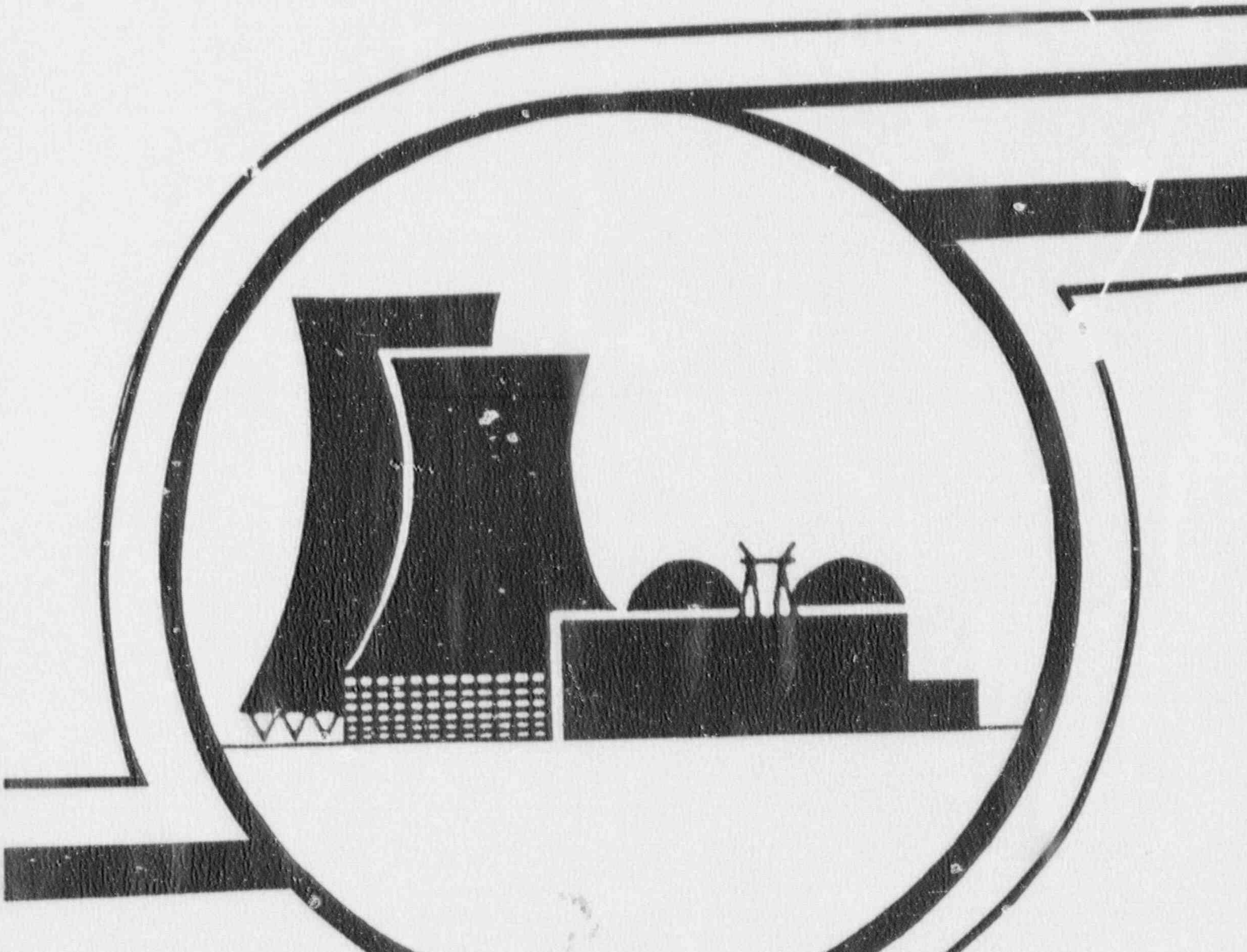
SIMULATOR CERTIFICATION REPORT

BEAVER VALLEY POWER STATION

UNIT 1



Duquesne Light

NRC FORM 474 (1-90) 10 CFR 55.45(b), 55.4 and 55.5

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0138 EXPIRES: 9-30-92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 120 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0138), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

SIMULATION FACILITY CERTIFICATION

INSTRUCTIONS. This form is to be filed for initial certification, recertification (if required), and for any change to a simulation facility performance testing plan made after initial submittal of such a plan. Provide the following information, and check the appropriate box to indicate reason for submittal.

