

SIMULATOR MODIFICATION GUIDE **1**

REVISED EXCEPTIONS TO ANSI/ANS 3.5-1985 **2**

PLANT MODIFICATIONS - (07/27/91-10/31/95) **3**

SIMULATOR OPERABILITY TEST (1996-1999) **4**

5

ANO TRAINING ADMINISTRATIVE GUIDELINE

SIMULATOR MODIFICATION CONTROL

REVISION 4
June 1, 1994

APPROVAL:

B. J. WO / 7-7-94
SIMULATOR SUPPORT SUPERVISOR DATE

Samuel H. Keaton / 7-7-94
SIMULATOR TRAINING SUPERVISOR DATE

R. B. Bessent / 7-21-94
TRAINING MANAGER DATE

TABLE OF CONTENTS

1.0 OBJECTIVE

2.0 DEFINITIONS

- 2.1 DATABASE CHANGE REQUEST (DBCR)
- 2.2 DESIGN CHANGE PACKAGE (DCP)
- 2.3 DESIGN CONCEPT DOCUMENT (DCD)
- 2.4 DESIGN DATA BASE (DDB)
- 2.5 DISCREPANCY
- 2.6 DISCREPANCY REPORT (DR)
- 2.7 SIMULATOR INSTRUCTOR (SI)
- 2.8 LIMITED CHANGE PACKAGE (LCP)
- 2.9 MODIFICATION
- 2.10 PLANT CHANGE (PC)
- 2.11 PLANT MODIFICATION (PM)
- 2.12 PROBLEM
- 2.13 PROBLEM VALIDATION
- 2.14 REJECTED
- 2.15 SIMULATOR ENGINEER (SE)
- 2.16 SIMULATOR ENHANCEMENT
- 2.17 SIMULATOR MODIFICATION (SM)
- 2.18 SIMULATOR TRAINING GROUP SUPERVISOR
- 2.19 SM DESIGN PACKAGE
- 2.20 SOFTWARE CHANGE REQUEST (SCR)
- 2.21 SOFTWARE MODULE
- 2.22 SOFTWARE SIMULATION SYSTEM
- 2.23 SOFTWARE SPECIALIST
- 2.24 SYSTEM MODULE
- 2.25 SIMULATOR SUPPORT SUPERVISOR (SSS)
- 2.26 TEMPORARY MODIFICATION (TM)

3.0 REQUIREMENTS

- 3.1 SOURCES OF SIMULATOR MODIFICATIONS (SM)
 - 3.1.1 MODIFICATIONS TO REFERENCE PLANT
 - 3.1.2 SIMULATOR PROBLEMS
 - 3.1.3 SIMULATOR ENHANCEMENTS
 - 3.1.4 SIMULATOR SPECIFICATION CHANGE
- 3.2 SIMULATOR MODIFICATION (SM) FLOWPATH
 - 3.2.1 IDENTIFICATION OF THE PROBLEM
 - 3.2.2 PROBLEM VALIDATION
 - 3.2.3 SIMULATOR ENGINEER (SE) RECEIPT OF DR
 - 3.2.4 AUTHORIZATION TO DEVELOP SIMULATOR MODIFICATION
 - 3.2.5 SOFTWARE/HARDWARE DEVELOPMENT
 - 3.2.6 DEVELOPMENT OF INITIAL TEST
 - 3.2.7 DOCUMENTATION UPDATE
 - 3.2.8 SIMULATOR MODIFICATION CLOSED

4.0 CONFIGURATION MANAGEMENT SYSTEM (CMS)

- 4.1 FUNCTIONS PROVIDED
- 4.2 DR/PM
- 4.3 DDB
- 4.4 DRAWINGS
- 4.5 JOB REQUEST
- 4.6 MANUALS
- 4.7 VENDORS
- 4.8 SIMULATOR AVAILABILITY
- 4.9 PREVENTATIVE MAINTENANCE TRACKING

5.0 ATTACHMENTS

- FIG 1 SIMULATOR MODIFICATION PROCESS DIAGRAM
- FIG 2 SIMULATOR DISCREPANCY REPORT
- FIG.3 DISCREPANCY REPORT CONTINUATION SHEET
- FIG 4 JOB REQUEST FORM
- FIG 5 SIMULATOR MODIFICATION SOFTWARE DESIGN
- FIG 6 SIMULATOR MODIFICATION TEST PLAN
- FIG 7 WORK INCOMPLETE TAG

1.0 OBJECTIVE

To establish guidelines for the design, tracking, installation, documentation, and modifications to the Entergy Operations, ANO Unit I and II Simulators.

2.0 DEFINITIONS

- 2.1 Database Change Request (DBCR): Request for a database change due to changes in the reference plant, usually due to a plant modification.
- 2.2 Design Change Package (DCP): A collection of documentation providing the specifics of a plant modification.
- 2.3 Design Concept Document (DCD): A document that describes the scope of simulation for each plant system.
- 2.4 Design Data Base (DDB): A collection of data consisting of reference plant drawings, manuals, performance data and other documents that defines the plant being simulated.
- 2.5 Discrepancy: A difference between observed performance and the current data base.
- 2.6 Discrepancy Report (DR): A form used to identify discrepancies (problems) and needed corrections and/or upgrading of the Simulator hardware and/or software and initiates the review and correction process.
- 2.7 Simulator Instructor (SI): An instructor currently certified by the NRC to conduct Simulator training and appointed by the Supervisor of Simulator Training as the interface between the Operations Training group and the Simulator Support group or his appointed designee.
- 2.8 Limited Change Package (LCP): A design package that does not require a technical specification change.
- 2.9 Modifications: Any addition, deletion or change to simulation software or hardware.
- 2.10 Plant Change (PC): Documentation of a change to the reference plant which does not change a plant drawing or procedure.
- 2.11 Plant Modification (PM): Term used to describe one or all of the following - PC, DBCR, SCR, DCP, TM.
- 2.12 Problem: A difference between observed performance and expected or desired performance.

- 2.13 Problem Validation: The process of ensuring the simulator problem report identifies a valid problem.
- 2.14 Rejected: The proposed software revision is not satisfactory.
- 2.15 Simulator Engineer (SE): An individual responsible for changes in the performance of the simulators. The engineer will be designated by the Simulator Support Supervisor.
- 2.16 Simulator Enhancement: A simulator modification which will result in any of the following:
1. Addition of data to the Design Data Base.
 2. Elimination of simulation design simplifications or assumptions.
 3. Increasing the capability of the Simulator.
- 2.17 Simulator Modification (SM): A change in the simulation software or hardware.
- 2.18 Simulator Training Supervisor (SS): Individual responsible for simulator training programs and the completion of performance/operability test as well as compliance with established regulations.
- 2.19 SM Design Package: The document that defines what the SM is to accomplish (specification or requirement) and how (design) the SM is going to accomplish it.
- 2.20 Software Change Request (SCR): Request for a software change due to changes in the reference plant, usually due to a plant modification.
- 2.21 Software Module: A unit of software whose source code is contained in one file.
- 2.22 Software Simulation System: The simulation system consists of the software necessary to execute and control the simulation. This shall include the job streams necessary to load, save, restore and unload the simulation system.
- 2.23 Software Specialist: An individual responsible for performing modifications on support software.
- 2.24 System Module: A software module that simulates a portion of a particular plant system.
- 2.25 Simulator Support Supervisor (SSS): Individual responsible for hardware and software maintenance of Simulators and its peripheral equipment at the training center.
- 2.26 Temporary Modification (TM): Modification to the reference plant that is not permanent.

3.0 REQUIREMENTS

3.1 Source of SM: It is intended that a Simulator modification be initiated from one of four sources. These sources as well as a discussion of each follows:

3.1.1 Modifications to the Reference Plant: As modifications to a Simulator's reference plant are made (i.e., TM, DCP, PC, DBCR, SCR, LCP), appropriate training and engineering evaluation of these modifications may result in the necessity to implement similar modifications into the Simulator. Discrepancy Reports initiated as a result of a plant modification (PM) should normally be cleared within one year after review.

NOTE: This type of Simulator modification will require updating of the Design Data Base.

3.1.2 Simulator Problem: As a result of trainee or Simulator Instructor feedback a problem with the current simulation system may be identified. Once reviewed, a SM may be initiated in order to resolve the problem. Discrepancy Reports initiated as a result of observed improper simulator performance should normally be cleared within three months.

3.1.3 Simulator Enhancements: It may become desirable to enhance the simulation beyond its current capabilities. If discussions between the Simulator Instructor and the Simulation Engineer result in an agreement to enhance the Simulator, a SM may be initiated. Discrepancy Reports initiated as a result of simulator enhancements should be cleared as simulator development time permits.

NOTE: This type of modification may result in the addition of data to the Design Data Base, the elimination of simulation design simplifications or assumptions, or extend the current scope of simulation.

3.1.4 Simulator Specification Change: From time to time it may become necessary to add, replace, or modify non-simulation software such as operating system software or system utilities, etc. Also, it may become necessary to modify the Simulator's hardware design. A SM should be initiated in order to document these type of changes. A Discrepancy Report initiated as a result of simulator specification changes should be cleared as simulator time permits.

NOTE: This type of SM may require a change to the Design Data Base.

3.2 Simulator Modification Flow Path: Any change to the simulator must be accompanied by documentation of the changes to be made. Therefore a path to represent the flow of information is presented below. Please refer to Figure 1 for a process diagram.

3.2.1 Identification of the Problem: Problems with the Simulator are generally discovered by Instructors or Operators in re-qualification, but may also be identified by others. It is the responsibility of all individuals to complete a Discrepancy Report (DR) upon observation of a discrepancy such that the perceived discrepancy can be validated and corrected at the earliest possible date. The following instructions will assist in completing these forms so that problems can be expeditiously resolved. The instructions have been keyed to circled item numbers on the attached DR form (Fig. 2). These DR forms are color coded for each unit with Unit 1 being RED and Unit 2 being BLUE. Items 1-6 shall be completed by the originator of the DR when the discrepancy is detected.

Item 1 Unit	*The unit on which the discrepancy was observed.
Item 2 Date	*The date the discrepancy was observed.
Item 3 Rept by	*DR originator.
Item 4 Desc Prob	*Provide sufficient information and/or data such that the problem can be resolved by the Engineers with minimal assistance from the originator. If additional space is required, use the Continuation section located on the back of the DR form.
Item 5 PM#	*Enter a Plant Modification number if one applies to this DR. For plant mod, enter the DCP #, SCR #, DBCR #, LCP, or PC # if applicable. Proceed this number with L-LCP, P-PC, S-SCR, or D-DBCR. No preceding letter required for DCP.
Item 6 Continued	*If a Cont. Sheet is required, indicate by checking box. This will refer to the back of the form. Refer to figure 3 for an example of this sheet.

3.2.2 Problem Validation: Upon receipt of the DR with the appropriate sections completed and supporting data, the SS shall determine if the problem is valid. If the problem is not valid, an explanation shall be attached to the DR and both shall be returned to the originator. If the problem is valid, the SS shall then check the

Configuration Management System (CMS) to see if the problem has been previously identified. If the problem has been identified, this shall be noted on the DR and the DR shall be returned to the originator. If the problem has not been previously identified, the SI should complete items 7-9.

- Item 7 Source •Identifies the category under which the DR originated.
- Item 8 Priority •Priority level of the DR based on training value. The criteria for priority selection is as follows:
- 1 = Training cannot be performed.
 - 2 = Many facets of training cannot be performed.
 - 3 = Some facets of training cannot be performed.
 - 4 = Only a particular facet of training cannot be performed.
 - 5 = Does not affect training or is deemed an enhancement.
- Item 9 Priority Assigned •SS signs and dates after the above items have been completed.

3.2.3 Simulator Engineer (SE) Receipt of a DR: Upon receiving a DR, the SE completes items 10-12 on the DR form (Fig 2).

- Item 10 CMS Desc •Enters a brief description of the overall scope of the DR.
- Item 11 Initiated •Signs and dates initiating the DR.
- Item 12 Assigned To •The Engineer assigned to fix the problem.

3.2.4 Authorization to Develop Simulator Modification: Once the DR has been assigned, it is the responsibility of the Simulator Support Supervisor (SSS) to either approve, disapprove, or defer each DR proposed by the Simulator Engineer (SE). This action may take place as soon as the DR is initiated or may be delayed until manpower and cost considerations have been more carefully analyzed. Disapproval of a DR shall be accompanied with an explanation of why the SM is not to proceed. Deferral of the SM means that implementation should not proceed until a specified event takes place (e.g., existing component requires replacement, final design data becomes available, etc.). Deferral shall be accompanied by a paragraph explaining the terms of the SM implementation. In any case, on the DR form (Fig. 2), items 13-14 shall be completed by the Simulator Support Supervisor.

- Item 13 Approved *Sign and date to indicate approval of the DR for design and development or indicate disapproval or deferral.
- Item 14 Due Date *A due date is also assigned by the SSS.

Upon completion of this portion of the DR form, the DR and/or DCP are entered into the Configuration Management System (CMS). A DR number will automatically be assigned by the system in the format of YY-XXX where YY is the year and XXX is the next sequential log number for that year. Once CMS generates this number, it should be written in the space designated as items 15-16 in Figure 2.

- Item 15 DR# *DR number generated by CMS
- Item 16 DDB# *Enter Design Data Base Doc. No. if DR is not associated with a PM, then this number will be 000.XX.000 where XX is the year in DR#. If DR is associated with a PM, DDB# will be next sequential number in the DDB system. CMS will automatically assign this number. All DR's are filed in the design database under the specified number.

3.2.5 Software/Hardware Development: If any changes are necessary to the hardware, a design shall be submitted by the Simulator Engineer to the Hardware Technician. This design shall be of sufficient detail for the technician to make all changes and shall follow established conventions for wiring, labeling, component installation, etc. A job request as shown in figure 4 shall be used as a cover sheet and tracking mechanism for a hardware design. Copies of all hardware procurement documents shall be part of this design package.

Any hardware work that is left incomplete shall be tagged appropriately with a Work Incomplete Tag. (Fig 7)

If the SM requires software modifications, a software design shall be developed by the Simulator Engineer(SE). Fig. 5 should be used for software design. At a minimum, the software design shall contain the file names of all source code modules that are to be modified as well as a description for the changes that are to be made to each section of a software module. Also, a listing of DATABASE/GLOBAL changes should be a part of the software design. Accepted programming conventions shall be followed in the software design. Referring to the DR form (Fig. 2), items 17-20 shall be completed by the Simulator Engineer.

Item 17 Taken *Final action taken to correct DR.
 Item 18 Models *4 letter model designation of models
 changed(ex. RKCR)
 Item 19 Impl By *First initial and Last name
 Item 20 Date *Date of initial test and completion of work on
 development disk.

Any changes to the simulator software must be done in the following manner:

1. Program History

- Identifier (initials followed by a sequential number i.e. BH01,RR02, etc.)
- Discrepancy Report Number
- Date revision was made originally to code
- Date module was updated and placed in training load
- Any comments, descriptions, PM number, etc.

2. Model Documentation

- Place the identifier on each line changed. This must be preceded by an (!).

3. Use and Store

- Always use the SM of a model or the highest T?. Store in the next highest T?. (ex. if T2_RCFL is the highest, USE T2_RCFL and STORE as T3_RCFL)

4. Compile/Catalogue

- Compile and Catalogue the new test file (T?)

3.2.6 Development of Initial Test: Any SM that requires software modifications shall be tested by the SI or preferably, the originator of the DR. The test shall be designed to ensure that the modified Simulator meets the requirements specified by the DR. The test should consider prerequisites, if any that must be met prior to performing the test and shall indicate the necessity for updating simulator initial conditions files. It is the responsibility of the person(s) developing the test to consider, as a minimum, the necessity of testing any of the following:

- | | |
|-----------------------|-------------------------|
| a. Digital Inputs | h. I/O Override |
| b. Analog Inputs | i. Monitored Parameters |
| c. Lamp Check | j. Logic Response |
| d. Meter Test | k. Transient Response |
| e. Recorder Functions | l. Dynamic Response |
| f. Remote Functions | m. Steady-State |
| g. Malfunctions | n. Switch Check |

The process taken to perform a test shall be documented on the Simulator DR Test Plan (Fig. 6).

If rejected, remedial design efforts should proceed. Once corrective action has been taken, modified appropriate sections of the test previously used shall be prepared and run as indicated above.

Upon clearing a DR on the development system, the Training Disks must be updated with the new software. The following steps will successfully update the Training Disks from a satisfactorily tested software change.

1. Save test file to magnetic tape from Development Disk.

Note: Verify that no other Test Files (T?) are on Simulator Load.

2. Restore Test File to Training Disk from Magnetic Tape.
3. Compile and Catalogue Test File on Training Disk
4. If test is satisfactory, store the test file as SM_????
5. Scratch Test File
6. Move to Development Disk
7. Store test file as SM_????
8. Scratch test file

Referring to the DR form (Fig. 2), items 21-22 shall be used by the SI to record the acceptance or rejection of the software/hardware modification on the training load.

Item 21 Test Sat	*If test is satisfactory, indicate here with a signature.
Item 22 Date	*Indicate the date of the satisfactory test. This becomes the clear date of the DR.

- 3.2.8 Documentation Update: The documentation update consist primarily of the DR package with the proper simulator software design. Accuracy of the modification documentation can be maintained with the use of the DR/DCP packages and the controlled plant documentation. All drawings and documents provided by our vendors are located in our design database for review.

Therefore, all functional specifications, DCD's, and drawings for both units are no longer being updated from the baseline with the exception of the following:

Unit 1 Panel drawings

Process drawings
 Logic drawings
 Panel electrical distribution drawings
 Functional Specs not associated with
 plant systems

Unit 2 DCD's not associated with plant systems

The above documents have been determined to be necessary for proper maintenance of the simulators. The Simulator Engineer (SE) is responsible for the required updates.

After the SM has been accepted and implemented into the new training pack, the remaining update packages shall be incorporated into the reference documents by whatever means is currently being utilized (local control, Document Control, Engineering Records, etc). Referring to the DR form (Fig. 2), items 23-24 shall be completed by the SE.

Item 23 Update Complete *To be completed after the update of all the documentation associated the DR.

Item 24 Date updated *Indicate the date the documentation was updated and indicate what was updated by checking the boxes marked: DOC - DCD or other written documentation, DRW - Drawing, and NA - Not applicable.

3.2.8 SM Closed: It is the responsibility of the SSS to review the completed DR status file for clarity and legibility in preparation for entry into the Configuration Management System. Upon successful review, the SSS shall officially close out the DR by completing items 25-26 on the DR form (Fig. 2).

Item 25 DR Package *If documentation update was completed as required, the SSS or his designated alternate shall verify that the documentation update was made and all other requirements were completed.

Item 26 Date *Date of review

4.0 Configuration Management System (CMS)

The Design Data Base File provides the accountability of all data and defines the status of the simulator. The maintenance of the DDB is not only regulated but necessary to maintain simulator fidelity. In the Configuration Management System, several files for each simulator unit reside to support DDB, DRs, and PM's. The DR file provides a record of all

DRs and PMs written. The DDB file provides the information concerning the Design Databases.

4.1 The CMS provides the following functions:

- a. Establishes a baseline record (DDB)
- b. Maintains a current data base of simulator design (DDB)
- c. Tracks plant changes affecting simulator design and operation (PM)
- d. Tracks plant changes not affecting simulator design and operation (PM)
- e. Tracks differences between the simulator and the simulator design bases (DR)
- f. Tracks identified improvements needed in simulator design (DR)
- g. Maintains additional databases used by Simulator Support which includes drawings, job request, manuals, vendors, availability, and preventative maintenance.

4.2 DR/PM (Tracked by the same file in CMS)

4.2.1 Discrepancy Reports (DRs)

- a. Discrepancy Reports (DRs) are the focal point of all simulator modifications. No change is done on the simulator without a DR. The exception is routine hardware maintenance which is tracked by the Job Request System.
- b. The DR file provides accountability for all the information located on the DR form (Fig 2). All information is stored in this file for easy access.
- c. Update of the DR file is done from the DR form per the attached flow chart (Fig 1).

4.2.2 Plant Modifications

- a. Plant Modifications are tracked with the DR database file with a field for PM number. If the record has a PM number and no DR number, then the PM has been reviewed and does not affect the simulator. If the record has a PM number and a DR number, then the PM does affect the simulator and a Design Database Number is assigned, with the normal DR information entered.
- b. The PM portion of the DR file provides accountability for the review of PM's and their associated implementation into the simulator.
- c. Update of PM's is done through the training center PM review process which utilizes TEAR (Training Evaluation and Review) forms. Upon receipt of the TEAR, Simulator Support reviews the PM and makes the determination of simulator requirements. The PM information is entered into CMS from a TEAR form regardless of these requirements.

- d. Verification should be done semiannually to verify that all PM's have been reviewed by simulator support. This is done by cross checking with the TANDUM system as well as the training center tracking programs.

4.3 Design Data Base (DDB)

- a. The DDB file maintains a record of all entries into the design database for the simulator. This includes all the baseline documents used during procurement and installation as well as current information such as technical manuals, drawings, power plant data, transient data, performance/operability test, and any plant modifications or resolved discrepancies that have been made to the simulator
- b. The DDB file provides accountability for all the modifications that have been made to the baseline simulator and reference plant since procurement.
- c. The DDB file is updated when a new item is added to the Design Data Base. At this time a number is assigned automatically by the CMS system. This number is in the form of WWW.XX.YYY where WWW is a 3 digit system number, XX is the year, and YYY is a sequential number assigned by CMS. The WWW prefix was used in the early configurations, however, typically these digits are '000'. All DR's cleared in a specified year not associated with a Plant Modification (PM) are assigned the number 000.XX.000.

NOTE: The following are other files maintained by CMS which are not directly related to simulator certification or ANSI 3.5.

4.4 Drawings

- a. The Drawings file provides accountability for information pertaining to the simulator drawings for each unit. Items include drawing number, sheet, revision, title, etc.
- b. This file is not currently maintained with revisions, modification dates, etc. However, new drawings that are created are added to the file. The file does represent the drawings that we currently have on hand.

4.5 Job Request

- a. A Job Request file is maintained for tracking request made to the hardware staff.
- b. Once the JR is written, it is entered into CMS and a JR number is assigned. When the work is complete and testing is satisfactory, the date the job was cleared is entered into CMS.

4.6 Manuals

- a. The manuals database tracks all the manuals kept in the simulator support library for easy search for reference material.
- b. Data is entered in this system by each member of simulator support when a new volume needs to be added to the simulator library.

4.7 Vendors

- a. The vendors database tracks the names, addresses, etc of any vendor/contact that we may encounter in day to day operations.
- b. This data is entered by anyone on the system based on personal need.

