Operations. Requirements occurring at other times should be first to the Duty Manager, who may direct the OSOS to call a department superintendent or the Manager Operations.

3.4.1 Notification Of Duty Manager

The OSOS shall notify the Manager Operations or Duty Manager if the following occur:

a. Reportable Occurrences requiring NRC red phone notification per Plant Administrative Procedure 00152-C, "Federal And State Reporting Requirements",

b. Conditions that require the use of Abnormal Operating Procedures,

c. Unscheduled entry into an LCO action statement with less than 72 hours restoration time,

d. Equipment failures that could necessitate a derate,

e. A major failure resulting in structural damage to company property,

f. Any serious personnel injury,

g. Any call for offsite assistance,

h. A fire with activation of the plant fire team,

i. Serious environmental problems, such as toxic chemical, oil, or hazardous waste spills;

j. Technical assistance or management direction is needed for issues of reportability, operability, technical specification compliance, or procedural adequacy.

3.4.2 NRC Immediate Notification Events

The OSOS is responsible for notification of the NRC Operations Center for prompt reportable occurrences in accordance with Plant Administrative Procedure 00152-C, "Federal And State Reporting Requirements".

3.5 SHIFT RELIEF AND EVOLUTION BRIEFINGS

3.5.1 Each shift relief shall be conducted in an orderly, professional manner in accordance with Procedure 10004-C, "Shift Relief". The OSOS may add to these minimum requirements as he sees fit.

3.5.2 Briefings shall be conducted for individuals involved in complex or unusual evolutions. The detail of the briefing is dependent on the degree of complexity, routineness, logistics, or number of people involved.

3.5.3 The individual who is to perform an activity is responsible to adequately review its procedure, to fully understand what he is doing, and to be cognizant of all the limitations and precautions and requirements.

3.5.4 Evolutions involving many individuals, especially from two or more departments or disciplines, may require large formal briefings or pre-planning sessions. If the evolution is complex and involves close coordination, the briefing session should include:

a. A review of the appropriate sections of the procedure by key parties,

b. An examination of each individual's specific involvement and responsibility,

c. A discussion of expected results or performance,

d. A review of limitations, hold points,

e. A review of emergency action to be taken in contingencies,

f. Checks to ensure that everyone understands the interface and communications required,

g. Identification of individual in charge of the evolution.

3.6 SHIFT RECORDS

Shift records include logs, round sheets, check lists, recorder charts, computer printouts and other data generated during operations.

3.6.1 Logs

a. Operations narrative logs, round sheets, recorder charts and computer printouts shall be kept in accordance with the provisions of 10001-C, "Logkeeping".

b. Where instrument numbers are provided in Rounds Sheets and Technical Specification Surveillance Logs, it is not intended to limit recording of the specified parameter from only the instrument number specified if an equivalent instrument is available which measures the same parameter.

3.6.2 Night Orders and Standing Orders

Night Orders and Standing Orders are issued in accordance with 10002-C, "Plant Operating Orders".

3.6.3 Reactor Trip Review

The OSOS shall initiate review of reactor trips in accordance with 10006-C, "Reactor Trip Review".

3.7 KEY CONTROL

Keys required for plant operation are controlled in accordance with 00008-C, "Plant Lock And Key Control".

3.8 RADIOLOGICAL CONTROLS

3.8.1 Each person on the plant staff is responsible to use proper radiological practices and procedures. Everyone must be continuously aware of the radiological aspects of the work he is involved in and take appropriate actions to minimize exposure and to control the generation and spread of radioactive contamination.

3.8.2 Refer to 43007-C, "Issuance, Use And Control Of Radiation Work Permit", for control of work in radiation and high radiation areas.

3.9 SAFETY CLEARANCE AND TAGGING

Clearance and tagging for personnel and equipment safety is conducted in accordance with 00304-C, "Equipment Clearance And Tagging".