FACILITY: Beaver Valley Power Station Unit 1

DOCKET NUMBER: 50-334

LICENSEE: Duquesne Light Company

DATE: 12/18/90

This is to certify that:

1. The above named facility licensee is using a simulation facility consisting solely of a plant-referenced simulator that meets the requirements of 10 CFR 55.45.
2. Documentation is available for NRC review in accordance with 10 CFR 55.45(b).
3. This simulation facility meets the guidance contained in ANSI/ANS 3.5, 1985, as endorsed by NRC Regulatory Guide 1.149.
   If there are any exceptions to the certification of this item, check here [X] and describe fully on additional pages as necessary.

NAME *(or other identification)* AND LOCATION OF SIMULATION FACILITY

Beaver Valley Power Station Unit 1 Simulator
Beaver Valley Training Center
Shippingport, PA 15077

[X] SIMULATION FACILITY PERFORMANCE TEST ABSTRACTS ATTACHED. *(For performance tests conducted in the period ending with the date of this certification)*

DESCRIPTION OF PERFORMANCE TESTING COMPLETED *(Attach additional page(s) as necessary, and identify the item description being continued)*

Initi l Certification - See attached Transient Steady State, Malfunction and Normal Operating Tests.

[X] SIMULATION FACILITY PERFORMANCE TESTING SCHEDULE ATTACHED. *(For the conduct of approximately 25% of performance tests per year for the four year period commencing with the date of this certification.)*

DESCRIPTION OF PERFORMANCE TESTING TO BE CONDUCTED. *(Attach additional page(s) as necessary, and identify the item description being continued)*

Refer To Enclosed Test Schedule.

[ ] PERFORMANCE TESTING PLAN CHANGE. *(For any modification to a performance testing plan submitted on a previous certification)*

DESCRIPTION OF PERFORMANCE TESTING PLAN CHANGE *(Attach additional page(s) as necessary, and identify the item description being continued)*

Not Applicable. Initial Submittal

[ ] RECERTIFICATION *(Describe corrective actions taken, attach results of completed performance testing in accordance with 10 CFR § 55.45(b)(5)(v). Attach additional page(s) as necessary, and identify the item description being continued.)*

Not Applicable. Initial Submittal

Any false statement or omission in this document, including attachments, may be subject to civil and criminal sanctions. I certify under penalty of perjury that the information in this document and attachments is true and correct.

SIGNATURE – AUTHORIZED REPRESENTATIVE	TITLE	DATE
J.D. Sieber (signed) J.D. Sieber	Vice President Nuclear Group	12-20-90

In accordance with 10 CFR § 55.5, Communications, this form shall be submitted to the NRC as follows:

BY MAIL ADDRESSED TO: Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555

BY DELIVERY IN PERSON TO THE NRC OFFICE AT: One White Flint North, 11555 Rockville Pike, Rockville, MD

Exceptions to ANSI/ANS 3.5 and/or Regulatory Guide 1.149

The following exceptions represent equipment function required by ANSI/ANS 3.5, which are not available in the Unit 1 Simulator. The training impact and/or plan to address their differences are as follows. Scheduled changes to the simulator will reduce the number of exceptions taken in future reports.

1. Unit I Plant Process Computer (P-250)
   ANSI/ANS 3.5 Section 3.2.1 - Currently the Unit I plant process computer is not replicated on the simulator. The Unit I plant process computer is scheduled for replacement during the 1991 refueling outage. Training impact is limited to the inability to perform computerized monitoring and trending. These functions are currently provided by the training instructor. The replacement plant process computer hardware for the simulator has been ordered, and should be available for training within 18 months after plant acceptance. (Refer to Section 3.6 for planned completion)

2. Normal Plant Evolutions
   ANSI/ANS 3.5 Section 3.1.1 (7) - Normal Plant Evolutions - The evolution of plant startup, shutdown and power operations with less than full coolant flow will not be performed as BVPS-1, is not licensed to, or have procedures to operate with less than full core flow.

3. E.R.F. Electrical Distribution/Turbine Water Induction Panel
   ANSI/ANS 3.5 Sections 3.1.1 (3) and 3.2.1 Normal Operations and Panel Simulation - E.R.F. Electrical Distribution/Turbine Water Induction Panel is retired in place in the Unit I Control Room with the exception of 4 control switches for reheater excess vent valves. The panel is not installed in the simulator and the control switches are controlled by a Local Operator Action feature of the simulator. The four (4) reheater excess vent valve control switches change the vent path of the reheater and do not have any observable affect on any plant parameter. The panels and switches will not be installed.