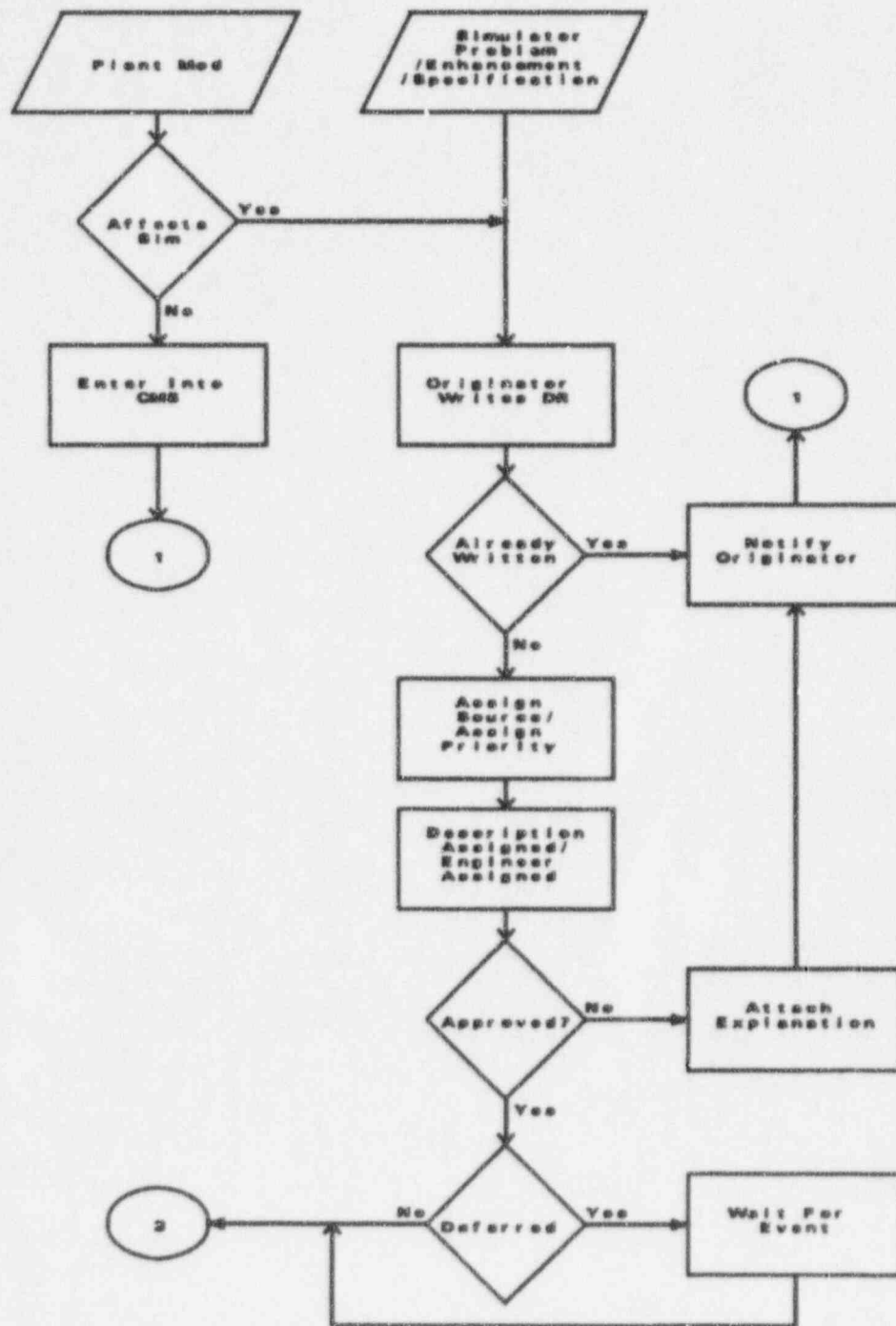
4.8 Availability

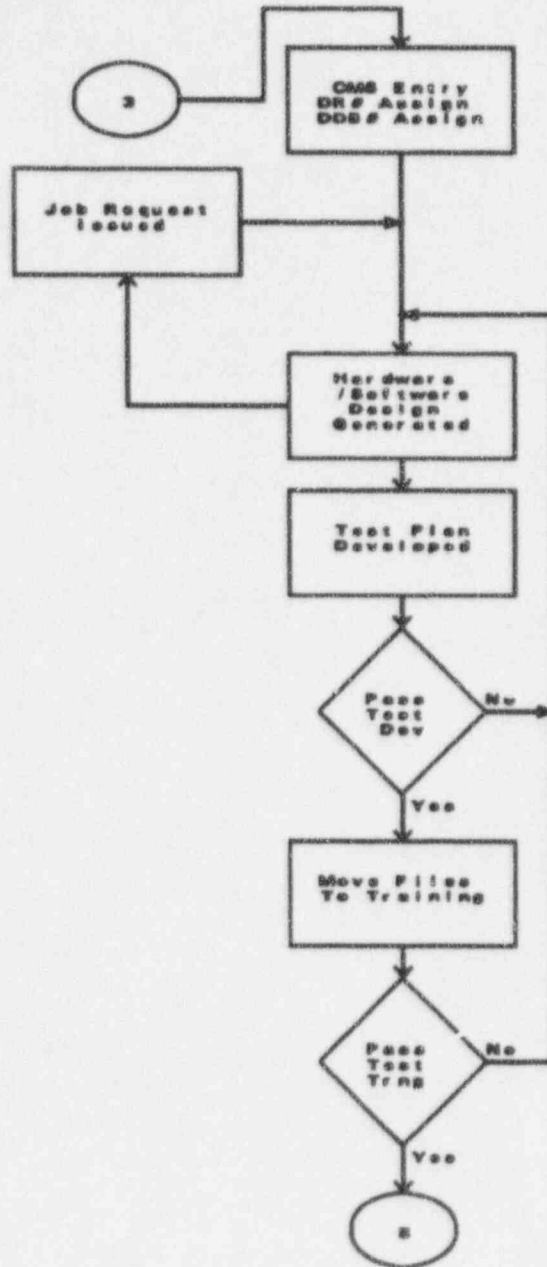
- a. The availability database is used on each unit to track the simulators availability as a percentage of time available to time scheduled.
- b. The data is provided to simulator support by the Simulator Training Supervisor at the beginning of each month for the previous month. This information is entered and various reports are generated based on this information.

4.9 Preventative Maintenance

- a. The preventative maintenance file is used to maintain a record of the activities that need to be performed on the equipment used by simulator support and the period between activities.
- b. This data is determined by the simulator engineers and the hardware technicians. Simulator support is notified when a task has been completed and this date is entered into the system. CMS provides a list of those tasks that are due to be performed and those that are delinquent.

FIGURE 1
SIMULATOR MODIFICATION PROCESS DIAGRAM





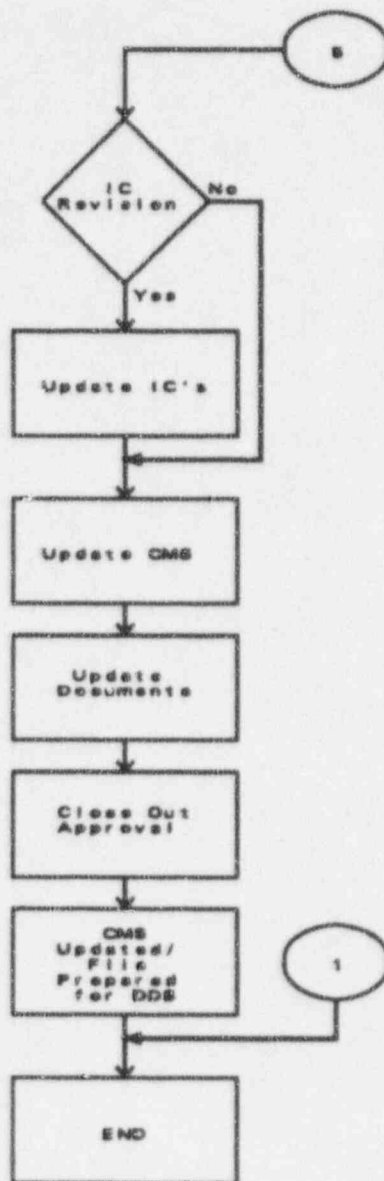


FIGURE 2
SIMULATOR DISCREPANCY REPORT

FIGURE 3

DISCREPANCY REPORT CONTINUATION SHEET

FIGURE 4

JOB REQUEST FORM

FIGURE 5

SIMULATOR MODIFICATION SOFTWARE DESIGN

FIGURE 6
SIMULATOR MODIFICATION TEST PLAN

FIGURE 7

WORK INCOMPLETE TAG

SECTION 2
REVISIONS TO ATTACHMENT 1 TO NRC FORM 474

Exception 1

Section 3.1.2 of ANSI/ANS 3.5-1985 contains a list of malfunctions that shall be included in the simulator and specifies in Item 12 that the ability to uncouple rods be provided. The Unit 2 Simulator does not presently have that specific capability, but our present capabilities in the area of rod malfunction are more than adequate to provide the operators with the necessary training related to rod operation.

The exception remains unchanged since the initial simulator certification.

Exception 2

Section 4.3 of ANSI/ANS 3.5-1985 states in part that "administrative controls or other means shall be provided to alert the Instructor when certain parameters approach values indicative of events beyond the implemented model or known plant behavior". We have identified no conditions that place the simulator into a configuration that is different from observed or predicted plant response under the same set of circumstances. If such a condition is identified in the future and can't be resolved, we will provide a method of alerting the Instructor.

At the time Exception 2 was written, the interpretation of Section 4.3 of ANSI/ANS 3.5-1985 was that an "Operating Limit" is a limit on the simulator which caused a "Blow Up" or the simulator could not handle the condition. In December of 1987, there was considerable confusion in the industry regarding to the "Operating Limit".

However, in September of 1988, this section was re-evaluated. The following items were determined necessary to satisfy Section 4.3 of ANSI/ANS 3.5-1985:

1. Containment Pressure High > 60 psig.
2. Containment Pressure Low < 10 psig.
3. Containment Temperature > 460° F.
4. RCS Pressure > 2750 psia.
5. S/G Pressure > 1200 psia.
6. Core Exit Thermocouple > 1200° F.
7. Core Power > 3000 Mwth
8. RCS Two-Phase Flow
9. RCS T_{HOT} > 700° F.
10. S/G Overfill.

These operating limits have been implemented and tested. This information was previously communicated via AP&L correspondence to the NRC, letter 2CAN058923, dated 05/31/89.

The ANO Unit 2 Simulator no longer takes this exception. Simulator Instructors are currently alerted to the above mentioned "Operating Limits" by a dialog box and an audible beep on the Instructor Console. The simulator continues to operate; however, the instructor must acknowledge the dialog box to continue manipulating the Instructor Console.

Exception 3

Section 3.3.2 of ANSI/ANS 3.5-1985 states in part that "the systems that are operated or monitored outside the Control Room or that provide some impact to the simulator models and are necessary to perform reference plant evolutions described in 3.1.1 shall be simulated." The simulator has been taken from Cold Shutdown to 100% Power and returned to Cold Shutdown using approved ANO Unit 2 procedures. The few steps that could not be completed were physical in nature requiring action in the plant and provide no input to the simulator. Examples of these are:

1. Physically racking down breakers, although indication in the Control Room is consistent with breaker configuration.
2. Flushing LPSI heat exchangers.
3. Taking vibration readings, local pressure readings and local temperature readings.
4. Adding hydrazine to the Condensate Systems.

This exception was modified from the original certification submittal on December 6, 1991 as per Energy Operations correspondence to the NRC, letter 2CAN129104. The exception, as stated above, remains unchanged since that time.

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
91-045	CAPS	PMS-COMPUTER	S CAPS 099-6	9/13/91
91-109	CAPS XP.CEASQ	PMS-COMPUTER	S CAP 113-9	9/13/91
91-113	CAPS REVISE MDS INOP	PMS-COMPUTER	S CAP 111-9	9/13/91
91-125	CAPS AUTO RESTART	PMS-COMPUTER	S CAP 109-9	1/16/92
91-129	DATABASE ADDITIONS FOR RODSW PROG	PMS-COMPUTER	DBCR 4.034-8	9/13/91
91-130	UNIT II PERFORMANCE TEST 1986 (VOL 1-	PMS-COMPUTER	S CAP 104-6	9/13/91
91-131	MODIFY CEA POSITION LOG	PMS-COMPUTER	S CAP 103-6	9/13/91
91-132	ADD REPORT TO LOG CAPS AVAILABILITY	PMS-COMPUTER	S CAP 112-9	9/13/91
91-133	MODIFY COLSS UNCERTAINTY CONSTANT	PMS-COMPUTER	DBCR 4.033-8	9/13/91
91-134	MODIFY COLSS TO SELECT PROPER BOLE	PMS-COMPUTER	S CAP 110-9	9/13/91
91-135	CAPS CYCLE 9 CONSTANT UPDATES	PMS-COMPUTER	S CAP 107-9	9/13/91
91-136	TEMPORARY LOW POWER TESTING DATA	PMS-COMPUTER	DBCR 7.032-8	9/13/91
91-148	2K11-J4 LOGIC	LOGICS/CTRLS	P89-8041	10/2/91
91-149	2CV-1460 AIR ACCUMULATOR	LOGICS/CTRLS	P90-8093	10/2/91
91-150	2RITS-4423 POTENTIOMETER	PANELS	P91-8012	10/28/91

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
91-151	SPDS 2P7A SPEED	SPDS	DBCR 5.129	11/1/91
91-152	2PS-4812 ALARM SETPOINT	LOGICS/CTRLS	P91-8051	10/2/91
91-160	PMS-ADD DEFAS	PMS-COMPUTER	DBCR 2.139-8	4/9/92
91-161	MODIFY FRACTIONAL DIGITS CAPS POINT	COMPUTERS	DBCR4.041-9	8/29/92
91-162	CAPS-CEA POSITION	COMPUTERS	S CAP.119-9	8/10/92
91-163	CAPS-COLSS DATABASE	COMPUTERS	DBCR4.030-6	8/24/92
91-164	CAPS - BV 2001 BV 2002	COMPUTERS	DBCR 4.037-9	11/1/91
91-165	CAPS - CONSTANT K6012	COMPUTERS	DBCR 4.035-9	10/29/91
91-166	CAPS JP:V6	COMPUTERS	S CAP 120-9	8/24/92
91-171	SPDS PID FW FWA1	SPDS	DBCR 5.132	10/31/91
91-172	SPDS SAFETY	SPDS	SPDS.097	11/1/91
91-173	CAPS - CPC DATA CONTENTION	PMS-COMPUTER	S CAP .116-9	10/29/91
91-174	CAPS - AUTO LKRT	PMS-COMPUTER	S CAP .117-9	8/24/92
91-175	PMS - AUTO LKRT	PMS-COMPUTER	DBCR 4.039.9	8/29/92
91-176	CAPS ALARM LOG	PMS-COMPUTER	000.91.072	11/1/91

SECTION 3
REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
91-178	CAPS - CYC 8 POISON PROGRAM	PMS-COMPUTER	S CAP .105.8	11/1/91
91-179	CAPS - RODSW LOGIC	PMS-COMPUTER	S CAP 115-9	11/1/91
91-180	CAPS - EFPD	PMS-COMPUTER	S CAP .118-9	8/24/92
92-017	2K12-H3,J3 CHG PUMP SEAL WATER	PANELS	LCP 90-6019	1/28/92
92-022	RC INVENTORY ON SFSC SCREEN	SPDS	SSPDS.102	4/14/92
92-051	REVISE SETPOINTS	PANELS	L90-6036	6/22/92
92-052	REMOVE RTI DEVICE 010	PANELS	90-2036	6/22/92
92-057	INHIBIT VS FUNCTION	MS-COMPUTER	DBCR 4.045.9	6/29/92
92-058	ADD POINTS FOR SHIFT AVERAGE AND TA	PMS-COMPUTER	DBCR 4.042.9	6/29/92
92-059	UPDATE CAPS RHOBAL FOR CYCLE 9	PMS-COMPUTER	CAP 108.9	8/18/92
92-060	UPDATE CAPS RHOBAL FOR CYCLE 8	PMS-COMPUTER	CAP 106.8	8/18/92
92-061	REVISE POISON & RHOBAL CONSTANTS	PMS-COMPUTER	CAP 126.9	8/24/92
92-062	INCREASE CAPS FEEDWATER FLOW	PMS-COMPUTER	CAP 123.9	8/24/92
92-063	CHANGE PD1029C & PD1129C HI LIMITS	PMS-COMPUTER	DBCR 4.043.9	8/24/92
92-064	IMPLEMENT SHIFT AVERAGE POWER CAL	PMS-COMPUTER	CAP 122.9	6/29/92

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
92-065	CAPS RHOBAL FORMAT CHANGES	PMS-COMPUTER	CAP 127.9	8/24/92
92-066	CHANGE INCORRECT VARIABLE NAME FO	PMS-COMPUTER	CAP 13 J.9	8/29/92
92-067	MODIFY CAPS RCS FLOW REPORT	PMS-COMPUTER	CAP 131.9	8/24/92
92-068	IMPLEMENT T-COLD ALARM	PMS-COMPUTER	CAP 129.9	8/24/92
92-069	IMPLEMENT RCS FLOW CALC BASED ON S	PMS-COMPUTER	CAP 129.9	8/24/92
92-070	CEDMCS UV RELAY POWER DEPENDENCY	LOGICS/CTRLS	84-2085	7/31/92
92-076	SDC VORTEX MONITORING	LOGICS/CTRLS	91-2012	9/23/92
92-078	2K03, 10, 11, 12	LOGICS/CTRLS	88-2111	1/14/93
92-084	PPS PZR PRESS LO SETPOINT	LOGICS/CTRLS	92-2008	9/9/92
92-086	CONTAINMENT H2 MONITOR	LOGICS/CTRLS	91-2003	10/9/92
92-087	REPLACE 2PT-5601,2,3,4	LOGICS/CTRLS	91-2013	9/29/92
92-088	TURBINE MODS	SECONDARY	91-2017	9/21/92
92-089	CONTROL ROOM DAMPER POSITION	LOGICS/CTRLS	L91-6007	9/30/92
92-090	EDG DAMPER POSITON	LOGICS/CTRLS	L91-6023	9/21/92
92-095	MAIN STEAM MOV MODS	LOGICS/CTRLS	91-2010	8/24/92

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
92-096	RWT RECIRC MODS	LOGICS/CTRLS	92-2002	9/8/92
92-097	2CV-1513-2, 1519-1 CHANGE STROKE TIME	LOGICS/CTRLS	L91-6017	8/24/92
92-098	PLANT COMPUTER REPLACEMENT	PMS-COMPUTER	90-2036	12/22/92
92-103	PRS MODS	LOGICS/CTRLS	P92-8031	9/8/92
92-111	REVISE PPS SETPOINTS	LOGICS/CTRLS	92-2008	9/28/92
92-113	AFW TO 2T41B	SECONDARY	P92-8041	9/18/92
92-117	CAPS TC ALARM	PMS-COMPUTER	DBCR R.046-9	9/29/92
92-118	SPDS ICC LEVEL	SPDS	SPDS.102	9/25/92
92-119	SPDS HEATUP/COOLDOWN	SPDS	SPDS.103	9/25/92
92-120	SPDS HEATUP/COOLDOWN	SPDS	DBCR 5.133	9/25/92
92-121	SPDS ICC LEVELS	SPDS	DBCR 5.160	9/25/92
92-123	LD FLOW CONTROL VALVE	PRIMARY	P92-8034	1/18/93
92-124	2CV-1460 LOGIC	LOGICS/CTRLS	P92-8021	9/30/92
92-125	DCPR #1 HZ MONITOR	LOGICS/CTRLS	DCPR91-2003	10/28/92
92-143	2CV-1017/1067	LOGICS/CTRLS	P92-8008	1/14/93

SECTION 3
REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
92-145	CCW TO RCPS	CLG WTR/MISC	92-2010	1/14/93
92-146	ADDITION OF N16 MONITORS	CLG WTR/MISC	92-2019	1/14/93
92-152	UPDATE SPDS FOR NEW PT	SPDS	SPDS.105	1/25/93
93-021	PMS PLANT POWER	PMS-COMPUTER	SW92-2001	1/29/93
93-022	PMS B FW FLOW	PMS-COMPUTER	SW92-2005	1/29/93
93-023	SPDS TAVECET 2	SPDS	SPDS.113	1/29/93
93-024	PMS - ADD BOP	PMS-COMPUTER	SW92-2006	3/16/93
93-025	PMS - DISPLAY OUTPUT	PMS-COMPUTER	SW93-3002	2/9/93
93-026	PMS - PLANT SYS CODE	PMS-COMPUTER	SW93-3003	2/9/93
93-063	2CV-8291-1 SEAL-IN LOGIC	LOGICS/CTRLS	SIMULATOR HA	3/22/93
93-066	CHANGE SGTR TO USE THOT	SPDS	SPDS.099	1/26/94
93-087	PMS-DIVIDE BY ZERO	PMS-COMPUTER	SW93-2005	5/12/93
93-088	PMS-CBOR REPORT	PMS-COMPUTER	SW93-2004	5/12/93
93-089	PMS-PRINT CEA POSITIONS	PMS-COMPUTER	SW93-2006	5/11/93
93-090	PMS-2K01 ALARM MENU	PMS-COMPUTER	SW93-2003	5/11/93

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
93-091	PMS-CEA LOG	PMS-COMPUTER	SW93-2008	5/11/93
93-103	2RITS-8750-1 OUTPUT TO 2RR-2330B(PR#5	PMS-COMPUTER	P92-8079	6/2/93
93-118	SPDS SFD UPDATE	SPDS	SPDS.118	7/14/93
93-158	*** MSIV LOGIC UPGRADE	LOGICS/CTRLS	91-2001	3/3/94
94-001	2CV-4816, 17 POSITIONER	LOGICS/CTRLS	P92-8072	1/25/94
94-002	RX VESSEL DP LOOPS	LOGICS/CTRLS	P91-8014	1/25/94
94-003	DCP92-2002A RWT RECIRC	LOGICS/CTRLS	92-2002A	1/27/94
94-011	*** INSTRUMENT AIR CROSS CONNECT	LOGICS/CTRLS	P92-8038	3/2/94
94-012	*** MSIS PRETRIP ANNUNCIATOR ADDITIO	LOGICS/CTRLS	P93-8042	3/2/94
94-014	SPDS E2H1 E2H2	SPDS	DBCR 5.146	1/25/94
94-015	SPDS-CONT PRESSURE	SPDS	DBCR 5.144	1/25/94
94-016	*** 2PIC 4626A/B PROGRAMS	LOGICS/CTRLS	P92-8074	3/2/94
94-020	ALTERNATE AC POWER (2R10 OUTAGE W	EL GEN/DIST.	89-2017	4/20/94
94-021	CAPS MIGRATION TO PMS	SYSTEM	92-2023	6/20/94
94-026	SIAS REMOVAL-2CV-5852, 5859	LOGICS/CTRLS	P93-8027	2/21/94