3.10 EQUIPMENT RETURN TO SERVICE

Following maintenance on or modification to a system or component, Operations shall verify the operable condition of that system or component. Verification may be by functionally testing or by surveillance testing. If the component or system is not covered by a surveillance procedure and a special functional test is not performed, a return to service functional inspection should be performed. The inspection should address items such as the following:

a. Mechanical coupling,

b. Blind flanges installed/removed,

c. Electrical connections,

d. Area cleanliness,

e. Valve alignment,

f. Proper lubrication,

g. System integrity,

h. Function of remotely operated valves.

3.11 TECHNICAL SPECIFICATION INTERPRETATIONS

3.11.1 Technical Specification interpretations may be made using Figure 2 as follows:

a. Immediate Need

The requestor will contact one of the below listed individuals:

(1) On-Shift Operations Supervisor,

(2) Manager Operations,

(3) Operations Superintendent.

The interpretation will be given verbally, and may be followed up by the interpreter with a written request form.

b. Normal Need

The requestor fills in the first two portions of the request form and forwards it to the Manager Operations. After interpretation is made and approved by Operations Management, copies are distributed and the original is placed in the Technical Specification Interpretation Book. This book will be maintained in the Control Room area.

4.0 PLANT OPERATING PROCEDURES

4.1 PROCEDURE COMPLIANCE

4.1.1 Operating personnel will follow approved plant procedures as directed by 00054-C, "Rules For Performing Procedures".

4.1.2 In emergencies, Operations personnel are directed to take such action as is necessary to minimize personnel injury and damage to the plant; to return the plant to a stable, safe condition; and to protect the health and safety of the general public and personnel on site.

4.1.3 In emergencies, personnel may take reasonable action that departs from a license condition or a Technical Specification when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and Technical Specifications that can provide adequate or equivalent protection is immedately apparent.

4.1.4 Personnel action permitted by Paragraph 4.1.3 shall be approved, as a minimum, by a licensed Senior Reactor Operator prior to taking the action.

4.2 PROCEDURE IMPLEMENTATION

4.2.1 Procedures for other than simple, frequently performed operations shall be followed step-by-step with the procedure present. Many procedures will require signoffs. Routine procedural actions that are frequently performed may not necessitate the presence of a procedure. If the operator is not completely familiar with the procedural action to be performed, the procedure must be present. Immediate operator actions of emergency procedures shall be committed to memory.

4.2.2 Independent Verifications required by procedures which do not have signoff spaces shall be documented using 11879-C, "Independent Verification Documentation Log Sheet".

4.2.3 If an evolution is suspended for an extended period of time, reverification of the initial conditions is required.

4.3 SYSTEM LINEUPS AND SYSTEM STATUS FILE

System lineups establish and confirm the status of equipment and systems. The current lineup for each system is maintained in a system status file. The file contains the most recent complete lineup and those partial lineups performed subsequently which collectively reflect the current status of the entire system.

4.3.1 Complete system lineups are performed as directed in unit operating procedures. Partial lineups are performed on portions of systems inside clearance boundaries, after clearances are released, when directed by the Shift Supervisor. Partial lineups are also performed on portions of systems affected by procedure revisions when directed by the Operations Superintendent. Complete or partial lineups may be performed when directed by the USS.

4.3.2 Each system lineup will be performed at least every 30 months. The Operations Manager or his designee will designate system lineups that will be performed prior to unit startup following cold shutdown. Any exceptions to this policy will be approved by the Assistant General Manager - Operations.

4.3.3 Lineups should be performed in sequence identified in Lineup procedure unless otherwise directed by the USS.

4.3.4 The operator shall compare the position of the component with the condition required on the alignment, and initial in the spaces provided. Report components found not to be in the required position to the USS for evaluation prior to repositioning to the condition required. Control valve position is verified by ensuring that power or air, as appropriate, is available to the valve operator and that no physical obstructions that could prevent operation are apparent.