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
94-027	EFW MOV'S	LOGICS/CTRLS	L91-6016	4/19/94
94-028	TURBINE TRIP LOGIC	LOGICS/CTRLS	L93-6020	3/7/94
94-029	MFRV/MFRBV MODIFICATION	LOGICS/CTRLS	L94-6004	3/2/94
94-031	SU2 FEEDER HANDSWITCHES	EL GEN/DIST.	P93-8016	3/2/94
94-032	AC-NON-OUTAGE	EL GEN/DIST.	92-2011	10/26/94
94-033	HPSi INJECTION VALVE REPLACEMENT	EL GEN/DIST.	93-2012	4/19/94
94-039	2VEF38A-1, 2VEF38B-2 ALARMS	LOGICS/CTRLS	P93-8062	3/16/94
94-040	T-MOD 2C03 SWITCH/SIGMA MODS	LOGICS/CTRLS	TM94-2-009	4/14/94
94-041	CHARGING PUMP SELECTOR HAND SWITC	LOGICS/CTRLS	P93-8051	3/31/94
94-047	START UP CHANNEL INDICATIONS	LOGICS/CTRLS	TM-94-2-011	4/12/94
94-051	2C69 CONTROL ROOM CONSOLE UPGRAD	PMS-COMPUTER	93-2013	11/21/94
94-064	FIRST STAGE PRESSURE FEEDBACK	LOGICS/CTRLS	T94-2-027	5/5/94
94-066	HEATER DRAIN PUMP HANDSWITCH	LOGICS/CTRLS	P92-8051	5/31/94
94-074	PLANT MONITOR SYSTEM POINTS	PMS-COMPUTER	93-2007	3/14/94
94-084	REPLACE 2SV-0205 WITH MOV	LOGICS/CTRLS	94-2013	6/20/94

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
94-105	2K10-K3 VLPMS ALARM	LOGICS/CTRLS	93-2006	9/28/94
94-119	2CV-5637-1 5638-2 STROKE TIME >5 SECO	LOGICS/CTRLS	92-2002A-1	9/28/94
94-135	H2 RECOMB TI	LOGICS/CTRLS	L93-6018	10/26/94
94-137	MAIN CHILLER REPLACEMENT	CLG WTR/MISC	93-2014	10/10/95
94-138	2RITS-8925 1,2 ALARMS	LOGICS/CTRLS	P94-8045	2/13/95
94-139	CPS-1084 SETPOINT CHANGE	LOGICS/CTRLS	P94-8048	12/14/94
94-140	TURBINE TRIP STATUS LIGHTS	LOGICS/CTRLS	L94-8022	2/8/95
94-141	GAMMA METRICS HEAT PROBLEM	LOGICS/CTRLS	P94-8027	2/13/95
94-142	NEW DIXSON INDICATORS ON 2C04	LOGICS/CTRLS	L94-8006	1/25/95
94-151	TG MONITORING	LOGICS/CTRLS	91-2018	12/21/94
94-152	CS HEADER LEVEL ALARMS	LOGICS/CTRLS	L94-8002	12/21/94
94-153	U-2 EMER. CONTROL ROOM CHILLER REP	LOGICS/CTRLS	94-2014	9/20/95
95-012	2SV-0205 TO 2CV-0205-2	LOGICS/CTRLS	94-2013	1/25/95
95-013	VCT LOW PRESSURE ALARM	LOGICS/CTRLS	P94-8053	1/27/95
95-014	MFP FLOW DEMANDS	SECONDARY	P94-8059	8/8/95

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
95-015	SBO PROTECTIVE RELAYS	LOGICS/CTRLS	92-2011	10/16/95
95-016	SICMA TRIP SIGNALS	LOGICS/CTRLS	P94-8054	10/17/95
95-035	2C15 FAN FAILURE	LOGICS/CTRLS	P94-8047	2/13/95
95-036	2PIS-1020/1070 LOGIC	LOGICS/CTRLS	P94-8054	6/20/95
95-045	2P8A, B TRIP LOGIC	LOGICS/CTRLS	P95-8009	2/9/95
95-048	2CV-5236-1, 2CV-5254-2, & 2CV5255-1 STRO	LOGICS/CTRLS	L95-6001	3/20/95
95-052	SNUBBER FOR FUEL OIL PUMP DP	CLG WTR. MIS	P94-8058	3/20/95
95-061	RCP SPEED INTERLOCK REMOVAL	LOGICS/CTRLS	P94-8049	3/22/95
95-062	SDBCS MASTER LOGIC CHANGE	LOGICS/CTRLS	P94-8056	3/22/95
95-074	FWCS UPGRADE	LOGICS/CTRLS	94-2008	9/20/95
95-094	MTG LOAD SET RUNBACK	LOGICS/CTRLS	P95-8038	7/5/95
95-106	REPLACEMENT OF PART LENGTHS	CORE RELATED	94-2017	10/17/95
95-107	HPSI INJECTION VALVE REPLACEMENT	CLG WTR. MIS	94-2002	9/27/95
95-108	SERVICE WTR. WATER HAMMER	CLG WTR. MIS	89-2049	8/10/95
95-109	NORMAL CONTROL ROOM CHILLERS	CLG WTR. MIS	L95-6007	9/27/95

SECTION 3
 REFERENCE PLANT MODIFICATIONS INCORPORATED ON THE UNIT 2 SIMULATOR
 PERIOD BETWEEN 07/27/91 TO 10/31/95

DR NO.	DESCRIPTION	CATEGORY	PLANT MOD NUMBER	DATE CLEARED
95-110	MFP TRIP HARDENING	SECONDARY	L94-6027	10/11/95
95-111	2P89C HANDSWITCH	LOGICS/CTRLS	P94-8060	7/24/95
95-112	CIRC WATER PUMP VALVE LOGIC	CLG WTR. MIS	L95-6004	7/24/95
95-113	DIGITAL FP SDBCS HIC'S	SECONDARY	P95-8028	8/10/95
95-114	GENERATOR TRIP HARDENING	EL GEN/DIST.	94-2024	10/4/95
95-115	PMS COMPUTER POINT ADDITION	PMS-COMPUTER	93-2007	10/17/95
95-119	LPSI INJECTION VALVE REPLACEMENT	PRIMARY	90-2015	9/14/95
95-144	MSIS RELAYS TO 2P2C, D	LOGICS/CTRLS	L95-6008	9/28/95
95-145	2CV-4820 STROKE TIME	LOGICS/CTRLS	L94-6009	9/29/95
95-147	2P7A STEAM PRESSURE ALARM	LOGICS/CTRLS	P95-8024	10/18/95
95-148	CEDMCS GROUND DETECTION	LOGICS/CTRLS	P95-8010	10/24/95
TOTAL	161			

ARKANSAS NUCLEAR ONE

UNIT 2

1996

SIMULATOR OPERABILITY TEST

REVISION 10, October 24, 1995

DATE COMMENCED: _____

DATE COMPLETED: _____

APPROVAL:

David M. Hahn

SUPV., SIMULATOR TRAINING 1/10/31/95
DATE

B. J. W.

SUPV., SIMULATOR SUPPORT 1/10-31-95
DATE

Sherri L. Cotton

MGR., TRNG AND EMERG. PLANNING 1/10-31-95
DATE

UNIT 2 OPERABILITY TEST

FORWARD

The Simulator Operability Test will be performed annually. The collected data will be evaluated, discrepancies, if any, explained and attached to the Annual Simulator Report.

An Operability Test is not a Performance Test. The Performance Test demonstrated the Simulator's fidelity by comparing simulator calculated values to actual or predicted plant data and demonstrated ability to comply with ANS-3.5, 1985. The ANO Training Administrative Guideline: Simulator Modification Control is designed to document the Simulator's fidelity. The Operability Test will provide the data to document satisfactory simulator response on an ongoing basis.

It is required that all malfunctions listed in ANS-3.5, 1985, 3.1.2 and the operational test be tested every 4 years and a minimum of 25% tested each year.

The lists provided are suggested and should be followed. In the event that specific conditions warrant a change in the events/malfunctions being performed, the Supervisor, Simulator Training will be informed of the necessary changes or revision to ensure that the changes are re-incorporated to meet the aforementioned requirements of ANS 3.5, 1985.

TABLE OF CONTENTS

I. OPERABILITY TESTS

SECTION A	Real-Time Test
SECTION B	Normal Operations Test
SECTION C	Steady State Operations Test
SECTION D	Surveillance Test
SECTION E	Transient Test
SECTION F	Malfunction Test

II. ATTACHMENTS

A-1	Discrepancy List (Real Time Test)
A-2	System Spare Cycle % - Normal OPS
A-3	System Spare Cycle % - Reactor Trip
A-4	System Spare Cycle % - 100% Steam Line Rupture
B-1	Discrepancy List (Normal Operations Test)
B-2	Normal Operating Procedures
C-1	Discrepancy List (Steady State Operations Test)
C-2	25% Rated Power Data
C-3	60% Rated Power Data
C-4	100% Rated Power Data
D-1	Discrepancy List (Surveillance Test)
D-2	Surveillance Procedures
E-1	Discrepancy List (Transient Test)
E-2	Turbine Trip/Rx Trip/High MSR Level Data
E-3	"A" MSIV Closure Data
E-4	Main Turbine Runback Data
E-5	Loss of Main Circ Water Data
E-6	"D" RCP Trip Data
E-7	Rx Trip "A" S/G Level Data
E-8	Loss of Offsite Power/Natural Circulation Data
E-9	Steam Line Break (100%) Data
E-10	LOCA (100%) Data
E-11	Uncomplicated Reactor Trip and restoration to Power
F-1	Discrepancy List (Malfunction Test)
F-2	Malfunction Verification List
F-3	Time-In-Life Malfunctions Data
F-4	APR Sheets
F-5	Annunciator Malfunctions
F-6	Valve Malfunctions
G	Procedural Steps Not Performed
H	Operability Test Staff

A. SIMULATOR REAL TIME TEST

1.0 DISCUSSION

The purpose of this test is to assure that the Simulator is running in real time.

Real-time calculations may be performed on-line by load module REAL-TIME. It calculates a real-time ratio by continually dividing elapsed simulator time by elapsed real time.

This test will also gather CPU spare cycle time statistics for normal, transient, and emergency operations.

2.0 REFERENCE(S)

- 2.1 ANS-3.5, 1985 A3.1, ANS NPP Simulator for Operator Training.
- 2.2 ANO Unit-II User Guide for Simulation Development Aide.
- 2.3 REAL-TIME program

3.0 EQUIPMENT

- 3.1 ANO-2 Simulator

4.0 INITIAL CONDITIONS

- 4.1 100% Power

5.0 ACCEPTANCE CRITERIA

- 5.1 REAL-TIME ratio will be greater than 98% for all test cases.
- 5.2 CPU spare cycle time will be greater than 0% for all test cases.

6.0 NON-ACCEPTANCE OF SIMULATOR RESULTS

- 6.1 If the Simulator REAL-TIME ratio or spare cycle time do not meet the acceptance criteria in 5.0, adjustments will be made before the Simulator is used for routine training.
- 6.2 Discrepancies will be listed on ATT. A-1

7.0 PROCEDURE - NORMAL OPS

INT. DATE

7.1 Initialize to 100% Rated Power.
Place Simulator in RUN.

7.2 Obtain CPU spare cycle time :

7.2.1 From a terminal, type: "TSM> !MODE ONRA" <ENTER>

7.2.2 Type "TSM>Z <ENTER>". Type "ENTER>SPA <ENTER>".

7.2.3 When complete, type "EXIT <ENTER>", then type
"TSM>!MODE OFRA <ENTER>".

7.3 Obtain data from printer and attach to Attachment A-2 of
this procedure. From the printouts, record
the minimum spare cycle times here.

CPU _____

7.4 On a terminal, type TSM>REALTIME. After
10 minutes, place simulator in FREEZE. Record
here the final displayed value of RTRATIO.

REALTIME RATIO = _____

8.0 PROCEDURE - TRANSIENT OPERATION

8.1 Initialize to 100% Rated Power. Place
the simulator in RUN and Trip the reactor.

8.2 Obtain CPU Spare Cycle time as in 7.2.

8.3 Obtain data from printer and attach to Attachment
A-3 of this procedure. From the printouts, record
the minimum spare times here.

CPU _____

8.4 On a terminal, type TSM>REALTIME. After
10 minutes, place simulator in FREEZE. Record
here the final displayed value of RTRATIO.

REALTIME RATIO = _____

9.0 PROCEDURE - EMERGENCY OPERATION

INIT DATE

9.1 Initialize to 100% Rated Power. Place simulator in RUN. Activate malfunction for a 100% MSLB outside containment downstream MSIVs on steam generator A.

9.2 Obtain CPU Spare Cycle time as in 7.2.

9.3 Obtain data from printer and attach to Attachment A-4 of this procedure. From the printouts, record the minimum spare cycle times here.

CPU _____

9.4 On a terminal, type TSM>REALTIME. After 10 minutes, place Simulator in FREEZE. Record here the final displayed value of RTRATIO.

REALTIME RATIO = _____

10. FINAL CONDITIONS

10.1 Data has been recorded and saved verifying computer Real Time during normal, transient, and emergency situations.

10.2 Spare cycle times exceed 0% for all cases recorded.

10.3 Real-Time ratios exceed 98% for all cases recorded.

10.4 List any DISCREPANCIES on Attachment A-1.

ATTACHMENT A-2

SYSTEM SPARE CYCLE 4 - NORMAL OPERATIONS

ATTACHMENT A-3

SYSTEM SPARE CYCLE 4 - REACTOR TRIP

ATTACHMENT A-4

SYSTEM SPARE CYCLE % - 100% STEAM LINE RUPTURE

B. NORMAL OPERATION TEST

1.0 DISCUSSION

Normal operations are performed to demonstrate the ability to operate the Simulator in accordance with reference plant operating procedures.

Normal operations will be tested by splitting the performance operations test into four segments, one of which will be tested each year.

2.0 REFERENCE(S)

2.1 ANS-3.5, 1985, 3.1.1, ANS NPP Simulator for Operator Training.

2.2 ANO Unit 2 Operating Procedures, 2102 Series.

3.0 EQUIPMENT

3.1 None.

4.0 INITIAL CONDITIONS

4.1 Initial Conditions (ICs) will be as stated in procedure.

5.0 ACCEPTANCE CRITERIA

5.1 The Simulator will perform, without distraction from training, reference plant normal operations.

5.2 Reference plant normal operations can be performed on the Simulator using only operator action normal to the reference plant.

6.0 NON-ACCEPTANCE OF SIMULATOR RESULTS

6.1 Non-acceptance is the inability of the Simulator to perform reference plant normal operations using only operator actions normal to the reference plant.

6.2 Non-acceptance of Simulator performance shall halt the routine training involving such operations. Discrepancies shall be recorded, models enhanced, and retested as required.

7.0 PROCEDURE

- 7.1 Using the latest revision of the reference plant procedures, perform the following operations:

The test will be split as follows:

- a. In year one, 1996, of the cycle, the simulator will be initialized at hot standby power and as directed by plant procedures will be brought to 100% power. (Steps 7.1.6 through 7.1.7)
- b. In year two, 1997, the plant will be initialized at 100% power and will be brought to hot standby power by plant procedures and this test procedure. (Steps 7.1.1 through 7.1.3)
- c. In year three, 1998, the simulator will be initialized in cold shutdown and a heatup and plant startup to hot standby power will be done using plant procedures and this test procedure. (Step 7.1.5)
- d. In year four, 1999, the simulator will be initialized at hot standby power and will be brought to a cold shut-down condition using plant procedures and this test procedure. (Step 7.1.4)

NOTE: Procedures are to be initialled/signed as appropriate, areas of non-simulation and Simulator specific operations are to be noted, and the procedure will be added to this test as Attachment B-2. Any procedure steps which cannot be performed shall be listed on Attachment G.

NOTE: Fast Time for Xenon and Heatup may be used if deemed appropriate.

NOTE: The plant may be stabilized at any point during the normal operation test and snapped into selected IC's for future use.

INIT DATE

7.1.1	100% Steady State Operations (OP 2102.04)	(Year 2, 1997)	
	7.1.1.1 Establish the following IC:		<u>NA</u> <u>NA</u>
	7.1.1.1.1 IC-___, 100% FP, EQ XE, MOL		
	7.1.1.2 Snap IC, if desired.		<u>NA</u> <u>NA</u>
7.1.2	100% - 20% Rated Power (OP2102.04)	(Year 2, 1997)	
	7.1.2.1 Establish following IC:		<u>NA</u> <u>NA</u>
	7.1.2.1.1 IC-___, 20% FP LAWP MOL		
	7.1.2.2. Snap IC, if desired.		<u>NA</u> <u>NA</u>
7.1.3	20% - HOT STBY (OP2102.10)	(Year 2, 1997)	
	7.1.3.1 Establish following IC:		<u>NA</u> <u>NA</u>
	7.1.3.1.1 IC-___, HOT STBY after S/D MOL		
	7.1.3.2 Snap IC, if desired.		<u>NA</u> <u>NA</u>
7.1.4	HOT STBY - Cold S/D (OP2102.10)	(Year 4, 1999)	
	7.1.4.1 Establish the following ICs:		<u>NA</u> <u>NA</u>
	7.1.4.1.1 IC-___, 305°F/420 PSIA, MOL,		
	7.1.4.1.2 IC-___, 150°F/150 PSIA, SDC, MOL		
	7.1.4.2 Snap ICs, if desired		<u>NA</u> <u>NA</u>

INIT DATE

7.1.5 Cold S/D To HOT STBY (OP 2102.02) (Year 3, 1998)

7.1.5.1 Establish the following ICs:

NA NA

7.1.5.1.1 IC-___, 230°F/270 PSIA, SDC, MOL

7.1.5.1.2 IC-___, 250°F/315 PSIA, 2 RCP's, LTOP's
in service, MOL,

7.1.5.1.3 IC-___, 490°F/2250 PSIA, 3 RCP's, MOL

7.1.5.2 Snap ICs, if desired.

NA NA

7.1.6 HOT STBY to 20% (OP 2102.02) (Year 1, 1996)

7.1.6.1 Establish the following ICs:

___ ___

7.1.6.1.1 IC-___, 545°/2250 PSIA HOT STBY, MOL

7.1.6.1.2 IC-___, 3%FP, No MFWP, 2P75, MOL

7.1.6.2 Snap ICs, if desired.

___ ___

7.1.7 20% to 100% FP (OP 2102.04) (Year 1, 1996)

7.1.7.1 Establish the following ICs:

___ ___

7.1.7.1.1 IC-___, 30% FP, 1 MFWP, MOL

7.1.7.1.2 IC-___, 60%FP, 1 MFWP, MOL

7.1.7.2 Snap ICs, if desired.

___ ___

8.0 FINAL CONDITIONS

8.1 Normal operations are completed, signed and attached. ICs have been established and stored. All discrepancies have been identified on ATT B-1.

___ ___

8.2 List procedural steps that were not performed on ATT G.

___ ___

ATTACHMENT B-2
NORMAL OPERATING PROCEDURES

C. STEADY STATE OPERATIONS TEST

1.0 DISCUSSION

Stability of the Simulator is to be demonstrated by establishing a steady state condition and monitoring parameter variation with respect to time. Simulator computed values are also to be compared to reference plant data at various power levels.

2.0 REFERENCE(S)

2.1 ANS-3.5, 1985, 4.1, A3.2 ANS NPP Simulators for Operator Training.

2.2 ANO Unit-II Instructor Station User Guide.

3.0 EQUIPMENT

3.1 None.

4.0 INITIAL CONDITIONS

4.1 Initial Conditions (ICs) will be as stated in procedure.

5.0 ACCEPTANCE CRITERIA

5.1 At 100% Rated Power, Simulator computed values shall not vary more than $\pm 2\%$ of the initial value over a 60 minute period.

5.2 Simulator computed values of critical parameters shall agree with the reference plant parameters within $\pm 2\%$ and shall not detract from training.

5.3 Simulator computed values of non-critical parameters shall agree with the reference plant within $\pm 10\%$ of the Instrument Range and shall not detract from training.

6.0 NON-ACCEPTANCE OF SIMULATOR RESULTS

6.1 Non-acceptance is defined as numerous Simulator computed values outside the range set forth in Section 5.0.

6.2 Non-acceptance shall halt the routine training involving such operations. Discrepancies shall be recorded, models enhanced, and retested, as required.

7.0 PROCEDURE

7.1 Obtain Data

INIT DATE

- | | | | |
|--------|---|-------|-------|
| 7.1.1 | Initialize to 100% rated power. | _____ | _____ |
| 7.1.2 | Stabilize Simulator. | | |
| 7.1.3 | Start TT 60SS on PMS Computer and start F-6 (Archive). | _____ | _____ |
| 7.1.4 | Record problem time from instructor station screen. Start _____ | _____ | _____ |
| 7.1.5 | Run for 60 minutes. Stop _____ | _____ | _____ |
| 7.1.6 | Freeze simulator. | _____ | _____ |
| 7.1.7 | Stop the F-6 Archive. | _____ | _____ |
| 7.1.8 | Download data to the disk. | _____ | _____ |
| 7.1.9 | Initialize to 60% rated power. | _____ | _____ |
| 7.1.10 | Start TT 60SS on PMS Computer and start F-6 (Archive). | _____ | _____ |
| 7.1.11 | Record problem time from instructor station screen. Start _____ | _____ | _____ |
| 7.1.12 | Run for 20 minutes. Stop _____ | _____ | _____ |
| 7.1.13 | Freeze simulator. | _____ | _____ |
| 7.1.14 | Stop the F-6 Archive. | _____ | _____ |
| 7.1.15 | Download data to the disk. | _____ | _____ |
| 7.1.16 | Initialize to 30% rated power. | _____ | _____ |
| 7.1.17 | Start TT 60SS on PMS Computer and start F-6 (Archive). | _____ | _____ |
| 7.1.18 | Record problem time from instructor station screen. Start _____ | _____ | _____ |

- 7.1.19 Run for 20 minutes. Stop _____
- 7.1.20 Freeze simulator. _____
- 7.1.21 Stop F-6 Archive. _____
- 7.1.22 Download data to the disk. _____

7.2 Delogging Data

INIT DATE

- 7.2.1 30% Rated Power.
 - 7.2.1.1 Plot each parameter at 1/2 second intervals for 20 minutes. _____
 - 7.2.1.2 Attach data to ATT C-2. _____
 - 7.2.1.3 List MAX and MIN values on the following Tableaux. _____
 - 7.2.1.4 List any discrepancies on ATT C-1. _____

TABLEAU 1 - 30*

ACCEPTANCE CRITERIA

#	TAG #	ACTUAL	I IN	MAX	DESCRIPTION	SIMULATED VALUES	
						MIN	MAX
46	J9624	265.5	260.2	270.8	MW Gross	_____	_____
66	CV5993	34.8	32.8	36.8	Core Thermal Power	_____	_____
87	T4611-2	542.3	531.5	553.1	Loop A T _C	_____	_____
86	T4611-1	545.0	534.1	555.9	Loop B T _C	_____	_____
85	T4610-1	564.3	553.0	575.6	Loop A T _H	_____	_____
94	T4717B	551.8	540.8	562.8	Tav	_____	_____
82	T1023	354.4	347.3	361.5	FW Temp	_____	_____
36	2PI-4624-2	2208	2165	2253	Pzr Press	_____	_____
35	2LI-4627-1	44.9	42.9	46.9	Pzr Level	_____	_____
89	T4627-2	654.0	640.9	667.1	Pzr Temp	_____	_____
15	2JR-9005-1	35.0	33.0	37.0	Neutron Flux	_____	_____
1	2LI-1031-1	70.0	68.0	72.0	S/G Lvl.	_____	_____
2	2PI-1041-1	923.4	904.9	941.9	S/G Press.	_____	_____
5	2FR-1029	1988.5	1948.8	2028	FW Flow (KLB/HR)	_____	_____
6	2FR-1030	1984.3	1944.6	2024	Stm Flow (KLB/HR)	_____	_____

* Data variables taken during actual plant SD on 1/06/95

INIT DATE

7.2.2 60% Rated Power.

7.2.2.1 Plot each parameter at 1/2 second intervals for 20 minutes.

___ ___

7.2.2.2 Attach data to ATT C-3.

___ ___

7.2.2.3 List MAX and MIN values on the following Tableaux.

___ ___

7.2.2.4 List any discrepancies on ATT C-1.

___ ___

TABLEAU 1 - 60%

ACCEPTANCE CRITERIA

#	TAG #	ACTUAL	MIN	MAX	DESCRIPTION	SIMULATED VALUES	
						MIN	MAX
46	J9624	591.61	579.8	603.4	MW Gross	___	___
66	CV5993	64.08	62.08	66.08	Core Thermal Power	___	___
87	T4611-2	542.5	531.6	553.3	Loop A T _C	___	___
86	T4611-1	544.9	534.0	555.8	Loop B T _C	___	___
85	T4610-1	583.2	571.5	594.9	Loop A T _H	___	___
94	T4717B	560.4	549.2	571.6	Tav	___	___
82	T1023	410.3	402.1	418.5	FW Temp	___	___
36	2PI-4624-2	2209	2164	2253	Pzr Press	___	___
35	2LI-4627-1	51.3	49.3	53.3	Pzr Level	___	___
89	T4627-2	654.4	641.3	667.5	Pzr Temp	___	___
15	2JR-9005-1	64.3	62.3	66.3	Neutron Flux	___	___
1	2LI-1031-1	71.4	69.4	73.4	S/G Level	___	___
2	2PI-1041-1	880.3	862.7	897.9	S/G Press	___	___
5	2FR-1029	3980.9	3901.3	4060.5	FW Flow (KLB/HR)	___	___
6	2FR-1030	3952.6	3872.6	4030.7	Stm Flow (KLB/HR)	___	___

* Data variables taken during actual plant SD on 1/06/95

7.2.3 Delogging Data.

7.2.1 100% Rated Power.

7.2.3.1 Plot each parameter at 1/2 second intervals for 60 minutes.

7.2.3.2 Attach data to ATT C-4.

7.2.3.3 List MAX and MIN values on the following Tableaux.

7.2.3.4 List any discrepancies on ATT C-1.

TABLEAU 1 - 100%

ACCEPTANCE CRITERIA

#	TAG #	ACTUAL	MIN	MAX	DESCRIPTION	SIMULATED VALUES	
						MIN	MAX
46	J9624	936.48	917.7	955.2	MW Gross	_____	_____
66	CV5993	98.75	96.75	100.75	Core Thermal Power	_____	_____
87	T4611-2	544.5	533.6	555.3	Loop A T _C	_____	_____
86	T4611-1	547.3	536.4	558.2	Loop B T _C	_____	_____
85	T4610-1	607.5	595.4	619.7	Loop A T _H	_____	_____
94	T4717B	572.1	560.7	583.2	Tave	_____	_____
82	T1023	451.7	442.7	468.8	FW Temp	_____	_____
36	2PI-4624-2	2219	2175	2263	Pzr Press	_____	_____
35	2LI-4627-1	60.1	58.1	62.1	Pzr Level	_____	_____
89	T4627-2	654.8	641.7	667.9	Pzr Temp	_____	_____
15	2JR-9005-1	98.7	96.7	100.7	Neutron Flux	_____	_____
1	2LI-1031-1	70.6	68.7	72.6	S/G Level	_____	_____
2	2PI-1041-1	843.1	826.2	860.0	S/G Press	_____	_____
5	2FR-1029	6297.9	6171.9	6423.8	FW Flow (KLB/HR)	_____	_____
6	2FR-1030	6300.9	6174.9	6427.8	Stm Flow (KLB/HR)	_____	_____

* Data variables taken during actual plant SD on 1/06/95

8.0 FINAL CONDITIONS

INIT DATE

Steady State data is collected, saved, and plots attached to this procedure, all discrepancies noted on ATT C-1.

— —

NOTES:

1. All data variables taken during actual plant SD on 1/06/95

ATTACHMENT C-2

30+ RATED POWER DATA

ATTACHMENT C-3
60+ RATED POWER DATA

ATTACHMENT C-4

100% RATED POWER DATA

D. SURVEILLANCE TEST

1.0 DISCUSSION

Surveillance Tests are performed to demonstrate the ability to perform Normal Operation surveillances in accordance with reference plant procedures. The following criteria was used to select which surveillances will be run:

- Safety related and routinely performed by Operations.
- Require Control Room Manipulations.
- Provide training value.

2.0 REFERENCE(S)

- 2.1 ANS-3.5, 1985, 3.1.1, ANS NPP Simulators for Operator Training
- 2.2 ANO Unit 2 Surveillance Test Procedures

3.0 EQUIPMENT

- 3.1 None.

4.0 INITIAL CONDITIONS

- 4.1 Initial Conditions (ICs) will be at 100%, unless otherwise noted.
- 4.2 When possible, the Surveillance may be completed during Normal Operations.

5.0 ACCEPTANCE CRITERIA

- 5.1 The simulator will perform, without distraction from training, reference plant surveillance procedures.

6.0 NONACCEPTANCE CRITERIA

- 6.1 Nonacceptance is defined as the inability to perform surveillance tests, or those that detract from training.
- 6.2 Nonacceptance shall halt routine training involving such operations. Discrepancies shall be recorded on ATT D-1, models enhanced, and retested, as required.

7.0 PROCEDURE

7.1 Using the latest revision of the reference plant surveillance procedures perform the following operations as indicated for the current year.

			1996	INIT	DATE
A7.1.1	PZR LVL Response	OP2103.05 Supp. 1		_____	_____
A7.1.2	Qtrly. SI TK VLV Stroke	OP2104.01 Supp. 2		_____	_____
A7.1.3	Cont. Atmos. Conditions	OP2104.33 Supp. 4		_____	_____
A7.1.4	2DG1 Monthly	OP2104.36 Supp. 1		_____	_____
A7.1.5	2DG2 Monthly	OP2104.36 Supp. 2		_____	_____
A7.1.6	Semiannual H2 Recomb	OP2104.44 Supp. 2		_____	_____
A7.1.7	Linear Power Calib.	OP2105.051		_____	_____
A7.1.8	2P7A Monthly	OP2106.06 Supp. 1		_____	_____
A7.1.9	2P7B Monthly	OP2106.06 Supp. 2		_____	_____

			1997	INIT	DATE
B7.1.10	Qtrly EFW VLV Stroke	OP2106.06 Supp. 3		<u>NA</u>	<u>NA</u>
B7.1.11	EFW A Train Flow	OP2106.06 Supp. 4		<u>NA</u>	<u>NA</u>
B7.1.12	EFW B Train Flow	OP2106.06 Supp. 5		<u>NA</u>	<u>NA</u>
B7.1.13	MFWPT Stop VLV	OP2106.07 Supp. 1		<u>NA</u>	<u>NA</u>
B7.1.14	Turb. Overspeed Trip	OP2106.09 Supp. 1		<u>NA</u>	<u>NA</u>
B7.1.15	T/G CV Stroke	OP2106.09 Supp. 3		<u>NA</u>	<u>NA</u>
B7.1.16	T/G Combined Stop/ Intercept Test	OP2106.09 Supp. 4		<u>NA</u>	<u>NA</u>
B7.1.17	MSIV Qtrly Stroke	OP2106.16 Supp. 1		<u>NA</u>	<u>NA</u>
B7.1.18	Elect. Sys. Brkr Align	OP2107.01 Supp. 4		<u>NA</u>	<u>NA</u>

1998

			INIT	DATE
C7.1.19	ESF SWGR RM. EXH Fa	OP2107.02 Supp. 1	<u>NA</u>	<u>NA</u>
C7.1.20	2P89A Quarterly	OP2104.39 Supp. 1	<u>NA</u>	<u>NA</u>
C7.1.21	2P89B Quarterly	OP2104.39 Supp. 2	<u>NA</u>	<u>NA</u>
C7.1.22	2P60A Quarterly	OP2104.40 Supp. 1	<u>NA</u>	<u>NA</u>
C7.1.23	2P60B Quarterly	OP2104.40 Supp. 2	<u>NA</u>	<u>NA</u>
C7.1.24	2P35A Quarterly	OP2104.05 Supp. 1	<u>NA</u>	<u>NA</u>
C7.1.25	2P35B Quarterly	OP2104.05 Supp. 2	<u>NA</u>	<u>NA</u>
C7.1.26	18 Month Press Interlk	OP2104.01 Supp. 3	<u>NA</u>	<u>NA</u>
C7.1.27	2P36A Quarterly	OP2104.02 Supp. 1	<u>NA</u>	<u>NA</u>

1999

			INIT	DATE
D7.1.28	2P36B Quarterly	OP2104.02 Supp. 2	<u>NA</u>	<u>NA</u>
D7.1.29	2P36C Quarterly	OP2104.02 Supp. 3	<u>NA</u>	<u>NA</u>
D7.1.30	2P39A Quarterly	OP2104.03 Supp. 1	<u>NA</u>	<u>NA</u>
D7.1.31	2P39B Quarterly	OP2104.03 Supp. 2	<u>NA</u>	<u>NA</u>
D7.1.32	SDC Vlv Interlock	OP2104.40 Supp. 6	<u>NA</u>	<u>NA</u>
D7.1.33	Rx TCB	OP2105.09 Supp. 1	<u>NA</u>	<u>NA</u>
D7.1.34	Relief VLV Monitor	OP2105.11 Supp. 1	<u>NA</u>	<u>NA</u>
D7.1.35	Heat Balance Calc	OP2103.16	<u>NA</u>	<u>NA</u>
D7.1.36	Moderator Temp. Coeff.	OP2302.09	<u>NA</u>	<u>NA</u>

8.0 FINAL CONDITIONS

		INIT	DATE
8.1	Surveillance procedures are completed, initialed and retained in ATT D-2.	---	---
8.2	Discrepancies listed on ATT D-1.	---	---
8.3	Surveillance procedural steps not completed are logged on Attachment G.	---	---

ATTACHMENT D-2
SURVEILLANCE PROCEDURES

E. TRANSIENT TEST

1.0 DISCUSSION

The intent of the Transient Test is to verify Simulator performance. Transients must be capable of continuing until such time that a stable, controllable and safe condition is attained which can be continued to a Cold Shutdown condition or until the Simulator operating limits are exceeded. These tests will be performed each year.

2.0 REFERENCE(S)

2.1 ANS 3.5, 1985, 4.2.1, 4.3, A.3.3 ANS NPP Simulators for Operator Training.

3.0 EQUIPMENT

3.1 None.

4.0 INITIAL CONDITIONS

4.1 Initial Conditions (ICs) will be as stated in procedure.

5.0 ACCEPTANCE CRITERIA

5.1 Observable changes in the parameters correspond in direction to those expected from plant data or best estimate data.

6.0 NON-ACCEPTANCE OF SIMULATOR RESULTS

6.1 Simulator results that would detract from positive training and those declared unacceptable by evaluation based on acceptance criteria, will not be used for routine training.

7.0 PROCEDURE

NOTE 1: After initiation of transient, Operators are to take a "HANDS OFF" approach except where exceptions are listed within the Operability Test. Only the actions as directed by this test document are to be performed.

NOTE 2: All problem times should begin at 00:00:00 with a 1 minute delay to the malfunction.

NOTE 3: All transients are to be carried to a stable plant condition.

7.1 Perform the following transients.

NOTE: The Test Director shall brief the crew as to their expected actions to ensure the accuracy and repeatability of these test.

7.1.1 Turbine trip/Reactor trip, High MSR Level (LER 8611)

7.1.1.1 Initialize to 100%.

7.1.1.2 Start TT RXTRP on .5 second update and start F-6 Archive.

7.1.1.3 Insert Component Malfunction 2CV-0417 = 0
and 2CV-0418 = 0

7.1.1.4 Record Data for 10 Minutes

7.1.1.5 When stable conditions are reached,
freeze simulator

7.1.1.6 Stop F-6 Archive

7.1.1.7 Save Archive to P.C.

7.1.2 "A" MSIV Closure (2CV-1010-1)

7.1.2.1 Initialize to 100%.

7.1.2.2 Start TT RXTRP on .5 second update and start F-6 Archive.

7.1.2.3 Insert Component Malfunction 2CV1010 = 0.

7.1.2.4 Record Data for 10 minutes.

7.1.2.5 When stable conditions are reached,
freeze simulator.

7.1.2.6 Stop F-6 Archive.

7.1.2.7 Save Archive to P.C.

7.1.3 Main Turbine Runback

7.1.3.1 Initialize to 100%.

7.1.3.2 Start TT RXTRP on .5 second update and start F-6 Archive.

7.1.3.3 Insert Component Malfunction for 2CV-1425 to 0.0

7.1.3.4 At 2 minutes after runback commences
reopen 2CV-1425.

7.1.3.5 Record Data for 10 minutes

7.1.3.6 When stable plant conditions are
reached, freeze simulator

7.1.3.7 Stop F-6 Archive.

7.1.3.8 Save Archive to P.C.

7.1.4 Loss of Main Circulating Water

7.1.4.1 Initialize to 100% power.

7.1.4.2 Maneuver to 67% power

7.1.4.3 Start TT CIRCTRIP on .5 second update and start F-6 Archive.

7.1.4.4 Insert Component Malfunctions to trip
Circ Water Pumps 2P3A and 2P3B.

7.1.4.5 Record Data for 10 minutes

7.1.4.6 When stable plant conditions are
reached, freeze simulator

7.1.4.7 Stop F-6 Archive.

7.1.4.8 Save Archive to P.C.

	INIT DATE
7.1.5 Reactor Trip, "D" RCP Trip (LER 867)	
7.1.5.1 Initialize to 100%.	___ ___
7.1.5.2 Start TT RCPTRP on .5 second update and start F-6 Archive.	___ ___
7.1.5.3 Insert Malfunction <u>RCP 2P32D Ground Fault</u> .	___ ___
7.1.5.4 Record Data for 10 minutes	___ ___
7.1.5.5 When stable plant conditions are reached, freeze simulator.	___ ___
7.1.5.6 Stop F-6 Archive.	___ ___
7.1.5.7 Save Archive to P.C.	___ ___
7.1.6 Reactor Trip, "A" S/G Level Low	
7.1.6.1 Initialize to 100%.	___ ___
7.1.6.2 Start TT ASGLTRP on .5 second update and start F-6 Archive.	___ ___
7.1.6.3 Insert Component Malf for 2CV-0748 value = 0.0, ramp = 15 seconds	___ ___
7.1.6.4 Trigger the Malfunction.	___ ___
7.1.6.5 When stable plant conditions are reached, freeze the simulator	___ ___
7.1.6.6 Stop F-6 Archive.	___ ___
7.1.6.7 Save Archive to P.C.	___ ___
7.1.7 Partial Loss of OffSite Power (Natural Circulation)	
7.1.7.1 Initialize to 100%.	___ ___
7.1.7.2 Start TT RCPTRP on .5 second update and start F-6 Archive.	___ ___
7.1.7.3 Place 6900 volt aux. loads on #3 S/U Transformer	___ ___
7.1.7.4 Place 4160 volt aux. loads on Aux. XFMR	___ ___
7.1.7.5 Insert malfunction 500 FAILSU3	___ ___
7.1.7.6 Fail 2CV0400 and 0460 shut on Turbine Trip	___ ___
7.1.7.7 Record data for 10 minutes	___ ___
7.1.7.8 When stable conditions are reached, freeze simulator	___ ___
7.1.7.9 Stop F-6 Archive.	___ ___
7.1.7.10 Save Archive to P.C.	___ ___

	INIT DATE
7.1.8 Steam Line Break (100%)	
7.1.8.1 Initialize to 100%.	____
7.1.8.2 Start TT MSLB on .5 second update and start F-6 Archive.	____
7.1.8.3 Insert malfunction for MSLB or "A" or "B" = 100%	____
7.1.8.4 Record data for 10 minutes	____
7.1.8.5 When stable conditions are reached, freeze simulator	____
7.1.8.6 Stop F-6 Archive.	____
7.1.8.7 Save Archive to P.C.	____
7.1.9 LOCA (100%)	
7.1.9.1 Initialize to 100%.	____
7.1.9.2 Start TT MSLB on .5 second update and start F-6 Archive.	____
7.1.9.3 Insert malfunction for "A", "B", "C", or "D" TCold LOCA. (Value = 100%)	____
7.1.9.4 Record data for 10 minutes	____
7.1.9.5 When stable conditions are reached, freeze simulator	____
7.1.9.6 Stop F-6 Archive.	____
7.1.9.7 Save Archive to P.C.	____
7.1.10 Manual Reactor Trip (uncomplicated)	
7.1.10.1 Initialize to 100%.	____
7.1.10.2 Start TT RXTRP on .5 second update and start F-6 Archive.	____
7.1.10.3 Depress both reactor trip pushbuttons on 2C03	____
7.1.10.4 Record data until hot stby conditions are obtained	____
7.1.10.5 Stop F-6 Archive.	____
7.1.10.6 Save Archive to P.C.	____
7.1.10.7 Perform plant startup and power ascension to 100%	____
7.1.10.8 Attach plant procedures to Attachment E-11	____

7.2 Delogging Data

7.2.1 Plot specified parameters (identified in Step 7.3) at 1/2 second intervals.

7.2.2 Compare simulator computed values to plant or simulator performance test data.

7.2.3 List any discrepancies on ATT E-1.

7.3 Data Tableaux

7.3.1 Delog the following parameters for each transient as follows:

7.3.1.5 Reactor Trip, "D" RCP TRIP (RCPTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
85	#T46101	525	625	Loop A T _H
90	#T47101	525	625	Loop B T _H
86	#T46111	525	625	Loop B T _C
87	#T46112	525	625	Loop A T _C
1	2LI10311	0	100	"A" S/G Level
2	2PI10411	0	1200	"A" S/G Pressure
72	#CV9199	0	.13E7	RCS Flow (Loop A)
73	#CV9200	0	.13E7	RCS Flow (Loop B)
74	#CV9201	0	.13E7	RCS Flow (Loop C)
75	#CV9202	0	.13E7	RCS Flow (Loop D)
17	2JR90051	0	110	Neutron Flux
3	2LI11311	0	100	"B" S/G Level
4	2PI11411	0	1200	"B" S/G Pressure

7.3.1.6 Reactor Trip, "A" S/G Level (ASGLTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
85	#T46101	525	625	Loop A T _H
3	2LI11311	0	100	"B" S/G Level
1	2LI10311	0	100	"A" S/G Level
2	2PI10411	0	1200	"A" S/G Pressure
86	#T46111	525	625	Loop B T _C
17	2JR90051	0	110	Neutron Flux (%)
6	2FR1029/30	0	6,500,000	A S/G Feed Flow
8	2FR1129/30	0	6,500,000	B S/G Feed Flow

7.3.1.1 Turbine Trip/Reactor trip, High MSR Level (RXTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
85	#T46101	525	625	Loop A T _H
17	2JR90051	0	110	Neutron Flux
1	2LI10311	0	100	"A" S/G Level
2	2PI10411	0	1200	"A" S/G Pressure
86	#T46111	525	625	Loop B T _C
87	#T46112	525	625	Loop A T _C

7.3.1.2 "A" MSIV Closure (RXTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
85	#T46101	525	625	Loop A T _H
90	#T47101	525	625	Loop B T _H
86	#T46111	525	625	Loop B T _C
87	#T46112	525	625	Loop A T _C
17	2JR90051	0	110	Neutron Flux (%)
1	2LI10311	0	100	"A" S/G Level
3	2LI11311	0	100	"B" S/G Level
2	2PI10411	0	1200	"A" S/G Pressure
4	2PI11411	0	1200	"B" S/G Pressure

7.3.1.3 Main Turbine Runback (RXTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
85	#T46101	525	625	Loop A T _H
17	2JR90051	0	110	Neutron Flux (%)
1	2LI10311	0	100	"A" S/G Level
2	2PI10411	0	1200	"A" S/G Pressure
86	#T46111	525	625	Loop B T _c
87	#T46112	525	625	Loop A T _c

7.3.1.4 Loss of Main Circulating Water (CIRCTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
85	#T46101	525	625	Loop A T _H
17	2JR90051	0	110	Neutron Flux
1	2LI10311	0	100	"A" S/G Level
2	2PI10411	0	1200	"A" S/G Pressure
86	#T-4611-1	525	625	Loop B T _C
100	2PIS0605	0	15	Condenser Vacuum

7.3.1.7 PARTIAL Loss of Offsite Power (Natural Circulation) (RCPTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI46271	0	100	Pzr Level
36	2PI46242	1500	2500	Pzr Pressure
4	2PI11411	0	1200	S/G B Pressure
3	2LI11311	0	100	S/G B Level
1	2LI10311	0	100	S/G A Level
2	2PI10411	0	1200	S/G A Pressure
85	#T46101	525	625	Loop A T _H
90	#T47101	525	625	Loop B T _H
72	#CV9199	0	.13E7	RCS Flow (Loop A)
73	#CV9200	0	.13E7	RCS Flow (Loop B)
74	#CV9201	0	.13E7	RCS Flow (Loop C)
75	#CV9202	0	.13E7	RCS Flow (Loop D)
17	2JR90051	0	110	Neutron Flux (%)
86	#T46111	525	625	Loop B T _C
87	#T46112	525	625	Loop A T _C

7.3.1.8 Steam Line Break (100%) (MSLB)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
36	2PI46242	900	2300	Pzr Pressure
2	2PI10411	0	1200	S/G A Pressure
4	2PI11411	0	1200	S/G B Pressure
35	2LI46271	0	100	Pzr Level
85	#T46101	350	625	Loop A T _H
90	#T47101	350	625	Loop B T _H
57	2PI56022	0	60	Cont. Pressure
58	2TI56642	0	300	Cont. Temperature