4.3.5 All components left in other than the condition required shall be noted on the comments section of each alignment procedure and the reason for the exception shall be entered.

4.3.6 While performing lineups, the operator should compare the component tag with the alignment procedure component I.D. and description. Discrepancies should be noted on the comments section of the alignment procedure.

4.3.7 Independent position verification shall be performed in accordance with 00308-C, "Independent Verification Policy" and Sub-subsection 4.2.2.

4.3.8 The USS or SSS shall review the completed system lineup for completeness and to ensure exceptions do not warrant further corrective action. The original lineup is placed in the system status file. Superceded lineups are forwarded to Document Control. Care must be taken when removing lineups from the file to ensure that the file reflects the current status of the systems (e.g., partial lineups can supercede only partial lineups on the same components; partial lineups can only supercede complete lineups if, collectively, they constitute a complete lineup.)

4.4 SURVEILLANCE TESTING

4.4.1 Operations Surveillance Tests

4.4.1.1 The Operations Department shall perform, document and review operations surveillance tests.

4.4.1.2 The approval of the USS shall be obtained before starting each surveillance test. The operator performing the test shall record information as required by the test procedure and initial each step as it is completed. He shall sign and date the procedure upon completion of the test. If a step is not completed the explanation shall be recorded on the procedure. If a test does not meet the specified acceptance criteria, the USS shall be notified and corrective action initiated.

4.4.1.3 The OSOS or USS shall review all operations surveillance tests performed on his shift for completeness and accuracy. He shall indicate his review by signing and dating the procedure in the appropriate space.

4.4.1.4 Refer to 00404-C, "Surveillance Test Program" for method of tracking Tech. Spec. surveillance tests during normal conditions.

4.4.2 Special Condition or Off-Normal Surveillance Requirements

The USS shall ensure 14915-1/2, "Special Condition Surveillance Logs" is or has been initiated as required to comply with Technical Specifications in conditional or off-normal situations.

4.4.3 The USS shall ensure 14000-1/2 "Operations Shift & Daily Surveillance Logs" surveillances are started within 2 hours of shift turnover and worked to completion, provided circumstances warrant.

5.0 REFERENCES

5.1 FSAR - Chapter 13

5.2 VECP Technical Specifications

5.3 PROCEDURES

5.3.1 00001-C, "Plant Organization: Managerial Staff Responsibilities And Authority"

5.3.2 00005-C, "Overtime Authorization"

5.3.3 00006-C, "Recall Of Off-Duty Personnel"

5.3.4 00008-C, "Plant Lock And Key Control"

5.3.5 00052-C, "Temporary Changes To Procedures"

5.3.6 00054-C, "Rules For Performing Procedures"

5.3.7 00152-C, "Federal And State Reporting Requirements"

5.3.8 00301-C, "Main Control Room Access And Personnel Conduct"

5.3.9 00304-C, "Equipment Clearance And Tagging"

5.3.10 00306-C, "Temporary Jumper And Lifted Wire Control"

5.3.11 00308-C, "Independent Verification Policy"

5.3.12 00404-C, "Surveillance Test Program"

5.3.13 10001-C, "Logkeeping"

5.3.14 10002-C, "Plant Operating Orders"

5.3.15 10003-C, "Manning The Shift"

5.3.16 10004-C, "Shift Relief"

5.3.17 10006-C, "Reactor Trip Review"

5.3.18 10017-C, "Operations Reading Book"

5.3.19 10018-C, "Annunciator Control"

5.3.20 11879-C, "Independent Verification Documentation Log Sheet"

5.3.21 14000-1/2, "Operations Shift And Daily Surveillance Logs"

5.3.22 14915-1/2, "Special Conditions Surveillance Logs"

5.3.23 43007-C, "Issuance, Use And Control Of Radiation Work Permits"