7.3.1.9 LOCA (100%) (MSLB)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
57	2PI56022	0	60	Cont. Pressure
58	2TI56642	0	300	Cont. Temperature
36	2PI46242	0	2400	Pzr Pressure
2	2PI10411	0	1200	S/G A Pressure
4	2PI11411	0	1200	S/G B Pressure
35	2LI46271	0	100	Pzr Level
85	#T46101	350	625	Loop A T _H
90	#T47101	350	625	Loop B T _H

7.3.1.10 Manual Reactor Trip (RXTRP)

<u>#</u>	<u>TAG #</u>	<u>MIN</u>	<u>MAX</u>	<u>DESCRIPTION</u>
35	2LI-4627-1	0	100	Pzr Level
36	2PI-4624-2	1500	2500	Pzr Pressure
85	#T-4610-1	525	625	Loop A T _H
90	#T-4710-1	525	625	Loop B T _H
86	#T-4611-1	525	625	Loop B T _C
87	#T-4611-2	525	625	Loop A T _C
17	2JR-9005-1	0	110	Neutron Flux (%)
1	2LI-1031-1	0	100	"A" S/G Level
3	2LI-1131-1	0	100	"B" S/G Level
2	2PI-1041-1	0	1200	"A" S/G Pressure
4	2PI-1141-1	0	1200	"B" S/G Pressure

INIT DATE

8.0 FINAL CONDITIONS

8.1 Transient tests have been run, data collected and saved,
transients evaluated, graphs attached, and saved.

8.2 All discrepancies are listed on ATT E-1

ATTACHMENT E-2

TURBINE TRIP/REACTOR TRIP/HIGH MSR LEVEL DATA

ATTACHMENT E-3

"A" MSIV CLOSURE DATA

ATTACHMENT E-4
MAIN TURBINE RUNBACK DATA

ATTACHMENT E-5

LOSS OF MAIN CIRC WATER DATA

ATTACHMENT E-6
"D" RCP TRIP DATA

ATTACHMENT E-7

RX TRIP "A" S/G LEVEL DATA

ATTACHMENT E-8

LOSS OFF SITE POWER/NATURAL CIRCULATION DATA

ATTACHMENT E-9

STEAM LINE BREAK (100%) DATA

ATTACHMENT E-10
LOCA (100%) DATA

ATTACHMENT E-11

MANUAL REACTOR TRIP (UNCOMPLICATED)

F. MALFUNCTION TEST

1.0 DISCUSSION

- A. All of the malfunctions that are required by either 10CFR55.59.C.3.i or ANS 3.5.1985 Section 3.1.2 and are not tested during the transient testing portion of the operability test will be tested by this section. Additionally, any other malfunction to be used as a part of operator training shall be tested by this section. A minimum of 25% of all malfunctions will be tested each year.
- B. The following assumptions have been utilized in preparing this section:
- 1) The simulator will be operated in accordance with approved plant procedures. Symptoms, automatic actions and plant response described in these procedures will be used to evaluate simulator performance and there is no need to attempt to define every possible alarm or response in the Malfunction test body.
 - 2) Where possible the "Cause & Effect" (C&E) Document should be utilized to verify the correct response during Malfunction Testing. The Simulator response should agree with the response and description presented in the Cause & Effect Document. The Cause and Effect Document provides guidance as to the parameter response, annunciators received, and additional information which may be desirable to the operator. In the event that plant changes have occurred since their last revision, the C & E Document should be updated to reflect the changes.
 - 3) In the event that the "Cause & Effect" Document does not contain the specific Malfunction that is being tested (ie. new Malf.) then an "Anticipated Plant Response sheet may be used. The "Anticipated Plant Response", detailed on the APR form should give the initial plant response. These responses should be obtained by discussion between training and operations department personnel and be approved by licensed representatives of each group. Subsequent action will be as required by normal system response (i.e. if pressurizer level decreases initially during a malfunction the APR will indicate such, but the plant will be expected to respond properly, which for this example would be letdown flow decreasing and if necessary backup charging pump(s) starting). Upon successful completion of the test, the Malfunction should be added to the Cause & Effect Document for reference.
- C. The following termination criteria will be used during malfunction testing:
- 1) For malfunctions that do not result in a plant trip but do require a shutdown, terminate the malfunction test when the shutdown is initiated. (ie. RC leak > T.S. but < CCP capacity)
 - 2) For malfunctions that result in a plant trip (automatic or manual) terminate the malfunction test when the plant is being controlled in accordance with the appropriate section of the EOP.
 - 3) For malfunctions not covered by 1 or 2 above terminate the malfunction test when the plant reaches stable conditions but it is not necessary to recover ie. during a dropped CEA from power malfunction, it is not necessary to withdraw the CEA.
 - 4) The Malfunction fails to perform correctly.

D. The following process will be used to conduct and document each malfunction test:

- 1) The Test Director will review the malfunction, AOP, EOP, Cause and Effect Document and/or the "Anticipated Plant Response" with the test personnel prior to each malfunction test.

NOTE: The test director and test personnel shall develop APR forms for all malfunctions being tested which are not currently entered in the C & E Document.

- 2) Test personnel and the test director will function as an operating crew using all applicable procedures during each malfunction test.
- 3) For those Malfunctions which have multiple variations (Example: 81 CEAs), the Test Director will ensure that a representative sampling of the variations are tested to provide confidence in the Simulator's ability to perform all variations.
- 4) If the simulator's response will be compared to a "Anticipated Plant Response" sheet, actual response will be noted on the APR form next to the anticipated response, or denoted on a blank APR form and attached to the existing APR form.
- 5) Discrepancies will be listed on ATT F-1.
- 6) If the acceptance criteria in section 5.0 have been met, the Test Director will sign and date the Malfunction Verification list (ATTACHMENT F-2) as being accepted.

2.0 REFERENCE(S)

- 2.1 ANS3.5, 1985, 3.1.2, 4.2.2, and A3.4,
- 2.2 10 CFR 55.59.C.3.i.A through AA

3.0 EQUIPMENT

- 3.1 None.

4.0 INITIAL CONDITIONS

- 4.1 Initial Conditions (ICs) will be 100%, unless otherwise stated.

5.0 ACCEPTANCE CRITERIA

- 5.1 Observable change in the parameters correspond in direction to actual plant data or to that expected from best estimate.
- 5.2 The Simulator shall not fail to cause an alarm or trip if the reference plant would have caused an alarm or trip.
- 5.3 The Simulator shall not alarm or trip if the reference plant would not alarm or trip.

6.0 NON-ACCEPTANCE OR SIMULATOR RESULTS

6.1 Simulator results that detract from positive training, those declared unacceptable by evaluation based on acceptance criteria, and those not tested, will not be used for training.

7.0 PROCEDURE

NOTE: Slow speed may be used during each malfunction if desired.

	INIT DATE
7.1 Test each malfunction in accordance with the Cause & Effect Document and/or Anticipated Plant Response sheets.	___ ___
7.1.1 Circle the selected component number to be tested in ATT F-2.	___ ___
7.1.2 Upon completion of the test (as defined in Section 1) initial the appropriate block and annotate as SAT or UNSAT on ATT F-2 for the component being tested.	___ ___
7.2 The malfunctions are split into four groups, with one group to be performed each year. The lists are identified by the test year number of the cycle in the column following the description of the malfunction. These are in addition to the malfunctions which are required to be performed annually.	___ ___

7.2.1 Malfunction Test Schedule Year One (1996)

<u>Malf.</u>	<u>Description</u>	<u>Test Year</u>	<u>INIT</u>	<u>DATE</u>
003	T Cold Leak	1	_____	_____
008	RCP Seal Leak to CCW	1	_____	_____
009	PRZR Back Up Heaters Fail	1	_____	_____
010	RCP Start Perm Overrioe	1	_____	_____
019	Degrade CEA Motion	1	_____	_____
020	Defeat Group Motion	1	_____	_____
024	RPS Reactor Trip	1	_____	_____
035	MFW Break In CNTMT Upstream 2FW5A	1	_____	_____
035	MFW Break In CNTMT Downstream 2FW5A	1	_____	_____
036	FW Heater Degradation	1	_____	_____
038	Steam Leak in MSR Shell	1	_____	_____
039	Turbine Trip	1	_____	_____
040	Turbine Loss of Lube Oil	1	_____	_____
047	Faulty EHC Control VLV Demand	1	_____	_____
051	Charging PP Discharge Leak	1	_____	_____
053	Cont Spray Pump Fault (2P35)	1	_____	_____
054	LPSI Suction Leak	1	_____	_____
058	Inadvertent SIAS Actuation	1	_____	_____
059	Inadvertent CIAS (Hi Cont. Pres)	1	_____	_____
066	Loss of CCW to L/D Hx	1	_____	_____
067	Loss of Chilled Wtr. to Contain	1	_____	_____
071	Loss of SW PP	1	_____	_____
072	Loss of Stator Cooling Wtr.	1	_____	_____
075	Loss of Condenser Vacuum	1	_____	_____
084	M Gen. L/O Trip	1	_____	_____
085	M Gen. Volt Reg. Failure	1	_____	_____
090	Loss of Off-Site Pwr	1	_____	_____
097	Log Power Chan Fail	1	_____	_____
129	Letdown Temp. Failures	1	_____	_____

7.2.2 Malfunction Test Schedule Year Two (1997)

<u>Malf.</u>	<u>Description</u>	<u>Test Year</u>	<u>INIT</u>	<u>DATE</u>
001	S/G Tube Rupture	2	<u>NA</u>	<u>NA</u>
002	T Hot Leak	2	<u>NA</u>	<u>NA</u>
004	RCP Lube Oil Loss	2	<u>NA</u>	<u>NA</u>
006	RCP Trip	2	<u>NA</u>	<u>NA</u>
011	PZR Safety Reset Press	2	<u>NA</u>	<u>NA</u>
012	PRZR Safety Leak	2	<u>NA</u>	<u>NA</u>
013	PRZR Steam Leak	2	<u>NA</u>	<u>NA</u>
015	DROP CEA	2	<u>NA</u>	<u>NA</u>
016	Eject CEA	2	<u>NA</u>	<u>NA</u>
018	Group Withdrawal	2	<u>NA</u>	<u>NA</u>
028	MPW PP Trip	2	<u>NA</u>	<u>NA</u>
030	Condenser Vacuum PP Fail	2	<u>NA</u>	<u>NA</u>
031	Circulating Water PP Fault	2	<u>NA</u>	<u>NA</u>
037	MS Leak In/Out Containment	2	<u>NA</u>	<u>NA</u>
039	Turbine Trip Failure	2	<u>NA</u>	<u>NA</u>
044	MS Relief Reset Press Change	2	<u>NA</u>	<u>NA</u>
048	CVCS Leaks	2	<u>NA</u>	<u>NA</u>
053	LPSI PP Fault	2	<u>NA</u>	<u>NA</u>
055	LPSI Discharge Leak	2	<u>NA</u>	<u>NA</u>
060	Inadvertent CSAS	2	<u>NA</u>	<u>NA</u>
068	Loss of ACW to Turb Lube Oil	2	<u>NA</u>	<u>NA</u>
075	FWC System Failure	2	<u>NA</u>	<u>NA</u>
079	MPWPT Loss of Lube Oil	2	<u>NA</u>	<u>NA</u>
086	M Gen Exciter Failure	2	<u>NA</u>	<u>NA</u>
091	Grid Degradation (Freq)	2	<u>NA</u>	<u>NA</u>
098	Start Up Chan Fail	2	<u>NA</u>	<u>NA</u>
131	S/G Level Transmitter Failure	2	<u>NA</u>	<u>NA</u>
132	STM Hdr Press Failure	2	<u>NA</u>	<u>NA</u>

7.2.3 Malfunction Test Schedule Year Three (1998)

<u>Malf.</u>	<u>Description</u>	<u>Test Year</u>	<u>INIT</u>	<u>DATE</u>
005	RCP Seal Fail (Hi, Mid, Lo)	3	<u>NA</u>	<u>NA</u>
007	RCP Rotor Lock	3	<u>NA</u>	<u>NA</u>
014	Reactor Vessel Vent Leak	3	<u>NA</u>	<u>NA</u>
017	Drop Group of CEA's	3	<u>NA</u>	<u>NA</u>
024	DS3 Reactor Trip	3	<u>NA</u>	<u>NA</u>
025	CEA Reed Switch Fails	3	<u>NA</u>	<u>NA</u>
026	Reactor Trip Failure	3	<u>NA</u>	<u>NA</u>
027	Condensate PP Trip	3	<u>NA</u>	<u>NA</u>
032	Condensate Disch HDR Leak	3	<u>NA</u>	<u>NA</u>
034	Heater Drn. PP Fault	3	<u>NA</u>	<u>NA</u>
043	Gland Seal Reg. Setpoint Drift	3	<u>NA</u>	<u>NA</u>
045	EHC to Intercept Valves	3	<u>NA</u>	<u>NA</u>
050	CH Pump Suction Leaks	3	<u>NA</u>	<u>NA</u>
052	Boric Acid PP Fault	3	<u>NA</u>	<u>NA</u>
053	2P60 Fails to Start on SIAS	3	<u>NA</u>	<u>NA</u>
056	SDC HX Tube Leak	3	<u>NA</u>	<u>NA</u>
061	TCB Pair Fail to Trip	3	<u>NA</u>	<u>NA</u>
064	Loss of SW to SDC Hx	3	<u>NA</u>	<u>NA</u>
070	No CCW to MFWP Lo Cooler	3	<u>NA</u>	<u>NA</u>
073	SDBCS Fails to Open Valves	3	<u>NA</u>	<u>NA</u>
077	Loss of SW to D/G	3	<u>NA</u>	<u>NA</u>
080	Elect Bus Loss	3	<u>NA</u>	<u>NA</u>
082	Station Blackout	3	<u>NA</u>	<u>NA</u>
088	Fail Unit Aux. Transformer	3	<u>NA</u>	<u>NA</u>
092	Rad Monitor Failures	3	<u>NA</u>	<u>NA</u>
128	PRZR Level/Press Cont. Fail	3	<u>NA</u>	<u>NA</u>
129	VCT Lvl Transmitter Fail	3	<u>NA</u>	<u>NA</u>
130	LPSI Flow Transmitter Fails	3	<u>NA</u>	<u>NA</u>
136	SPDS/RRS Failures	3	<u>NA</u>	<u>NA</u>

7.2.4 Malfunction Test Schedule Year Four (1999)

<u>Malf.</u>	<u>Description</u>	<u>Test Year</u>	<u>INIT</u>	<u>DATE</u>
007	RCP Shaft Broken	4	<u>NA</u>	<u>NA</u>
021	Loss Group W/D Sequence Perm	4	<u>NA</u>	<u>NA</u>
023	Uncontrolled CEA Motion	4	<u>NA</u>	<u>NA</u>
029	APW PP Trip 2P75	4	<u>NA</u>	<u>NA</u>
029	EFW PP Trip	4	<u>NA</u>	<u>NA</u>
029	Loss of Lo to 2P75	4	<u>NA</u>	<u>NA</u>
033	Condenser Tube Leak	4	<u>NA</u>	<u>NA</u>
035	FW PP Disch Leak	4	<u>NA</u>	<u>NA</u>
041	S/G "A" Channel 1 Ref. Leg Break	4	<u>NA</u>	<u>NA</u>
042	Turbine High Vibration	4	<u>NA</u>	<u>NA</u>
046	Freeze Signal to Governor Valves	4	<u>NA</u>	<u>NA</u>
049	Charging PP Failure	4	<u>NA</u>	<u>NA</u>
053	HPSI Fail to Start	4	<u>NA</u>	<u>NA</u>
057	False Reactor Trip	4	<u>NA</u>	<u>NA</u>
062	No ESAS Response to ESF Actuation	4	<u>NA</u>	<u>NA</u>
063	Loss of CCW (Loop 1)	4	<u>NA</u>	<u>NA</u>
063	Loss of CCW (Loop 2)	4	<u>NA</u>	<u>NA</u>
065	Inhibit Brkr Status Change	4	<u>NA</u>	<u>NA</u>
069	Loss of SW to CCW Loop 1	4	<u>NA</u>	<u>NA</u>
069	Loss of SW to CCW Loop 2	4	<u>NA</u>	<u>NA</u>
074	Loss of ACW	4	<u>NA</u>	<u>NA</u>
078	Loss of Lake Dardenelle	4	<u>NA</u>	<u>NA</u>
083	Loss of Instrument Bus	4	<u>NA</u>	<u>NA</u>
087	Loss of D/G Lube Oil/Start Air	4	<u>NA</u>	<u>NA</u>
089	Fail Start Up Transformer	4	<u>NA</u>	<u>NA</u>
093	Loss of Inst. Air (Leak)	4	<u>NA</u>	<u>NA</u>
094	Failed Fuel	4	<u>NA</u>	<u>NA</u>
095	Linear Pwr Safety Channel Fail	4	<u>NA</u>	<u>NA</u>
133	FW Transmitter Failures	4	<u>NA</u>	<u>NA</u>

- INIT DATE

- 7.3 Annunciator malfunctions are handled identically, therefore, at least one annunciator per annunciator panel in the Control Room shall be tested annually as follows and the results annotated on ATT F-5, any discrepancies shall be noted on ATT F-1.
- 7.3.1 Set value = 2.0 and verify annunciator alarms (fast flash).
- 7.3.2 Set value = 1.0 and verify annunciator clears (slow flash).
- 7.4 Valve malfunctions are handled identically therefore, at least one valve per major system shall be tested annually as follows, and the results annotated on ATT F-6. Any discrepancies shall be noted on ATT F-1.
- 7.4.1 Set value = 0 and verify the valve indicates closed and the system responds to the closed valve.
- 7.4.2 Set value = 1.0 and verify the valve indicates open and the system responds to the open valve.
- 7.5 Test the following malfunctions annually at BOL and MOL (or EOL) to evaluate inherent Core characteristics:

	INIT/DATE	INIT/DATE
1. Small Steam Leak	(BOL) ____ / ____	(MOL)(EOL) ____ / ____
2. Dropped CEA	(BOL) ____ / ____	(MOL)(EOL) ____ / ____
3. Loss of One MFWP	(BOL) ____ / ____	(MOL)(EOL) ____ / ____

The following malfunctions will be recorded , saved, plotted and attached. (Attachment F-3)

	INIT DATE
A. Main Steam Line Break	
1) BOL Log #14 (Start _____) (Stop _____)	____
2) MOL or EOL Log #15 (Start _____) (Stop _____)	____
B. T/G Runback	
1) BOL Log #16 (Start _____) (Stop _____)	____
2) MOL or EOL Log #17 (Start _____) (Stop _____)	____

8.0 FINAL CONDITIONS

		INIT	DATE
8.1	Malfunction has been tested and the Malfunction Verification List has been signed by the Test Director and identified as SAT or UNSAT.	---	---
8.2	Any discrepancies are identified on ATT F-1.	---	---
8.3	Changes required to be made in the Cause & Effect Document have been identified and APR sheets that were satisfactorily performed are signed and dated by the Test Director and attached in ATT F-4.	---	---