END OF PROCEDURE TEXT

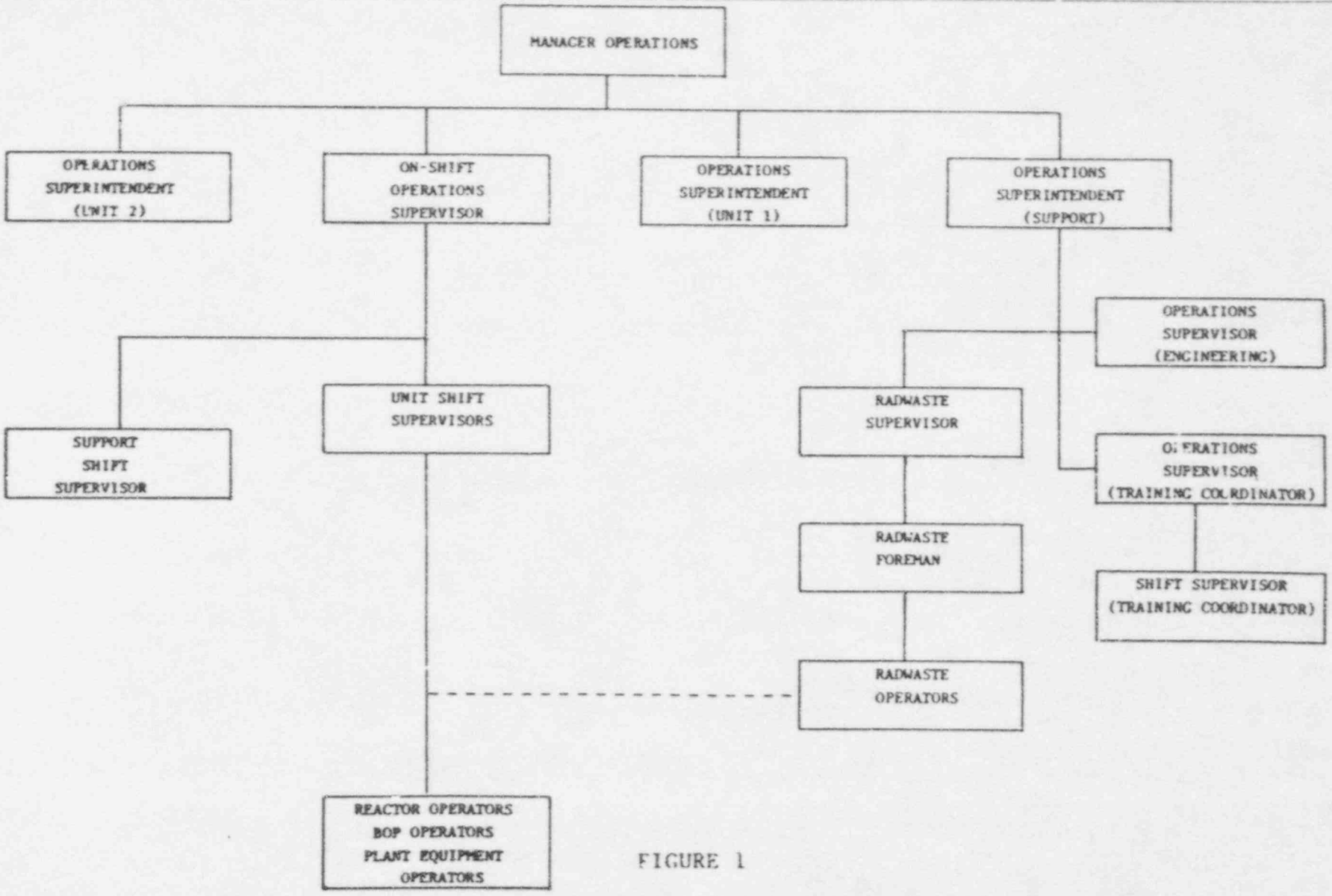
MANAGER OPERATIONS
OPERATIONS SUPERINTENDENT (UNIT 2)
ON-SHIFT OPERATIONS SUPERVISOR
OPERATIONS SUPERINTENDENT (UNIT 1)
OPERATIONS SUPERINTENDENT (SUPPORT)
OPERATIONS SUPERVISOR (ENGINEERING)
SUPPORT SHIFT SUPERVISOR
UNIT SHIFT SUPERVISORS
RADWASTE SUPERVISOR
OPERATIONS SUPERVISOR (TRAINING COORDINATOR)
RADWASTE FOREMAN
SHIFT SUPERVISOR (TRAINING COORDINATOR)
RADWASTE OPERATORS
REACTOR OPERATORS
BOP OPERATORS
PLANT EQUIPMENT OPERATORS