ATTACHMENT F-2
MALFUNCTION VERIFICATION LIST

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
1	1	01	A S/G Tube Lk % of 1% Flow	XRSG0101	3.1.2.1a	2				
		02	B S/G Tube Lk % of 1% Flow	XRSG0102	3.1.2.1a	2				
1	2	01	Th-A Leak % of DBL Rupture	XRRC0201	3.1.2.1b 3.1.2.1c	2				
		02	Th-B Leak % of DBL Rupture	XRRC0202	3.1.2.1b 3.1.2.1c	2				
1	3	01	Tc-A Leak % of DBL Rupture	XRRC0301	3.1.2.1b 3.1.2.1c	1				
		02	Tc-B Leak % of DBL Rupture	XRRC0302	3.1.2.1b 3.1.2.1c	1				
		03	Tc-C Leak % of DBL Rupture	XRRC0303	3.1.2.1b 3.1.2.1c	1				
		04	Tc-D Leak % of DBL Rupture	XRRC0304	3.1.2.1b 3.1.2.1c	1				
1	4	01	RCP Lube Oil Loss - A	X:RQ0401	3.1.2.4	2				
		02	RCP Lube Oil Loss - B	X:RQ0402	3.1.2.4	2				
		03	RCP Lube Oil Loss - C	X:RQ0403	3.1.2.4	2				
		04	RCP Lube Oil Loss - D	X:RQ0404	3.1.2.4	2				
1	5	01	RCP Upper Seal Failure - A	X:RQ0501	3.1.2.1B	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
1	5	02	RCP Middle Seal Failure - A	X:RQ0502	3.1.2.1B	1				
		03	RCP Lower Seal Failure - A	X:RQ0503	3.1.2.1B	1				
		04	RCP Upper Seal Failure - B	X:RQ0504	3.1.2.1B	3				
		05	RCP Middle Seal Failure - B	X:RQ0505	3.1.2.1B	3				
		06	RCP Lower Seal Failure - B	X:RQ0506	3.1.2.1B	3				
		07	RCP Upper Seal Failure - C	X:RQ0507	3.1.2.1B	1				
		08	RCP Middle Seal Failure - C	X:RQ0508	3.1.2.1B	1				
		09	RCP Lower Seal Failure - C	X:RQ0509	3.1.2.1B	1				
		10	RCP Upper Seal Failure - D	X:RQ0510	3.1.2.1B	3				
		11	RCP Middle Seal Failure - D	X:RQ0511	3.1.2.1B	3				
		12	RCP Lower Seal Failure - D	X:RQ0512	3.1.2.1B	3				
1	6	01	RCP Trip - Ground Fault - A	X:RQ0601	3.1.2.4	2				
		02	RCP Trip - Ground Fault - B	X:RQ0602	3.1.2.4	2				
		03	RCP Trip - Ground Fault - C	X:RQ0603	3.1.2.4	2				
		04	RCP Trip - Ground Fault - D	X:RQ0604	3.1.2.4	2				
1	7	01	RCP Rotor Locked-Loss of LO - A	X:RQ0701	3.1.2.4	3				
		02	RCP Rotor Locked-Loss of LO - B	X:RQ0702	3.1.2.4	3				
		03	RCP Rotor Locked-Loss of LO - C	X:RQ0703	3.1.2.4	3				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
1	7	04	RCP Rotor Locked-Loss of LO - D	X:RQ0704	3.1.2.4	3				
		05	RCP Shaft Broken - A	X:RQ0705	3.1.2.4	4				
		06	RCP Shaft Broken - B	X:RQ0706	3.1.2.4	4				
		07	RCP Shaft Broken - C	X:RQ0707	3.1.2.4	4				
		08	RCP Shaft Broken - D	X:RQ0708	3.1.2.4	4				
1	8	01	RCP A Seal Leak To CCW	XRRC0801	3.1.2.1b	1				
		02	RCP B Seal Leak To CCW	XRRC0802	3.1.2.1b	1				
		03	RCP C Seal Leak To CCW	XRRC0803	3.1.2.1b	1				
		04	RCP D Seal Leak To CCW	XRRC0804	3.1.2.1b	1				
1	9	01	PZR Backup Htrs Fail OFF	X:PZ0901	3.1.2.18	1				
		02	PZR Backup Htrs Contr Fail ON	X:PZ0902	3.1.2.18	1				
1	10	01	RCP Permsv Interlks Ovrdd - A	X:RQ1001	3.1.2.22	1				
		02	RCP Permsv Interlks Ovrdd - B	X:RQ1002	3.1.2.22	1				
		03	RCP Permsv Interlks Ovrdd - C	X:RQ1003	3.1.2.22	1				
		04	RCP Permsv Interlks Ovrdd - D	X:RQ1004	3.1.2.22	1				
1	11	01	Safety Vlv 4633 Reset Press	XRRC1101	3.1.2.1d	2				
		02	Safety Vlv 4634 Reset Press	XRRC1102	3.1.2.1d	2				
1	12	01	PZR Safety Vlv Leak 4633	XRRC1201	3.1.2.1d	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
1		02	PZR Safety Vlv Leak 4634	XRRC1202	3.1.2.1d	2				
1	13	01	PZR Steam Leak	XRRC1300	3.1.2.1b	2				
1	14	01	Reactor Vessel Vent Leak	XRRC1400	3.1.2.1b	3				
2	15	01	Dropped CEA 01 To Any Height	XRCE1501	3.1.2.12	2				
		02	Dropped CEA 02 To Any Height	XRCE1502	3.1.2.12	2				
		03	Dropped CEA 03 To Any Height	XRCE1503	3.1.2.12	2				
		04	Dropped CEA 04 To Any Height	XRCE1504	3.1.2.12	2				
		05	Dropped CEA 05 To Any Height	XRCE1505	3.1.2.12	2				
		06	Dropped CEA 06 To Any Height	XRCE1506	3.1.2.12	2				
		07	Dropped CEA 07 To Any Height	XRCE1507	3.1.2.12	2				
		08	Dropped CEA 08 To Any Height	XRCE1508	3.1.2.12	2				
		09	Dropped CEA 09 To Any Height	XRCE1509	3.1.2.12	2				
		10	Dropped CEA 10 To Any Height	XRCE1510	3.1.2.12	2				
		11	Dropped CEA 11 To Any Height	XRCE1511	3.1.2.12	2				
		12	Dropped CEA 12 To Any Height	XRCE1512	3.1.2.12	2				
		13	Dropped CEA 13 To Any Height	XRCE1513	3.1.2.12	2				
		14	Dropped CEA 14 To Any Height	XRCE1514	3.1.2.12	2				
		15	Dropped CEA 15 To Any Height	XRCE1515	3.1.2.12	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	15	16	Dropped CEA 16 To Any Height	XRCE1516	3.1.2.12	2				
		17	Dropped CEA 17 To Any Height	XRCE1517	3.1.2.12	2				
		18	Dropped CEA 18 To Any Height	XRCE1518	3.1.2.12	2				
		19	Dropped CEA 19 To Any Height	XRCE1519	3.1.2.12	2				
		20	Dropped CEA 20 To Any Height	XRCE1520	3.1.2.12	2				
		21	Dropped CEA 21 To Any Height	XRCE1521	3.1.2.12	2				
		22	Dropped CEA 22 To Any Height	XRCE1522	3.1.2.12	2				
		23	Dropped CEA 23 To Any Height	XRCE1523	3.1.2.12	2				
		24	Dropped CEA 24 To Any Height	XRCE1524	3.1.2.12	2				
		25	Dropped CEA 25 To Any Height	XRCE1525	3.1.2.12	2				
		26	Dropped CEA 26 To Any Height	XRCE1526	3.1.2.12	2				
		27	Dropped CEA 27 To Any Height	XRCE1527	3.1.2.12	2				
		28	Dropped CEA 28 To Any Height	XRCE1528	3.1.2.12	2				
		29	Dropped CEA 29 To Any Height	XRCE1529	3.1.2.12	2				
		30	Dropped CEA 30 To Any Height	XRCE1530	3.1.2.12	2				
		31	Dropped CEA 31 To Any Height	XRCE1531	3.1.2.12	2				
		32	Dropped CEA 32 To Any Height	XRCE1532	3.1.2.12	2				
		33	Dropped CEA 33 To Any Height	XRCE1533	3.1.2.12	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	15	34	Dropped CEA 34 To Any Height	XRCE1534	3.1.2.12	2				
		35	Dropped CEA 35 To Any Height	XRCE1535	3.1.2.12	2				
		36	Dropped CEA 36 To Any Height	XRCE1536	3.1.2.12	2				
		37	Dropped CEA 37 To Any Height	XRCE1537	3.1.2.12	2				
		38	Dropped CEA 38 To Any Height	XRCE1538	3.1.2.12	2				
		39	Dropped CEA 39 To Any Height	XRCE1539	3.1.2.12	2				
		40	Dropped CEA 40 To Any Height	XRCE1540	3.1.2.12	2				
		41	Dropped CEA 41 To Any Height	XRCE1541	3.1.2.12	2				
		42	Dropped CEA 42 To Any Height	XRCE1542	3.1.2.12	2				
		43	Dropped CEA 43 To Any Height	XRCE1543	3.1.2.12	2				
		44	Dropped CEA 44 To Any Height	XRCE1544	3.1.2.12	2				
		45	Dropped CEA 45 To Any Height	XRCE1545	3.1.2.12	2				
		46	Dropped CEA 46 To Any Height	XRCE1546	3.1.2.12	2				
		47	Dropped CEA 47 To Any Height	XRCE1547	3.1.2.12	2				
		48	Dropped CEA 48 To Any Height	XRCE1548	3.1.2.12	2				
		49	Dropped CEA 49 To Any Height	XRCE1549	3.1.2.12	2				
		50	Dropped CEA 50 To Any Height	XRCE1550	3.1.2.12	2				
		51	Dropped CEA 51 To Any Height	XRCE1551	3.1.2.12	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	15	52	Dropped CEA 52 To Any Height	XRCE1552	3.1.2.12	2				
		53	Dropped CEA 53 To Any Height	XRCE1553	3.1.2.12	2				
		54	Dropped CEA 54 To Any Height	XRCE1554	3.1.2.12	2				
		55	Dropped CEA 55 To Any Height	XRCE1555	3.1.2.12	2				
		56	Dropped CEA 56 To Any Height	XRCE1556	3.1.2.12	2				
		57	Dropped CEA 57 To Any Height	XRCE1557	3.1.2.12	2				
		58	Dropped CEA 58 To Any Height	XRCE1558	3.1.2.12	2				
		59	Dropped CEA 59 To Any Height	XRCE1559	3.1.2.12	2				
		60	Dropped CEA 60 To Any Height	XRCE1560	3.1.2.12	2				
		61	Dropped CEA 61 To Any Height	XRCE1561	3.1.2.12	2				
		62	Dropped CEA 62 To Any Height	XRCE1562	3.1.2.12	2				
		63	Dropped CEA 63 To Any Height	XRCE1563	3.1.2.12	2				
		64	Dropped CEA 64 To Any Height	XRCE1564	3.1.2.12	2				
		65	Dropped CEA 65 To Any Height	XRCE1565	3.1.2.12	2				
		66	Dropped CEA 66 To Any Height	XRCE1566	3.1.2.12	2				
		67	Dropped CEA 67 To Any Height	XRCE1567	3.1.2.12	2				
		68	Dropped CEA 68 To Any Height	XRCE1568	3.1.2.12	2				
		69	Dropped CEA 69 To Any Height	XRCE1569	3.1.2.12	2				

ATTACHMENT F-2
 UNIT 2 MALFUNCTION VERIFICATION LISTING
 Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	15	70	Dropped CEA 70 To Any Height	XRCE1570	3.1.2.12	2				
		71	Dropped CEA 71 To Any Height	XRCE1571	3.1.2.12	2				
		72	Dropped CEA 72 To Any Height	XRCE1572	3.1.2.12	2				
		73	Dropped CEA 73 To Any Height	XRCE1573	3.1.2.12	2				
2	16	01	Ejected CEA 62 To Any Height	XRCE1601	3.1.2.12	2				
		02	Ejected CEA 64 To Any Height	XRCE1602	3.1.2.12	2				
		03	Ejected CEA 66 To Any Height	XRCE1603	3.1.2.12	2				
		04	Ejected CEA 68 To Any Height	XRCE1604	3.1.2.12	2				
		05	Ejected CEA 63 To Any Height	XRCE1605	3.1.2.12	2				
		06	Ejected CEA 65 To Any Height	XRCE1606	3.1.2.12	2				
		07	Ejected CEA 67 To Any Height	XRCE1607	3.1.2.12	2				
		08	Ejected CEA 69 To Any Height	XRCE1608	3.1.2.12	2				
		09	Ejected CEA 10 To Any Height	XRCE1609	3.1.2.12	2				
		10	Ejected CEA 11 To Any Height	XRCE1610	3.1.2.12	2				
		11	Ejected CEA 12 To Any Height	XRCE1611	3.1.2.12	2				
		12	Ejected CEA 13 To Any Height	XRCE1612	3.1.2.12	2				
		13	Ejected CEA 58 To Any Height	XRCE1613	3.1.2.12	2				
		14	Ejected CEA 59 To Any Height	XRCE1614	3.1.2.12	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Y-	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	16	15	Ejected CEA 60 To Any Height	XRCE1615	3.1.2.12	2				
		16	Ejected CEA 61 To Any Height	XRCE1616	3.1.2.12	2				
		17	Ejected CEA 46 To Any Height	XRCE1617	3.1.2.12	2				
		18	Ejected CEA 47 To Any Height	XRCE1618	3.1.2.12	2				
		19	Ejected CEA 48 To Any Height	XRCE1619	3.1.2.12	2				
		20	Ejected CEA 49 To Any Height	XRCE1620	3.1.2.12	2				
		21	Ejected CEA 1 To Any Height	XRCE1621	3.1.2.12	2				
2	17	01	Dropped CEA SDB-A To Any Height	XRCE1701	3.1.2.12	3				
		02	Dropped CEA SDB-B To Any Height	XRCE1702	3.1.2.12	3				
		03	Dropped CEA Reg-1 To Any Height	XRCE1703	3.1.2.12	3				
		04	Dropped CEA Reg-2 To Any Height	XRCE1704	3.1.2.12	3				
		05	Dropped CEA Reg-3 To Any Height	XRCE1705	3.1.2.12	3				
		06	Dropped CEA Reg-4 To Any Height	XRCE1706	3.1.2.12	3				
		07	Dropped CEA Reg-5 To Any Height	XRCE1707	3.1.2.12	3				
		08	Dropped CEA Reg-6 To Any Height	XRCE1708	3.1.2.12	3				
2	18	01	Grp Withdrawal (SDB-A)	X:CE1801	3.1.2.13	2				
		02	Grp Withdrawal (SDB-B)	X:CE1802	3.1.2.13	2				
		03	Grp Withdrawal (Reg-1)	X:CE1803	3.1.2.13	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	18	04	Grp Withdrawal (Reg-2)	X:CE1804	3.1.2.13	2				
		05	Grp Withdrawal (Reg-3)	X:CE1805	3.1.2.13	2				
		06	Grp Withdrawal (Reg-4)	X:CE1806	3.1.2.13	2				
		07	Grp Withdrawal (Reg-5)	X:CE1807	3.1.2.13	2				
		08	Grp Withdrawal (Reg-6)	X:CE1808	3.1.2.13	2				
2	19	01	Degrade Mot CEA 01	XRCE1901	3.1.2.12	1				
		02	Degrade Mot CEA 02	XRCE1902	3.1.2.12	1				
		03	Degrade Mot CEA 03	XRCE1903	3.1.2.12	1				
		04	Degrade Mot CEA 04	XRCE1904	3.1.2.12	1				
		05	Degrade Mot CEA 05	XRCE1905	3.1.2.12	1				
		06	Degrade Mot CEA 06	XRCE1906	3.1.2.12	1				
		07	Degrade Mot CEA 07	XRCE1907	3.1.2.12	1				
		08	Degrade Mot CEA 08	XRCE1908	3.1.2.12	1				
		09	Degrade Mot CEA 09	XRCE1909	3.1.2.12	1				
		10	Degrade Mot CEA 10	XRCE1910	3.1.2.12	1				
		11	Degrade Mot CEA 11	XRCE1911	3.1.2.12	1				
		12	Degrade Mot CEA 12	XRCE1912	3.1.2.12	1				
		13	Degrade Mot CEA 13	XRCE1913	3.1.2.12	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	19	14	Degrade Mot CEA 14	XRCE1914	3.1.2.12	1				
		15	Degrade Mot CEA 15	XRCE1915	3.1.2.12	1				
		16	Degrade Mot CEA 16	XRCE1916	3.1.2.12	1				
		17	Degrade Mot CEA 17	XRCE1917	3.1.2.12	1				
		18	Degrade Mot CEA 18	XRCE1918	3.1.2.12	1				
		19	Degrade Mot CEA 19	XRCE1919	3.1.2.12	1				
		20	Degrade Mot CEA 20	XRCE1920	3.1.2.12	1				
		21	Degrade Mot CEA 21	XRCE1921	3.1.2.12	1				
		22	Degrade Mot CEA 22	XRCE1922	3.1.2.12	1				
		23	Degrade Mot CEA 23	XRCE1923	3.1.2.12	1				
		24	Degrade Mot CEA 24	XRCE1924	3.1.2.12	1				
		25	Degrade Mot CEA 25	XRCE1925	3.1.2.12	1				
		26	Degrade Mot CEA 26	XRCE1926	3.1.2.12	1				
		27	Degrade Mot CEA 27	XRCE1927	3.1.2.12	1				
		28	Degrade Mot CEA 28	XRCE1928	3.1.2.12	1				
		29	Degrade Mot CEA 29	XRCE1929	3.1.2.12	1				
		30	Degrade Mot CEA 30	XRCE1930	3.1.2.12	1				
		31	Degrade Mot CEA 31	XRCE1931	3.1.2.12	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	19	32	Degrade Mot CEA 32	XRCE1932	3.1.2.12	1				
		33	Degrade Mot CEA 33	XRCE1933	3.1.2.12	1				
		34	Degrade Mot CEA 34	XRCE1934	3.1.2.12	1				
		35	Degrade Mot CEA 35	XRCE1935	3.1.2.12	1				
		36	Degrade Mot CEA 36	XRCE1936	3.1.2.12	1				
		37	Degrade Mot CEA 37	XRCE1937	3.1.2.12	1				
		38	Degrade Mot CEA 38	XRCE1938	3.1.2.12	1				
		39	Degrade Mot CEA 39	XRCE1939	3.1.2.12	1				
		40	Degrade Mot CEA 40	XRCE1940	3.1.2.12	1				
		41	Degrade Mot CEA 41	XRCE1941	3.1.2.12	1				
		42	Degrade Mot CEA 42	XRCE1942	3.1.2.12	1				
		43	Degrade Mot CEA 43	XRCE1943	3.1.2.12	1				
		44	Degrade Mot CEA 44	XRCE1944	3.1.2.12	1				
		45	Degrade Mot CEA 45	XRCE1945	3.1.2.12	1				
		46	Degrade Mot CEA 46	XRCE1946	3.1.2.12	1				
		47	Degrade Mot CEA 47	XRCE1947	3.1.2.12	1				
		48	Degrade Mot CEA 48	XRCE1948	3.1.2.12	1				
		49	Degrade Mot CEA 49	XRCE1949	3.1.2.12	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	19	50	Degrade Mot CEA 50	XRCE1950	3.1.2.12	1				
		51	Degrade Mot CEA 51	XRCE1951	3.1.2.12	1				
		52	Degrade Mot CEA 52	XRCE1952	3.1.2.12	1				
		53	Degrade Mot CEA 53	XRCE1953	3.1.2.12	1				
		54	Degrade Mot CEA 54	XRCE1954	3.1.2.12	1				
		55	Degrade Mot CEA 55	XRCE1955	3.1.2.12	1				
		56	Degrade Mot CEA 56	XRCE1956	3.1.2.12	1				
		57	Degrade Mot CEA 57	XRCE1957	3.1.2.12	1				
		58	Degrade Mot CEA 58	XRCE1958	3.1.2.12	1				
		59	Degrade Mot CEA 59	XRCE1959	3.1.2.12	1				
		60	Degrade Mot CEA 60	XRCE1960	3.1.2.12	1				
		61	Degrade Mot CEA 61	XRCE1961	3.1.2.12	1				
		62	Degrade Mot CEA 62	XRCE1962	3.1.2.12	1				
		63	Degrade Mot CEA 63	XRCE1963	3.1.2.12	1				
		64	Degrade Mot CEA 64	XRCE1964	3.1.2.12	1				
		65	Degrade Mot CEA 65	XRCE1965	3.1.2.12	1				
		66	Degrade Mot CEA 66	XRCE1966	3.1.2.12	1				
		67	Degrade Mot CEA 67	XRCE1967	3.1.2.12	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	19	68	Degrade Mot CEA 68	XRCE1968	3.1.2.12	1				
		69	Degrade Mot CEA 69	XRCE1969	3.1.2.12	1				
		70	Degrade Mot CEA 70	XRCE1970	3.1.2.12	1				
		71	Degrade Mot CEA 71	XRCE1971	3.1.2.12	1				
		72	Degrade Mot CEA 72	XRCE1972	3.1.2.12	1				
		73	Degrade Mot CEA 73	XRCE1973	3.1.2.12	1				
		74	Degrade Mot CEA 74	XRCE1974	3.1.2.12	1				
		75	Degrade Mot CEA 75	XRCE1975	3.1.2.12	1				
		76	Degrade Mot CEA 76	XRCE1976	3.1.2.12	1				
		77	Degrade Mot CEA 77	XRCE1977	3.1.2.12	1				
		78	Degrade Mot CEA 78	XRCE1978	3.1.2.12	1				
		79	Degrade Mot CEA 79	XRCE1979	3.1.2.12	1				
		80	Degrade Mot CEA 80	XRCE1980	3.1.2.12	1				
		81	Degrade Mot CEA 81	XRCE1981	3.1.2.12	1				
2	20	00	Defeat Rod Group Motion	X:CE2000	3.1.2.13	1				
2	21	01	Loss Grp-1 Wthdwl Seq Signl	X:CE2101	3.1.2.13	4				
		02	Loss Grp-2 Wthdwl Seq Signl	X:CE2102	3.1.2.13	4				
		03	Loss Grp-3 Wthdwl Seq Signl	X:CE2103	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	21	04	Loss Grp-4 Wthdwl Seq Signl	X:CE2104	3.1.2.13	4				
		05	Loss Grp-5 Wthdwl Seq Signl	X:CE2105	3.1.2.13	4				
		06	Loss Grp-6 Wthdwl Seq Signl	X:CE2106	3.1.2.13	4				
2	22	00	Spare Malf	X:CE2200						
2	23	01	Uncontrolled Rod Withdrawal/Insertion CEA 1	XICE2301	3.1.2.13	4				
		02	Uncontrolled Rod Withdrawal/Insertion CEA 2	XICE2302	3.1.2.13	4				
		03	Uncontrolled Rod Withdrawal/Insertion CEA 3	XICE2303	3.1.2.13	4				
		04	Uncontrolled Rod Withdrawal/Insertion CEA 4	XICE2304	3.1.2.13	4				
		05	Uncontrolled Rod Withdrawal/Insertion CEA 5	XICE2305	3.1.2.13	4				
		06	Uncontrolled Rod Withdrawal/Insertion CEA 6	XICE2306	3.1.2.13	4				
		07	Uncontrolled Rod Withdrawal/Insertion CEA 7	XICE2307	3.1.2.13	4				
		08	Uncontrolled Rod Withdrawal/Insertion CEA 8	XICE2308	3.1.2.13	4				

ATTACHMENT F-2
 UNIT 2 MALFUNCTION VERIFICATION LISTING
 Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	09	Uncontrolled Rod Withdrawal/Insertion CEA 9	XICE2309	3.1.2.13	4				
		10	Uncontrolled Rod Withdrawal/Insertion CEA 10	XICE2310	3.1.2.13	4				
		11	Uncontrolled Rod Withdrawal/Insertion CEA 11	XICE2311	3.1.2.13	4				
		12	Uncontrolled Rod Withdrawal/Insertion CEA 12	XICE2312	3.1.2.13	4				
		13	Uncontrolled Rod Withdrawal/Insertion CEA 13	XICE2313	3.1.2.13	4				
		14	Uncontrolled Rod Withdrawal/Insertion CEA 14	XICE2314	3.1.2.13	4				
		15	Uncontrolled Rod Withdrawal/Insertion CEA 15	XICE2315	3.1.2.13	4				
		16	Uncontrolled Rod Withdrawal/Insertion CEA 16	XICE2316	3.1.2.13	4				
		17	Uncontrolled Rod Withdrawal/Insertion CEA 17	XICE2317	3.1.2.13	4				
		18	Uncontrolled Rod Withdrawal/Insertion CEA 18	XICE2318	3.1.2.13	4				
		19	Uncontrolled Rod Withdrawal/Insertion CEA 19	XICE2319	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	20	Uncontrolled Rod Withdrawal/Insertion CEA 20	XICE2320	3.1.2.13	4				
		21	Uncontrolled Rod Withdrawal/Insertion CEA 21	XICE2321	3.1.2.13	4				
		22	Uncontrolled Rod Withdrawal/Insertion CEA 22	XICE2322	3.1.2.13	4				
		23	Uncontrolled Rod Withdrawal/Insertion CEA 23	XICE2323	3.1.2.13	4				
		24	Uncontrolled Rod Withdrawal/Insertion CEA 24	XICE2324	3.1.2.13	4				
		25	Uncontrolled Rod Withdrawal/Insertion CEA 25	XICE2325	3.1.2.13	4				
		26	Uncontrolled Rod Withdrawal/Insertion CEA 26	XICE2326	3.1.2.13	4				
		27	Uncontrolled Rod Withdrawal/Insertion CEA 27	XICE2327	3.1.2.13	4				
		28	Uncontrolled Rod Withdrawal/Insertion CEA 28	XICE2328	3.1.2.13	4				
		29	Uncontrolled Rod Withdrawal/Insertion CEA 29	XICE2329	3.1.2.13	4				
		30	Uncontrolled Rod Withdrawal/Insertion CEA 30	XICE2330	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	31	Uncontrolled Rod Withdrawal/Insertion CEA 31	XICE2331	3.1.2.13	4				
		32	Uncontrolled Rod Withdrawal/Insertion CEA 32	XICE2332	3.1.2.13	4				
		33	Uncontrolled Rod Withdrawal/Insertion CEA 33	XICE2333	3.1.2.13	4				
		34	Uncontrolled Rod Withdrawal/Insertion CEA 34	XICE2334	3.1.2.13	4				
		35	Uncontrolled Rod Withdrawal/Insertion CEA 35	XICE2335	3.1.2.13	4				
		36	Uncontrolled Rod Withdrawal/Insertion CEA 36	XICE2336	3.1.2.13	4				
		37	Uncontrolled Rod Withdrawal/Insertion CEA 37	XICE2337	3.1.2.13	4				
		38	Uncontrolled Rod Withdrawal/Insertion CEA 38	XICE2338	3.1.2.13	4				
		39	Uncontrolled Rod Withdrawal/Insertion CEA 39	XICE2339	3.1.2.13	4				
		40	Uncontrolled Rod Withdrawal/Insertion CEA 40	XICE2340	3.1.2.13	4				
		41	Uncontrolled Rod Withdrawal/Insertion CEA 41	XICE2341	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	42	Uncontrolled Rod Withdrawal/Insertion CEA 42	XICE2342	3.1.2.13	4				
		43	Uncontrolled Rod Withdrawal/Insertion CEA 43	XICE2343	3.1.2.13	4				
		44	Uncontrolled Rod Withdrawal/Insertion CEA 44	XICE2344	3.1.2.13	4				
		45	Uncontrolled Rod Withdrawal/Insertion CEA 45	XICE2345	3.1.2.13	4				
		46	Uncontrolled Rod Withdrawal/Insertion CEA 46	XICE2346	3.1.2.13	4				
		47	Uncontrolled Rod Withdrawal/Insertion CEA 47	XICE2347	3.1.2.13	4				
		48	Uncontrolled Rod Withdrawal/Insertion CEA 48	XICE2348	3.1.2.13	4				
		49	Uncontrolled Rod Withdrawal/Insertion CEA 49	XICE2349	3.1.2.13	4				
		50	Uncontrolled Rod Withdrawal/Insertion CEA 50	XICE2350	3.1.2.13	4				
		51	Uncontrolled Rod Withdrawal/Insertion CEA 51	XICE2351	3.1.2.13	4				
		52	Uncontrolled Rod Withdrawal/Insertion CEA 52	XICE2352	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	53	Uncontrolled Rod Withdrawal/Insertion CEA 53	XICE2353	3.1.2.13	4				
		54	Uncontrolled Rod Withdrawal/Insertion CEA 54	XICE2354	3.1.2.13	4				
		55	Uncontrolled Rod Withdrawal/Insertion CEA 55	XICE2355	3.1.2.13	4				
		56	Uncontrolled Rod Withdrawal/Insertion CEA 56	XICE2356	3.1.2.13	4				
		57	Uncontrolled Rod Withdrawal/Insertion CEA 57	XICE2357	3.1.2.13	4				
		58	Uncontrolled Rod Withdrawal/Insertion CEA 58	XICE2358	3.1.2.13	4				
		59	Uncontrolled Rod Withdrawal/Insertion CEA 59	XICE2359	3.1.2.13	4				
		60	Uncontrolled Rod Withdrawal/Insertion CEA 60	XICE2360	3.1.2.13	4				
		61	Uncontrolled Rod Withdrawal/Insertion CEA 61	XICE2361	3.1.2.13	4				
		62	Uncontrolled Rod Withdrawal/Insertion CEA 62	XICE2362	3.1.2.13	4				
		63	Uncontrolled Rod Withdrawal/Insertion CEA 63	XICE2363	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	64	Uncontrolled Rod Withdrawal/Insertion CEA 64	XICE2364	3.1.2.13	4				
		65	Uncontrolled Rod Withdrawal/Insertion CEA 65	XICE2365	3.1.2.13	4				
		66	Uncontrolled Rod Withdrawal/Insertion CEA 66	XICE2366	3.1.2.13	4				
		67	Uncontrolled Rod Withdrawal/Insertion CEA 67	XICE2367	3.1.2.13	4				
		68	Uncontrolled Rod Withdrawal/Insertion CEA 68	XICE2368	3.1.2.13	4				
		69	Uncontrolled Rod Withdrawal/Insertion CEA 69	XICE2369	3.1.2.13	4				
		70	Uncontrolled Rod Withdrawal/Insertion CEA 70	XICE2370	3.1.2.13	4				
		71	Uncontrolled Rod Withdrawal/Insertion CEA 71	XICE2371	3.1.2.13	4				
		72	Uncontrolled Rod Withdrawal/Insertion CEA 72	XICE2372	3.1.2.13	4				
		73	Uncontrolled Rod Withdrawal/Insertion CEA 73	XICE2373	3.1.2.13	4				
		74	Uncontrolled Rod Withdrawal/Insertion CEA 74	XICE2374	3.1.2.13	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	23	75	Uncontrolled Rod Withdrawal/Insertion CEA 75	XICE2375	3.1.2.13	4				
		76	Uncontrolled Rod Withdrawal/Insertion CEA 76	XICE2376	3.1.2.13	4				
		77	Uncontrolled Rod Withdrawal/Insertion CEA 77	XICE2377	3.1.2.13	4				
		78	Uncontrolled Rod Withdrawal/Insertion CEA 78	XICE2378	3.1.2.13	4				
		79	Uncontrolled Rod Withdrawal/Insertion CEA 79	XICE2379	3.1.2.13	4				
		80	Uncontrolled Rod Withdrawal/Insertion CEA 80	XICE2380	3.1.2.13	4				
		81	Uncontrolled Rod Withdrawal/Insertion CEA 81	XICE2381	3.1.2.13	4				
2	24	01	DSS Reactor Trip	X:CE2401	3.1.2.19	3				
		02	RPS Reactor Trip	X:CE2402	3.1.2.19	1				
2	25	01	Reed SW 1 Failure CEA 11	X:CE2501	3.1.2.22	3				
		02	Reed SW 1 Failure CEA 23	X:CE2502	3.1.2.22	3				
		03	Reed SW 1 Failure CEA 30	X:CE2503	3.1.2.22	3				
		04	Reed SW 1 Failure CEA 33	X:CE2504	3.1.2.22	3				
		05	Reed SW 1 Failure CEA 38	X:CE2505	3.1.2.22	3				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
2	25	06	Reed SW 1 Failure CEA 46	X:CE2506	3.1.2.22	3				
		07	Reed SW 1 Failure CEA 59	X:CE2507	3.1.2.22	3				
		08	Reed SW 1 Failure CEA 62	X:CE2508	3.1.2.22	3				
		09	Reed SW 1 Failure CEA 72	X:CE2509	3.1.2.22	3				
		10	Reed SW 1 Failure CEA 73	X:CE2510	3.1.2.22	3				
		11	Reed SW 1 Failure CEA 74	X:CE2511	3.1.2.22	3				
		12	Reed SW 2 Failure CEA 04	X:CE2512	3.1.2.22	3				
		13	Reed SW 2 Failure CEA 08	X:CE2513	3.1.2.22	3				
		14	Reed SW 2 Failure CEA 18	X:CE2514	3.1.2.22	3				
		15	Reed SW 2 Failure CEA 21	X:CE2515	3.1.2.22	3				
		16	Reed SW 2 Failure CEA 29	X:CE2516	3.1.2.22	3				
		17	Reed SW 2 Failure CEA 45	X:CE2517	3.1.2.22	3				
		18	Reed SW 2 Failure CEA 55	X:CE2518	3.1.2.22	3				
		19	Reed SW 2 Failure CEA 56	X:CE2519	3.1.2.22	3				
		20	Reed SW 2 Failure CEA 69	X:CE2520	3.1.2.22	3				
2	26	01	Defeat DSS Trip	XICE2601	3.1.2.24	3				
		02	Defeat RPS Trip	XICE2602	3.1.2.24	3				

ATTACHMENT F-2
 UNIT 2 MALFUNCTION VERIFICATION LISTING
 Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
3	27	01	Condensate Pump A Trip	X:FW2701	3.1.2.9 3.1.2.10	3				
		02	Condensate Pump B Trip	X:FW2702	3.1.2.9 3.1.2.10	3				
		03	Condensate Pump C Trip	X:FW2703	3.1.2.9 3.1.2.10	3				
		04	Condensate Pump D Trip	X:FW2704	3.1.2.9 3.1.2.10	3				
		05	Cond Pump A Mtr Wnd Temp Hi	X:FW2705	3.1.2.9 3.1.2.10	3				
3	28	01	Main FW Pump A Trip	X:PF2801	3.1.2.9 3.1.2.10	2				
		02	Main FW Pump B Trip	X:PF2802	3.1.2.9 3.1.2.10	2				
		03	MFWP A Active TB Temp High	X:PF2803	3.1.2.9 3.1.2.10	4				
3	29	01	2P75 Aux Feed Pump Trip	X:FW2901	3.1.2.9 3.1.2.10	4				
		02	Emergency FW Pump B Fault	X:FW2902	3.1.2.9 3.1.2.10	4				
		03	Loss of LO To 2P75	X:LO2903	3.1.2.9 3.1.2.10	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
3	30	01	Condenser Vacuum PP A Fails	X:CR3001	3.1.2.5	2				
		02	Condenser Vacuum PP B Fails	X:CR3002	3.1.2.5	2				
3	31	01	Circ Water Pump 2P3A Fault	X:CR3101	3.1.2.5	2				
		02	Circ Water Pump 2P3B Fault	X:CR3102	3.1.2.5	2				
3	32	00	Condensate Disch Hdr Leak	XRFW3200	3.1.2.20	3				
3	33	01	Mn Cond 2E11A Tube Lk	XRCR3301		4				
		02	Mn Cond 2E11A Tube Lk	XRCR3302		4				
3	34	01	Htr Drn Pmp Fault A	X:FW3401	3.1.2.9	3				
		02	Htr Drn Pmp Fault B	X:FW3402	3.1.2.9	3				
		03	Htr Drn Pump A Mtr Wnd Tmp Hi	X:FW3403	3.1.2.9	3				
3	35	01	FW Pump A Disch Line Break	XRFW3501	3.1.2.10 3.1.2.20	4				
		02	FW Pump B Disch Line Break	XRFW3502	3.1.2.10 3.1.2.20	4				
		03	FW Break In Cntmt Before 2FW5A	XRFW3503	3.1.2.10 3.1.2.20	1				
		04	FW Break In Cntmt After 2FW5A	XRFW3504	3.1.2.10 3.1.2.20	1				
		05	FW Break In Cntmt Before 2FW5B	XRFW3505	3.1.2.10 3.1.2.20	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
3	35	06	FW Break In Cntmt After 2FW/5B	XRFW3506	3.1.2.10 3.1.2.20	1				
3	36	01	FW Heater Degradation 2E1A	XRHT3601	3.1.2.9	1				
		02	FW Heater Degradation 2E2A	XRHT3602	3.1.2.9	1				
		03	FW Heater Degradation 2E3A	XRHT3603	3.1.2.9	1				
		04	FW Heater Degradation 2E4A	XRHT3604	3.1.2.9	1				
		05	FW Heater Degradation 2E5A	XRHT3605	3.1.2.9	1				
		06	FW Heater Degradation 2E6A	XRHT3606	3.1.2.9	1				
		07	FW Heater Degradation 2E7A	XRHT3607	3.1.2.9	1				
		08	FW Heater Degradation 2E1B	XRHT3608	3.1.2.9	1				
		09	FW Heater Degradation 2E2B	XRHT3609	3.1.2.9	1				
		10	FW Heater Degradation 2E3B	XRHT3610	3.1.2.9	1				
		11	FW Heater Degradation 2E4B	XRHT3611	3.1.2.9	1				
		12	FW Heater Degradation 2E5B	XRHT3612	3.1.2.9	1				
		13	FW Heater Degradation 2E6B	XRIIT3613	3.1.2.9	1				
		14	FW Heater Degradation 2E7B	XRHT3614	3.1.2.9	1				
4	37	01	Mn Stm Lk In Cntmnt 2E24A	XRSG3701	3.1.2.20	2				
		02	Mn Stm Lk In Cntmnt 2E24B	XRSG3702	3.1.2.20	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
4	37	03	A MSLB Outside After MSIV	XRSG3703	3.1.2.20	2				
		04	B MSLB Outside After MSIV	XRSG3704	3.1.2.20	2				
		05	A MSLB Outside Before MSIV	XRSG3705	3.1.2.20	2				
		06	B MSLB Outside Before MSIV	XRSG3706	3.1.2.20	2				
		07	Leak Before 2P7A (I = 1.2E6)	XRSG3707	3.1.2.20	2				
4	38	01	Stm Lk A MSR Shell Side	XRSS3801	3.1.2.20	1				
		02	Stm Lk B MSR Shell Side	XRSS3802	3.1.2.20	1				
4	39	01	Turbine Trip - SW Short Ckt	X:EH3901	3.1.2.15	1				
		02	Turb Trip Sig Fail F=Norm	X:EH3902	3.1.2.15	1				
4	40	00	Loss Of Turb LO - Tank Rupture	X:LO4000	3.1.2.15	1				
4	41	00	SG- A CH 1 Reference Leg Break	X:SG4100	3.1.2.17	2				
4	42	00	Turbine Vibration (Increase)	XRTM4200		4				
4	43	00	Gland Stm Press Reg Sp Drift	XRSH4300	3.1.2.5	3				
4	44	01	MS Relf Vlv Reset Press 1002	XRSG4401	3.1.2.17	2				
		02	MS Relf Vlv Reset Press 1003	XRSG4402	3.1.2.17	2				
		03	MS Relf Vlv Reset Press 1004	XRSG4403	3.1.2.17	2				
		04	MS Relf Vlv Reset Press 1005	XRSG4404	3.1.2.17	2				
		05	MS Relf Vlv Reset Press 1006	XRSG4405	3.1.2.17	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
4	44	06	MS Relf Vlv Reset Press 1052	XRSG4406	3.1.2.17	2				
		07	MS Relf Vlv Reset Press 1053	XRSG4407	3.1.2.17	2				
		08	MS Relf Vlv Reset Press 1054	XRSG4408	3.1.2.17	2				
		09	MS Relf Vlv Reset Press 1055	XRSG4409	3.1.2.17	2				
		10	MS Relf Vlv Reset Press 1056	XRSG4410	3.1.2.17	2				
4	45	00	EHC Sig To Cntrl & Inv Vlvs	X:EH4500	3.1.2.22	3				
4	46	00	Frz EHC Signal To Gov Vlvs	X:EH4600	3.1.2.22	4				
4	47	00	Faulty EHC Cont Vlv Demand	XREH4700	3.1.2.17	1				
5	48	01	Letdwn Leak In Cont	XRCH4801	3.1.2.1b	2				
		02	Letdn Leak Out Cont	XRCH4802	3.1.2.1b	2				
		03	Letdown Hx Tube Leak	XRCH4803	3.1.2.1b	2				
5	49	01	Charging Pump Failure - 2P36A	X:CH4901	3.1.2.18	4				
		02	Charging Pump Failure - 2P36B	X:CH4902	3.1.2.18	4				
		03	Charging Pump Failure - 2P36C	X:CH4903	3.1.2.18	4				
		04	2P36A Fail To Start On SIAS	X:CH4904	3.1.2.18	2				
		05	2P36B Fail To Start On SIAS	X:CH4905	3.1.2.18	2				
		06	2P36C Fail To Start On SIAS	X:CH4906	3.1.2.18	2				
		07	2P36A Fail To Start - PZR Level	X:CH4907	3.1.2.18	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Maif #	Comp #	Description	Maif #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
5	49	08	2P36B Fail To Start - PZR Level	X:CH4908	3.1.2.18	2				
		09	2P36C Fail To Start - PZR Level	X:CH4909	3.1.2.18	2				
		10	A Chg Pmp Fail On UV Relay	X:CH4910	3.1.2.18	2				
5	50	01	Chg Pump Suct Lk - 2P36A	XRCH5001	3.1.2.18	3				
		02	Chg Pump Suct LK - 2P36B	XRCH5002	3.1.2.18	3				
		03	Chg Pump Suct LK - 2P36C	XRCH5003	3.1.2.18	3				
5	51	00	Charging Pump Discharge Leak	XRCH5100	3.1.2.18	1				
5	52	01	BAM Pump Fault - 2P39A	X:CH5201	3.1.2.18	3				
		02	BAM Pump Fault - 2P39B	X:CH5202	3.1.2.18	3				
		03	2P39A Fail To Start On SIAS	X:CH5203	3.1.2.18	3				
		04	2P39B Fail To Start On SIAS	X:CH5204	3.1.2.18	3				
6	53	01	LPSI Fault - Pwr Loss - 2P60A	X:SI5301	3.1.2.7	2				
		02	LPSI Fault - Pwr Loss - 2P60B	X:SI5302	3.1.2.7	2				
		03	2P89A Fail To Start On SIAS	X:SI5303	3.1.2.23	2				
		04	2P89B Fail To Start On SIAS	X:SI5304	3.1.2.23	4				
		05	2P89C Fail To Start On SIAS	X:SI5305	3.1.2.23	4				
		06	CSP 2P35A Fault	X:CS5306	3.1.2.23	1				
		07	CSP 2P35B Fault	X:CS5307	3.1.2.23	1				

6		08	2P35A Fail To Start On CSAS	X:CS5308	3.1.2.23	1			
		09	2P35B Fail To Start On CSAS	X:CS5309	3.1.2.23	1			
		10	2P60A Fail To Start On SIAS	X:SI5310	3.1.2.23	3			
		11	2P60B Fail To Start On SIAS	X:SI5311	3.1.2.23	3			
		12	LPSI Pumps Vortex	X:SI5312		3			
		13	2CV-5015 Bkr Trips On C _{pen}	X:SI5313	3.1.2.23	3			
6	54	01	LPSI Suction Leak - 2P60A	XRSI5401	3.1.2.1b 3.1.2.7	1			
		02	LPSI Suction Leak - 2P60B	XRSI5402	3.1.2.1b 3.1.2.7	1			
6	55	01	LPSI Discharge Leak - 2P60A	XRSI5501	3.1.2.1b 3.1.2.7	2			
		02	LPSI Discharge Leak - 2P60B	XRSI5502	3.1.2.1b 3.1.2.7	2			
6	56	01	SDC Hx Tube Lk - 2E35A	XRCS5601	3.1.2.1b	3			
		02	SDC Hx Tube Lk - 2E35B	XRCS5602	3.1.2.1b	3			
7	57	00	False Reactor Trip Signal	X:RP5700	3.1.2.19	4			
7	58	01	Inadvertent SIAS-1 Signal	X:ES5801	3.1.2.11	1			
		02	Inadvertent SIAS-2 Signal	X:ES5802	3.1.2.11	1			

30

		05	DSS Bkr 29-1 Trip Fails	X:RP6105	3.1.2.11	3			
		06	DSS Bkr 29-2 Trip Fails	X:RP6106	3.1.2.11	3			
		07	CPC Trips Fail	X:RP6107	3.1.2.11	3			

31

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
7	61	08	CPC Pretrips/Trips Fail	X:RP6108	3.1.2.11	4				
7	62	01	No ESAS Response To SIAS-1	X:ES6201	3.1.2.11	4				
		02	No ESAS Response To SIAS-2	X:ES6202	3.1.2.11	4				
		03	No ESAS Response To CIAS-1	X:ES6203	3.1.2.11	4				
		04	No ESAS Response To CIAS-2	X:ES6204	3.1.2.11	4				
		05	No ESAS Response To CSAS-1	X:ES6205	3.1.2.11	4				
		06	No ESAS Response To CSAS-2	X:ES6206	3.1.2.11	4				
		07	No ESAS Response To CCAS-1	X:ES6207	3.1.2.11	4				
		08	No ESAS Response To CCAS-2	X:ES6208	3.1.2.11	4				
		09	No ESAS Response To RAS-1	X:ES6209	3.1.2.11	4				
		10	No ESAS Response To RAS-2	X:ES6210	3.1.2.11	4				
		11	No ESAS Response To MSIS-1	X:ES6211	3.1.2.11	4				
		12	No ESAS Response To MSIS-2	X:ES6212	3.1.2.11	4				
		13	No ESAS Response To EFAS-1-1	X:ES6213	3.1.2.11	4				
		14	No ESAS Response To EFAS-1-2	X:ES6214	3.1.2.11	4				
		15	No ESAS Response To EFAS-2-1	X:ES6215	3.1.2.11	4				
		16	No ESAS Response To EFAS-2-2	X:ES6216	3.1.2.11	4				
		17	Fail DEFAS Ch 1	XIES6217	3.1.2.11	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/ 5