FIGURE 1

PLANT VOGTLE UNITS 1 & 2

TECH SPEC INTERPRETATION

TECH SPEC #: _____

QUESTION OR AREA NEEDING CLARIFICATION:

_____

_____

_____

_____

INTERPRETATION:

_____

_____

_____

_____

_____

_____

Approved By: _____ _____
Manager Operations Date

xc: Manager Operations
Nuclear Safety & Compliance Manager
Engineering Support Manager
Plant Training & Emergency Preparedness Manager
Required Reading Book

FIGURE 2

Approval	Vogtle Electric Generating Plant NUCLEAR OPERATIONS	Procedure No. 10008-C
Date 7-27-89	Unit COMMON Georgia Power	Revision No. 9
		Page No. 1 of 11

VOID

RECORDING LIMITING CONDITIONS FOR OPERATION

1.0 PURPOSE

This procedure prescribes the method to record the failure to meet the Limiting Conditions for Operation (LCO), the associated ACTION requirements, any change in status effecting the ACTION, and the return to compliance with LCO.

2.0 DEFINITIONS

2.1 LIMITING CONDITION FOR OPERATION

A condition specified in the plant Technical Specifications which limits unit operations. An LCO may be entered by equipment malfunction or a change in a unit parameter. If an LCO is not met, the associated ACTION requirements shall be met.

2.2 ONE HOUR ACTIONS

One hour actions are actions that must be performed within one hour or less.

2.3 INFORMATION ONLY LIMITING CONDITION FOR OPERATION (Info LCO)

A method of tracking an equipment malfunction or change in plant parameter which would restrict unit operation in any other mode or prevent a mode change, or may become an LCO for the present mode should other Technical Specification related equipment or redundant safety related equipment become inoperable.

3.0 PROCEDURE

3.1 LCO STATUS SHEET PREPARATION

When a unit fails to meet an applicable LCO and requires initiation of an ACTION statement or equipment malfunction requires an Info LCO, the Unit Shift Supervisor (USS) shall complete Figure 1, "LCO Status Sheet" Section I, inform the On-Shift Operations Supervisor (OSOS), and log the status sheet on Figure 2, "LCO Status Log" prior to completing his shift. The LCO Status Sheet shall be placed in the LCO Status Binder.

Completion of an LCO Status Sheet is not required for the performance of surveillances or short term entry into an LCO that does not continue past a shift turnover if the USS logs the following items in the USS Log:

a. Entry and exit times of an LCO,

b. Reason for entry,

c. Completion of all required Technical Specification Action Statements due to entry into the LCO if it is not documented in the surveillance procedure.

3.1.1 Initiation Of LCO Status Sheet For An LCO

Complete Section I of the LCO Status Sheet in accordance with the following subsections:

3.1.1.1 Applicable Modes

Record most limiting applicable modes from Technical Specification References.

3.1.1.2 LCO Number

The LCO Number is assigned by unit-year-sequence. e.g.:

1-85-002

- 002 — The 2nd LCO for the year
- 85 — 1985
- 1 — Unit 1

3.1.1.3 One Hour Actions

Circle YES or NO.

3.1.1.4 Technical Specification 3.0.4 Applicable

Circle YES or NO.

3.1.1.5 LCO Initiated

The date and time the LCO was not met. If a time cannot be determined for the initiating event, the time of discovery should be used. Record the date as mm-dd-yy.

where mm = month (01-12)
dd = day (01-31)
yy = year (84-99)

Record the time using a 24 hour clock as hh-mm.

where hh = hours (00-23)
mm = minute (00-59)

3.1.1.6 Technical Specification References

List the paragraph number(s) of the LCO(s) stated in the Technical Specifications. List the most restrictive paragraph first.

3.1.1.7 Condition Initiating LCO

The initiating event, equipment failure, or parameter deviation explained in a few words.

3.1.1.8 DC Number(s)

List all DC numbers which apply to the LCO. Additional DC numbers should be added to this section if the LCO is referenced on new DC cards.

3.1.1.9 MWO Number(s)

List all MWOs which apply to the LCO. MWO numbers should be obtained from Work Planning prior to completion of Section I of LCO Status Sheet. If other MWOs are worked under this LCO, the MWO numbers should be added when the MWO work authorization is given.

3.1.1.10 Required Actions

List required actions from the Technical Specification reference(s). Use Figure 3 for guidance in listing actions. The USS will initial, date and time each action when complete.

3.1.1.11 Remarks

Include any additional information on the LCO in this section.

3.1.1.12 USS/OSOS Signatures

The USS and OSOS both sign indicating correctness of all entries.

3.1.1.13 Disposition

The original LCO Status Sheet is placed in the LCO Status Binder.

3.1.2 Initiation Of LCO Status Sheet For An Info LCO

Complete Section I of the LCO Status Sheet per Sub-subsection 3.1.1 except as modified by the following subsections.

3.1.2.1 Information Only LCO Number

The LCO Number is assigned by unit-year-sequence and information only identifier. e.g.:

1-85-002-I

- I — Information LCO (only)
- 002 — The 2nd LCO for the year
- 85 — 1985
- 1 — Unit 1

The LCO numbers and Info LCO numbers share the same sequence numbers.

3.1.2.2 LCO Initiated

Enter date and time of equipment malfunction.

3.1.2.3 Required Actions

State any mode restraints or restraints on equipment operation. The completion section will be N/A.

3.1.3 Restoration Of LCOs And Info LCOs

3.1.3.1 When the LCO restoration is complete, the USS shall remove the LCO Status Sheet from the LCO Status Binder, complete Section II, and forward the sheet to the OSOS. Specific entries are:

a. Corrective Measures Taken: Include a statement on the corrective actions taken.

b. Operability determined: The SS shall, on LCO restoration, make a determination of operability status of all plant components effected, and shall verify their functional acceptability. This is documented by listing the items verified and the procedures used to verify operability. The SS's signature indicates that this has been satisfactorily performed.

c. Chemistry HP person notified (for Rad Monitors only): Enter date, time and person contacted. Necessary to ensure required Chemistry/HP surveillances are completed prior to returning Rad Monitors to operable status.

d. LCO No Longer Active: Enter date and time that limiting condition no longer exists.

3.1.3.2 The OSOS shall verify the correctness of all entries and the completion of all required action prior to signing the form. The completed form is then forwarded to the Operations Superintendent (Shift Operations).

3.1.3.3 When the Operations Superintendent has indicated his approval of the completed action by signing and dating, the original form is sent to Document Control for permanent file. Copies should be forwarded to the Nuclear Safety & Compliance Department and placed in the completed portion of the LCO Status Binder.

3.1.3.4 LCOs and Info LCOs are restored in exactly the same way.

3.2 CONVERSION OF LCOS TO INFO LCOS

When the unit enters a mode where a given Technical Specification is no longer applicable, LCOs against that specification should be converted to Info LCOs. To convert to Info LCOs perform the following:

a. Add an "I" to LCO Status Sheet and LCO Status Log.

b. N/A required actions and add note to remarks section stating "Conversion to Info LCO on (date and time) upon entry into mode (number)".

c. Add necessary statements to Required Action Section per Step 3.1.2.3.