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
7	62	18	Fail DEFAS Ch 2	XIES6218	3.1.2.11	4				
		19	K401A Fails (2CV-5015/17)	X:ES6219	3.1.2.11	4				
8	63	01	Loss Of CC'V To All RCP's	X:CC6301	3.1.2.8	4				
		02	CCW Pmp r'fault-Pwr Loss 2P33A	X:CC6302	3.1.2.8	4				
		03	CCW Pmp Fault-Pwr Loss 2P33B	X:CC6303	3.1.2.8	4				
		04	CCW PMP Fault-Pwr Loss 2P33C	X:CC6304	3.1.2.8	4				
		05	CCW Pmp B Auto-Start Fail	X:CC6305	3.1.2.8	4				
8	64	01	Loss Of SW To SDC Hx 2E35A	X:SW6401	3.1.2.6	3				
		02	Loss OF SW To SDC HX 2E35B	X:SW6402	3.1.2.6	3				
8	65	01	5=Defeat Auto Op 5130	XIEA6501	3.1.2.3	4				
		02	5=Defeat Auto Op 5134	XIEA6502	3.1.2.3	4				
		03	Bkr Stat Chg/Inh 2H1-13	XIEA6503	3.1.2.3	4				
		04	Bkr Stat Chg/Inh 2H1-14	XIEA6504	3.1.2.3	4				
		05	Bkr Stat Chg/Inh 2H1-15	XIEA6505	3.1.2.3	4				
		06	Bkr Stat Chg/Inh 2H1-23	XIEA6506	3.1.2.3	4				
		07	Bkr Stat Chg/Inh 2H2-24	XIEA6507	3.1.2.3	4				
		08	Bkr Stat Chg/Inh 2H2-25	XIEA6508	3.1.2.3	4				
		09	Bkr Stat Chg/Inh 2A1-111	XIEA6509	3.1.2.3	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
8	65	10	Bkr Stat Chg/Inh 2A1-112	XIEA6510	3.1.2.3	4				
		11	Bkr Stat Chg/Inh 2A1-113	XIEA6511	3.1.2.3	4				
		12	Bkr Stat Chg/Inh 2A2-211	XIEA6512	3.1.2.3	4				
		13	Bkr Stat Chg/Inh 2A2-212	XIEA6513	3.1.2.3	4				
		14	Bkr Stat Chg/Inh 2A2-213	XIEA6514	3.1.2.3	4				
		15	Bkr Stat Chg/Inh 2A1-102	XIEA6515	3.1.2.3	4				
		16	Bkr Stat Chg Inh 2A1-103	XIEA6516	3.1.2.3	4				
		17	Bkr Stat Chg Inh 2A1-104	XIEA6517	3.1.2.3	4				
		18	Bkr Stat Chg/Inh 2A1-109	XIEA6518	3.1.2.3	4				
		19	Bkr Stat Chg/Inh 2A2-202	XIEA6519	3.1.2.3	4				
		20	Bkr Stat Chg/Inh 2A2-203	XIEA6520	3.1.2.3	4				
		21	Bkr Stat Chg/Inh 2A2-204	XIEA6521	3.1.2.3	4				
		22	Bkr Stat Chg/Inh 2B2-209	XIEA6522	3.1.2.3	4				
		23	Bkr Stat Chg/Inh 2B1-112	XIEA6523	3.1.2.3	4				
		24	Bkr Stat Chg/Inh 2B2-212	XIEA6524	3.1.2.3	4				
		25	Bkr Stat Chg Inh 2B1/2B2 Tie	XIEA6525	3.1.2.3	4				
		26	Bkr Stat Chg/Inh 2B3-312	XIEA6526	3.1.2.3	4				
		27	Bkr Stat Chg/Inh 2B4-412	XIEA6527	3.1.2.3	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
8	65	28	Bkr Stat Chg/Inh 2B3/2B4 Tie	XIEA6528	3.1.2.3	4				
		29	4=Defeat Auto CI 2A3-308	XIEA6529	3.1.2.3	4				
		30	Bkr Stat Chg/Inh 2A3-309	XIEA6530	3.1.2.3	4				
		31	Bkr Stat Chg/Inh 2A3-310	XIEA6531	3.1.2.3	4				
		32	4=Defeat Auto CI 2A4-408	XIEA6532	3.1.2.3	4				
		33	Bkr Stat Chg/Inh 2A4-409	XIEA6533	3.1.2.3	4				
		34	Bkr Stat Chg/Inh 2A4-410	XIEA6534	3.1.2.3	4				
		35	Bkr Stat Chg/Inh 2B5-512	XIEA6535	3.1.2.3	4				
		36	Bkr Stat Chg/Inh 2B5-513	XIEA6536	3.1.2.3	4				
		37	Bkr Stat Chg/Inh 2B6-612	XIEA6537	3.1.2.3	4				
		38	Bkr Stat Chg/Inh 2B6-613	XIEA6538	3.1.2.3	4				
		39	Bkr Stat Chg/Inh 2B7-712	XIEA6539	3.1.2.3	4				
		40	Bkr Stat Chg/Inh 2B7/2B8 Tie	XIEA6540	3.1.2.3	4				
		41	Bkr Stat Chg/Inh 2B8-812	XIEA6541	3.1.2.3	4				
		42	Bkr Stat Chg/Inh 2B9-912	XIEA6542	3.1.2.3	4				
		43	Bkr Stat Chg/Inh 2B9/2B10 Tie	XIEA6543	3.1.2.3	4				
		44	Bkr Stat Chg/Inh 2B10-1012	XIEA6544	3.1.2.3	4				
		45	Bkr Stat Chg/Inh 2A3-3014	XIEA6545	3.1.2.3	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
8	65	46	Bkr Stat Chg/Inh 2A4-401	XIEA6546	3.1.2.3	4				
		47	Bkr Status 2P75 2A100	XIEA6547	3.1.2.3					
		48	Bkr Status 2P2A 2A105	XIEA6548	3.1.2.3					
		49	Bkr Status 2P2C 2A106	XIEA6549	3.1.2.3					
		50	Bkr Status 2P8A 2A107	XIEA6550	3.1.2.3					
		51	Bkr Status 2P2B 2A205	XIEA6551	3.1.2.3					
		52	Bkr Status 2P2B 2A206	XIEA6552	3.1.2.3					
		53	Bkr Status 2P8B 2A207	XIEA6553	3.1.2.3					
		54	Bkr Status 2P32A 2H11	XIEA6554	3.1.2.3					
		55	Bkr Status 2P32B 2H21	XIEA6555	3.1.2.3					
		56	Bkr Status 2P32C 2H22	XIEA6556	3.1.2.3					
		57	Bkr Status 2P32D 2H12	XIEA6557	3.1.2.3					
		58	Bkr Status 2P3A 2H10	XIEA6558	3.1.2.3					
		59	Bkr Status 2P3B 2H20	XIEA6559	3.1.2.3					
		60	Bkr Status 2P4A 2A302	XIEA6560	3.1.2.3					
		61	Bkr Status 2P4B 2A303	XIEA6561	3.1.2.3					
		62	Bkr Status 2P35A 2A304	XIEA6562	3.1.2.3					
		63	Bkr Status 2P60A 2A305	XIEA6563	3.1.2.3					

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
8	65	64	Bkr Status 2P89A 2A306	XIEA6564	3.1.2.3					
		65	Bkr Status 2P89C 2A307	XIEA6565	3.1.2.3					
		66	Bkr Status 2P7B 2A311	XIEA6566	3.1.2.3					
		67	Bkr Status 2P4C 2A402	XIEA6567	3.1.2.3					
		68	Bkr Status 2P4B 2A403	XIEA6568	3.1.2.3					
		69	Bkr Status 2P35B 2A404	XIEA6569	3.1.2.3					
		70	Bkr Status 2P60B 2A405	XIEA6570	3.1.2.3					
		71	Bkr Status 2P89B 2A406	XIEA6571	3.1.2.3					
		72	Bkr Status 2P89C 2A407	XIEA6572	3.1.2.3					
8	66	00	Loss Of CCW To Ldwn Hx	X:CC6600	3.1.2.8	1				
8	67	00	Loss Of Chilled Wtr To RB	X:SW6700	3.1.2.6	1				
8	68	00	Loss Of ACW To Turb Lube Oil	X:SW6800	3.1.2.6	2				
8	69	01	Loss Of SW To CCW Loop 1	X:SW6901	3.1.2.6	4				
		02	Loss Of SW To CCW Loop 2	X:SW6902	3.1.2.6	4				
8	70	00	No CCW To MFWP LO Cooler	X:CC7000	3.1.2.6	3				
8	71	01	Loss Of SW Pump 2P4A	X:SW7101	3.1.2.6	1				
		02	Loss Of SW Pump 2P4C	X:SW7102	3.1.2.6	1				
		03	SW Pump A Mtr Wnd Temp High	X:SW7103	3.1.2.6	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
8	72	00	Loss of Stator Cooling Wtr	X:EA7200	3.1.2.8	1				
8	73	00	SDBCS Fails To Open Valves	X:PB7300	3.1.2.17	3				
8	74	01	ACW Header Break	XRSW7401	3.1.2.6	4				
		02	SW LOOP 1 AB Break	XRSW7402	3.1.2.6	4				
		03	SW Cntmt Clr Rtn Line Break	XRSW7403	3.1.2.6	3				
8	75	00	Loss of Condenser Vacuum	XRCR7500	3.1.2.5	1				
8	76	01	FWCS A 2LIC-1029 Failure	X:PF7601	3.1.2.17	2				
		02	FWCS B 2LIC-1129 Failure	X:PF7602	3.1.2.17	2				
8	77	01	Loss Of SW To D-G A	X:SW7701	3.1.2.6	3				
		02	Loss Of SW To D-G B	X:SW7702	3.1.2.6	3				
8	78	00	Loss Of Lake Dardanelle	X:SW7800	3.1.2.6	4				
8	79	01	Loss Of Lube Oil to MFWP A	X:LO7901	3.1.2.9 3.1.2.10	2				
		02	Loss Of Lube Oil To MFWP B	X:LO7902	3.1.2.9 3.1.2.10	2				
9	80	01	Loss Of 6.9 KV Swgr 2H1	X:EA8001	3.1.2.3	3				
		02	Loss Of 6.9 KV Swgr 2H2	X:EA8002	3.1.2.3	3				
		03	Loss Of 4.16 KV Swgr 2A1	X:EA8003	3.1.2.3	3				
		04	Loss Of 4.16 KV Swgr 2A2	X:EA8004	3.1.2.3	3				

ATTACHMENT F-2
 UNIT 2 MALFUNCTION VERIFICATION LISTING
 Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
9	80	05	Loss Of 4.16 KV Swgr 2A3	X:EA8005	3.1.2.3	3				
		06	Loss Of 4.16 KV Swgr 2A4	X:EA8006	3.1.2.3	3				
		07	Loss Of 480 VAC Bus 2B1	X:EA8007	3.1.2.3	3				
		08	Loss Of 480 VAC Bus 2B2	X:EA8008	3.1.2.3	3				
		09	Loss Of 480 VAC Bus 2B3	X:EA8009	3.1.2.3	3				
		10	Loss Of 480 VAC Bus 2B4	X:EA8010	3.1.2.3	3				
		11	Loss Of 480 VAC ESF Bus 2B5	X:EA8011	3.1.2.3	3				
		12	Loss Of 480 VAC ESF Bus 2B6	X:EA8012	3.1.2.3	3				
		13	Loss Of 480 VAC Bus 2B7	X:EA8013	3.1.2.3	3				
		14	Loss Of 480 VAC Bus 2B8	X:EA8014	3.1.2.3	3				
		15	Loss Of 480 VAC Bus 2B9	X:EA8015	3.1.2.3	3				
		16	Loss Of 480 VAC Bus 2B10	X:EA8016	3.1.2.3	3				
		17	Loss Of 480 VAC MCC 2B51	X:EA8017	3.1.2.3	3				
		18	Loss Of 480 VAC MCC 2B52	X:EA8018	3.1.2.3	3				
		19	Loss Of 480 VAC MCC 2B53	X:EA8019	3.1.2.3	3				
		20	Loss Of 480 VAC MCC 2B54	X:EA8020	3.1.2.3	3				
		21	Loss Of 480 VAC MCC 2B61	X:EA8021	3.1.2.3	3				
		22	Loss Of 480 VAC MCC 2B62	X:EA8022	3.1.2.3	3				

ATTACHMENT F-2
 UNIT 2 MALFUNCTION VERIFICATION LISTING
 Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
9	80	23	Loss Of 480 VAC MCC 2B63	X:EA8023	3.1.2.3	3				
		24	Loss Of 480 VAC MCC 2B64	X:EA8024	3.1.2.3	3				
		25	Loss Of 120 VAC Panel 2RS1	X:EA8025	3.1.2.3	3				
		26	Loss Of 120 VAC Panel 2RS2	X:EA8026	3.1.2.3	3				
		27	Loss Of 120 VAC Panel 2RS3	X:EA8027	3.1.2.3	3				
		28	Loss Of 120 VAC Panel 2RS4	X:EA8028	3.1.2.3	3				
		29	Loss Of 125 VDC Bus 2D01	X:EA8029	3.1.2.3	3				
		30	Loss Of 125 VDC Bus 2D02	X:EA8030	3.1.2.3	3				
		31	Loss Of 125 VDC Bus 2D03	X:EA8031	3.1.2.3	3				
		32	Loss Of 125 VDC Dist Panel 2RA1	X:EA8032	3.1.2.3	3				
		33	Loss Of 125 VDC Dist Panel 2RA2	X:EA8033	3.1.2.3	3				
		34	Loss Of 125 VDC Dist Panel 2D21	X:EA8034	3.1.2.3	3				
		35	Loss Of 125 VDC Dist Panel 2D22	X:EA8035	3.1.2.3	3				
		36	Loss Of 125 VDC Dist Panel 2D23	X:EA8036	3.1.2.3	3				
		37	Loss Of 125 VDC Dist Panel 2D24	X:EA8037	3.1.2.3	3				
		38	Loss Of 125 VDC Dist Panel 2D25	X:EA8038	3.1.2.3	3				
		39	Loss Of 125 VDC MCC 2D26	X:EA8039	3.1.2.3	3				
		40	Loss Of 125 VDC MCC 2D27	X:EA8040	3.1.2.3	3				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
9	81	00	SPARE	X:EA8100						
9	82	00	Statn Blkout-DGs-Not Availbl	X:EA8200	3.1.2.3	3				
9	83	01	Loss Of 120 VAC Instr Bus 2Y1	X:EA8301	3.1.2.3	4				
9	83	02	Loss Of 120 VAC Instr Bus 2Y2	X:EA8302	3.1.2.3	4				
		03	Loss Of 120 VAC Instr Bus 2Y3	X:EA8303	3.1.2.3	4				
		04	Loss Of 120 VAC Instr Bus 2Y4	X:EA8304	3.1.2.3	4				
9	84	00	Main Generator Trip - Lockout	X:EA8400	3.1.2.16	1				
9	85	00	Fail Of Mn Gen AC Vltg Reg	X:EA8500	3.1.2.22	1				
9	86	00	Failure Of Main Gen Exciter	X:EA8600	3.1.2.16	2				
9	87	01	Loss Of DG 1 Starting Air	X:EA8701	3.1.2.3	4				
		02	Loss of DG 2 Starting Air	X:EA8702	3.1.2.3	4				
		03	Loss of DG 1 Lube Oil	X:EA8703	3.1.2.3	4				
		04	Loss of DG 2 Lube Oil	X:EA8704	3.1.2.3	4				
		05	EDG 1 Gov Fails Open	X:EA8705	3.1.2.3	4				
9	88	00	Fail Unit Aux - Faulty L/O	X:EA8800	3.1.2.3	3				
9	89	01	Fail SU#2 Trans - Faulty L/O	X:EA8901	3.1.2.3	4				
		02	Fail SU#3 Trans - Faulty L/O	X:EA8902	3.1.2.3	4				
9	90	01	Loss Of 500 KV Lines	X:EA9001	3.1.2.3	1				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
9	90	02	Loss of 161 KV Lines	X:EA9002	3.1.2.3	1				
9	91	01	Breaker 5148 Trip	X:EA9101	3.1.2.3	3				
		02	Breaker 5122 Trip	X:EA9102	3.1.2.3	3				
		03	Breaker 5102 Trip	X:EA9103	3.1.2.3	3				
		04	Breaker 5106 Trip	X:EA9104	3.1.2.3	3				
		05	Breaker 5110 Trip	X:EA9105	3.1.2.3	3				
		06	Breaker 5126 Trip	X:EA9106	3.1.2.3	3				
		07	Breaker 5118 Trip	X:EA9107	3.1.2.3	3				
		08	Breaker 5114 Trip	X:EA9108	3.1.2.3	3				
		09	Breaker 125 Trip	X:EA9109	3.1.2.3	3				
		10	Breaker 126 Trip	X:EA9110	3.1.2.3	3				
		11	Breaker 1205 Trip	X:EA9111	3.1.2.3	3				
		12	Breaker 1218 Trip	X:EA9112	3.1.2.3	3				
		13	Breaker 1215 Trip	X:EA9113	3.1.2.3	3				
		14	Breaker 1212 Trip	X:EA9114	3.1.2.3	3				
10	92	01	2RITS-2429 Gas Decay Tanks	XRRM9201	3.1.2.22	3				
		02	2RITS-8233 Containment Purge	XRRM9202	3.1.2.22	3				
		03	2RITS-8540 Spent Fuel Vent	XRRM9203	3.1.2.22	3				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
10	92	04	2RITS-8542 Aux Building Vent	XRRM9204	3.1.2.22	3				
		05	2RITS-7828 Aux Extension Vent	XRRM9205	3.1.2.22	3				
		06	2RITS-8846-2 Pent Room Vent	XRRM9206	3.1.2.22	3				
		07	2RITS-8845-1 Pent Room Vent	XRRM9207	3.1.2.22	3				
		08	2RITS-8750-1 Control Room In	XRRM9208	3.1.2.22	3				
		09	2RITS-8925, 12, 9, 5 Cont Area	XRRM9209	3.1.2.22	3				
		10	2RITS-8271/31A Cont Part	XRRM9210	3.1.2.22	3				
		11	2RITS-8271/31B Cont Gas	XRRM9211	3.1.2.22	3				
		12	2RITS-2330 BMS/LRW Release	XRRM9212	3.1.2.22	3				
		13	2RITS-5202 CCW Loop 2	XRRM9213	3.1.2.22	3				
		14	2RITS-8914/15/16 Spent Fuel	XRRM9214	3.1.2.22	3				
		15	2RITS-8900 317' Area	XRRM9215	3.1.2.22	3				
		16	2RITS-8901 335' Area (CCPs)	XRRM9216	3.1.2.22	3				
		17	2RITS-8902 335' Area Elevation	XRRM9217	3.1.2.22	3				
		18	2RITS-8903 354' Area Elevation	XRRM9218	3.1.2.22	3				
		19	2RITS-8917 354' Area (Sampling)	XRRM9219	3.1.2.22	3				
		20	2RE-1057	XRRM9220	3.1.2.22					
		21	2RE-1007	XRRM9221	3.1.2.22					

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
10	92	22	2RE-0645	XRRM9222	3.1.2.22					
		23	Spare	XRRM9223	3.1.2.22					
		24	2RITS-4806A Letdown Gross	XRRM9224	3.1.2.22					
10	92	25	2RITS-4806B Letdown Iodine	XRRM9225	3.1.2.22					
10	93	00	Loss Of Instrument Air - Leak	XRAR9300	3.1.2.2	4				
10	94	00	Failed Fuel (0 - 1% of Total)	XRRK9400	3.1.2.14	4				
10	95	01	Lin Pwr Sfty Ch - A Fail H/L	XINI9501	3.1.2.21	4				
		02	Lin Pwr Sfty Ch - B Fail H/L	XINI9502	3.1.2.21	4				
		03	Lin Pwr Sfty Ch - C Fail H/L	XINI9503	3.1.2.21	4				
		04	Lin Pwr Sfty Ch - D Fail H/L	XINI9504	3.1.2.21	4				
10	96	01	Safety Ch 1 Calibration Err	XRNI9601	3.1.2.21	4				
		02	Safety Ch 2 Calibration Err	XRNI9602	3.1.2.21	4				
10	97	01	Log Pwr Ch - A Fail H/L	XINI9701	3.1.2.21	1				
		02	Log Pwr Ch - B Fail H/L	XINI9702	3.1.2.21	1				
		03	Log Pwr Ch - C Fail H/L	XINI9703	3.1.2.21	1				
		04	Log Pwr Ch - D Fail H/L	XINI9704	3.1.2.21	1				
10	98	01	S/U Ch - 1 Fail H/L	XINI9801	3.1.2.21	2				
		02	S/U Ch - 2 Fail H/L	XINI9802	3.1.2.21	2				

ATTACHMENT F-2
 UNIT 2 MALFUNCTION VERIFICATION LISTING
 Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No / App	UnSat Inits	Sat Inits
11	99-113	Vars	Annunciator Malfunctions		3.1.2.22	1,23,4				
12	114-127	Vars	Valve Malfunctions		3.1.2.23	1,2,3,4				
13	128	01	PZR Level Control Ch A (LEVEL)	XITR0101	3.1.2.18	3				
		02	PZR Pressure Control Ch B	XITR0102	3.1.2.18	3				
13	128	03	PZR Pressure Control Ch A	XITR0103	3.1.2.18	3				
		04	PZR Pressure 2PT-4623-1	XITR0104	3.1.2.18	3				
		05	PZR Pressure 2PT-4623-2	XITR0105	3.1.2.18	3				
		06	PZR Press 2PT-4601-2	XITR0106	3.1.2.18	3				
		07	PZR Press 2PT-4624-2	XITR0107	3.1.2.18	3				
13	129	01	Letdown Hx Outlet Temp	XITR0201	3.1.2.22	1				
		02	Regen Hx Letdown Outlet Tmp	XITR0202	3.1.2.22	1				
		03	VCT Level Xmitr 2LT-4861	XITR0203	3.1.2.22	3				
		04	Spare	XITR0204						
		05	2P36A Suct 2PS-4833	XITR0205	3.1.2.22	3				
		06	LD Hx Outlet 2TE-4805	XITR0206	3.1.2.22	3				
13	130	01	LPSI Flow 2FT-5091	XITR0301	3.1.2.22	3				
13	131	01	S/G Lvl Cntrl Ch A	XITR0401	3.1.2.22	2				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
13	131	02	2PT-1041-1 SG A Pressure	XITR0402	3.1.2.22	2				
		03	2LT-1031-2 SG A Level	XITR0403	3.1.2.22	2				
		04	2LT-1031-3 SG A Level	XITR0404	3.1.2.22	2				
		05	2LT-1131-1 SG B Level	XITR0405	3.1.2.22	2				
		06	2LT-1131-4 SG B Level	XITR0406	3.1.2.22	2				
		07	Spare Malfunction	XITR0407						
13	132	01	Stm Hdr Press	XITR0501	3.1.2.22	2				
		02	Stm Flow 2FT-1030	XITR0502	3.1.2.22	2				
		03	2P76 Disch Press 2PS-2620	XITR0503	3.1.2.22	2				
		04	2P19 Suct Press 2PS-2600	XITR0504	3.1.2.22	2				
		05	Spare	XITR0505						
		06	Bearing Header Press 2P76	XITR0506	3.1.2.22	2				
		07	EHC Header Press 2PS-9660	XITR0507	3.1.2.22	2				
		08	EHC Header Press 2PS-9661	XITR0508	3.1.2.22	2				
		09	Fail 2PT-0251 TP Signal	XITR0509	3.1.2.22	2				
13	133	01	2P8B Flow 2FIS-0723	XITR0601	3.1.2.22	4				
		02	2P1A Suction Flow 2FIS-0735	XITR0602	3.1.2.22	4				
		03	2P1A Exh Press 2PS-0374	XITR0603	3.1.2.22	4				

ATTACHMENT F-2
UNIT 2 MALFUNCTION VERIFICATION LISTING
Revised: 10/31/95

Sys #	Sim Malf #	Comp #	Description	Malf #	ANSI 3.5	Yr	Date of Test	DR No If App	UnSat Inits	Sat Inits
13	133	04	2P1A Exh Press 2PS-0371	XITR0604	3.1.2.22	4				
		05	2P7A Suction 2PIS-0795-2	XITR0605	3.1.2.22	4				
		06	2P7B Suction 2PIS-0789-1	XITR0606	3.1.2.22	4				
		07	FWCS Feed Flow 2FT-1029	XITR0607	3.1.2.22	4				
13	134	01	SPDS VCT Lvl L4861 5%/MIN	XITR0701	3.1.2.22	3				
13	135		Spare	XITR0800						
13	136	01	SPDS Update Failure	XITR0901	3.1.2.22	3				
		02	RRS Hot Leg 2TE-4614	XITR0902	3.1.2.22	3				
		03	RRS Cold Leg 2TE-4615	XITR0903	3.1.2.22	3				

ATTACHMENT F-3

TIME-IN-LIFE MALFUNCTIONS DATA

ATTACHMENT F-4

ANTICIPATED PLANT RESPONSE SHEETS

ATTACHMENT H
OPERABILITY TEST STAFF

<u>Position</u>	<u>Name</u>	<u>Title/License</u>
<u>Test Director</u>	_____	<u>SRO</u>
<u>Test Director</u>	_____	<u>SRO</u>
<u>Test Director</u>	_____	<u>SRO</u>
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Operator</u>	_____	_____
<u>Simulator Support</u>	_____	<u>SR. ENG.</u>
<u>Simulator Support</u>	_____	<u>ENG</u>
<u>Simulator Support</u>	_____	<u>ENG</u>