3.3 CONVERSION OF INFO LCOS TO LCOS

An Info LCO should be closed out and a new LCO status sheet generated.

3.4 LCO STATUS BINDER

An LCO Status Binder shall be maintained for each unit by the SS. The binder is a looseleaf notebook containing 3 sections:

3.4.1 Part I. LCO Status Log.

The first part shall list, on Figure 2, "LCO Status Log", all LCO's in their order of initiation. New log pages should be placed in the front, so that opening the front cover will expose the most recent entries. The LCO Status Log Sheets will be retained in the binder until all listed LCO Status Sheets have been retired, then the log sheet should be removed and sent to Document Control. A copy of the complete status log sheet should be placed in Part III.

3.4.2 Part II. Active LCO Status Sheets.

Part II contains the original of Figure 1, "LCO Status Sheet" forms for all LCO's that are in effect. New entries are placed in the front. LCO and Info LCO forms may be kept separately in Part II if desired.

3.4.3 Part III. Completed LCO Status Sheets.

Part III contains copies of LCO Status Sheets for LCO's that have been restored. Sheets are filed in order of their LCO number. Copies of completed sheets should be retained in the binder for at least 30 days after they have been closed out.

4.0 REFERENCES

4.1 PROCEDURES

4.1.1 10000-C, "Conduct Of Operations"

4.1.2 00150-C, "Deficiency Reports"

4.1.3 00152-C, "Federal And State Reporting Requirements"

END OF PROCEDURE TEXT

LCO STATUS SHEET

SECTION I: INITIATION

Applicable Modes _____ _____ LCO Number _____

One Hour Actions YES NO (circle one) Tech. Spec. 3.0.4 Applicable YES NO (circle one)

LCO Initiated: Date _____ Time _____

Tech. Spec. References _____

_____

Condition Initiating LCO Action _____

_____

_____

_____

DC Number(s) _____

MWO Number(s) _____

_____

REQUIRED ACTIONS — Completion SS Init/Date/Time

Figure 1

REQUIRED ACTIONS CONT'D. Completion SS Init/Date/Time

Remarks _____

USS _____ OSOS _____

SECTION II: RESTORATION

Corrective Measures Taken: _____

Operability Determined: _____

Chemistry/HP Person Notified (for Rad Monitors only): Date _____ Time _____

LCO No Longer Active: Date _____ Time _____

USS _____ OSOS _____

Operations Superintendent Review _____ (Date)

Figure 1 (Cont'd.)

19 _ _ LCO STATUS LOG UNIT _____

NO.	DATE	T.S. PARA. & CONDITION INITIATING LOG	TERMINATED	
			DATE	SS

Figure 2

GUIDELINES FOR WRITING REQUIRED ACTIONS ON LCO STATUS SHEET

1. Break action statements into single actions.

   Example: Restore to operable within 72 hours -or-

   _____

   Be in HOT STANDBY within following 6 hours -and-

   _____

   Be in COLD SHUTDOWN within following 30 hours

   _____

2. Use the following statement for actions to be performed periodically.

   "Initiate (the required action) every (required interval) and log completion in USS Log."

   This action can be signed complete when performed the first time.

3. Use the following statement for actions that are taken by other departments.

   "Notified (Department Supervision) (Printed Name) to initiate (required action)

   _____ / / _____ "

   Department Supervision or Unit Shift Supervisor (USS) — Date — Time

   The above statement should be made next to the applicable "Required Action" statement. In the case of a short term entry as defined in Subsection 3.1 paragraph 2, the above information should be entered in the USS Log, if applicable.

4. Paraphrase action statements where it would result in a clear, concise action.

   Example: "With one AFW pump inoperable, restore the required AFW pump to operable status within 72 hours or"

   can be paraphrased

   "With one AFW pump inoperable, restore within 72 hours -or-"

Figure 3