4. Radiation Monitoring System Control Console
   ANSI/ANS 3.5 Section 3.2.1 - The Radiation Monitoring System Control Console which includes the steam generator blowdown radiation monitor is not installed in the simulator control room. After review of this console functions, it was determined to install this console and to integrate the steam generator blowdown radiation monitor. The steam generator blowdown radiation monitor is addressed in the emergency and abnormal procedures as an indicator for steam generator tube leaks. The training impact is a concern since the operator is unable to access the correct panel in the simulator. Administrative action to purchase and integrate the console has commenced. Expected integration to occur within 18 months after procurement is authorized.

BEAVER VALLEY POWER STATION UNIT I SIMULATOR
INITIAL CERTIFICATION REPORT

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Section	Title
APPENDIX 1	List of Initial Conditions
APPENDIX 2	List of In Plant Local Operator Actions
APPENDIX 3	Proposed Simulator Malfunction Testing Schedule
APPENDIX 4	Simulator Discrepancy Reporting and Resolution
APPENDIX 5	Simulator Data Base Tracking
APPENDIX 6	BVPS Transient Review Committee Expereince Summaries

1. Simulator Information

1.1 General

The Duquesne Light Company is submitting this report as the initial certification report prescribed by 10CFR55.45(b)(1)(ii). The Duquesne Light Company operates Beaver Valley Power Station Unit I which is a Westinghouse PWR 3-loop 2652 MWTH power plant. The Beaver Valley Power Station Unit I simulator replicates the controls area of Unit I. The simulator was constructed by Westinghouse in the early 1980's with the first training classes conducted in February of 1985. The Unit I simulator is currently used for training the Beaver Valley Unit I and Unit II operators. A Unit II simulator is currently being built by Westinghouse and is scheduled to be available for training in 1991.

Duquesne Light Company and Westinghouse has entered an agreement to install the Westinghouse Advance Primary Systems Models (SIMARC 4.0)into the Unit I simulator. The installation of the upgrade is to commence in January 1991. Completion of integration and testing of the upgrade is scheduled for May 1992.

1.2 Physical Comparison of Unit I and Simulator Control Rooms

A physical comparison of the BVPS Unit I control room and the Unit I simulator was conducted. This comparision was to ensure that sufficient controls, instrumentation, alarms and other man-machine interfaces are installed to perform normal operations and respond to the malfunctions. The comparison was subdivided into four areas; controls area physical arrangement (1.2.1), controls area (1.2.2), systems (1.2.3) and general control room environments (1.2.4). The controls area comparison is intended to identify any differences in panel arrangement or major equipment differences. In the Controls Area Equipment Differences Section (1.2.2) the details of the panel equipment differences are provided, i.e. a switch on a specific panel not being installed. Section 1.2.3 Systems, compares the systems which can be operated from the Unit I controls area verses the systems which are interactively modelled in the Unit I simulator.

Since the delivery of the simulator, Beaver Valley Power Station Unit I changes have been tracked by reviewing the Design Change Packages (DCP's) issued by DLC engineering. If this review indicates that action is required, a simulator Change Request (CR) is implemented per Appendix 5 Simulator Data Base Tracking Procedure. The Change Requests which have been installed in the simulator are listed in Section 1.5.

Another method used to maintain hardware fidelity has been to take several series of detailed photographs of the Beaver Valley Power Station Unit I control boards. These photographs were compared to the Unit I simulator by the simulator staff. The last series of photographs were taken in February of 1990 and were the data point for hardware comparison for this report. Specific data sheets covering meter scales, pointers, labelling etc. of the Beaver Valley Power Station Unit I control boards were completed and compared with the Unit I simulator's configuration.

During these reviews the demarcations of the control boards were compared. Also, the placement and color of markings used as operator aids were visually checked and verified.

Following the completion of these comparisons, a difference evaluation committee was convened to evaluate the impact of differences and to recommend any further action. The committee was composed of the Unit I Operations Manager, the Training Manager, the Director of Operations Training, Supervisor of Licensed Operator Training, Supervisor of Simulator Training and the Coordinator of Simulator Training. The differences of sections 1.2.1, 1.2.2. 1.2.3., 1.2.4 between Unit I and the Unit I simulator were evaluated as to potential training impact or detrimental effect on operator performance during simulator training. The actions undertaken as a result of the committee's review are summarized in the appropriate sections of this report.

1.2.1 Control Room Physical Arrangement

The physical arrangement of the simulator's control room duplicates the Beaver Valley Power Station Unit I controls area. The controls area is defined in Figure 1.2.1.1. The BVPS Unit I control room drawing is provided as Figure 1.2.1.2, and the simulator control room in Figure 1.2.3.

B.V.P.S. - O.M.
Beaver Valley Control Room Area

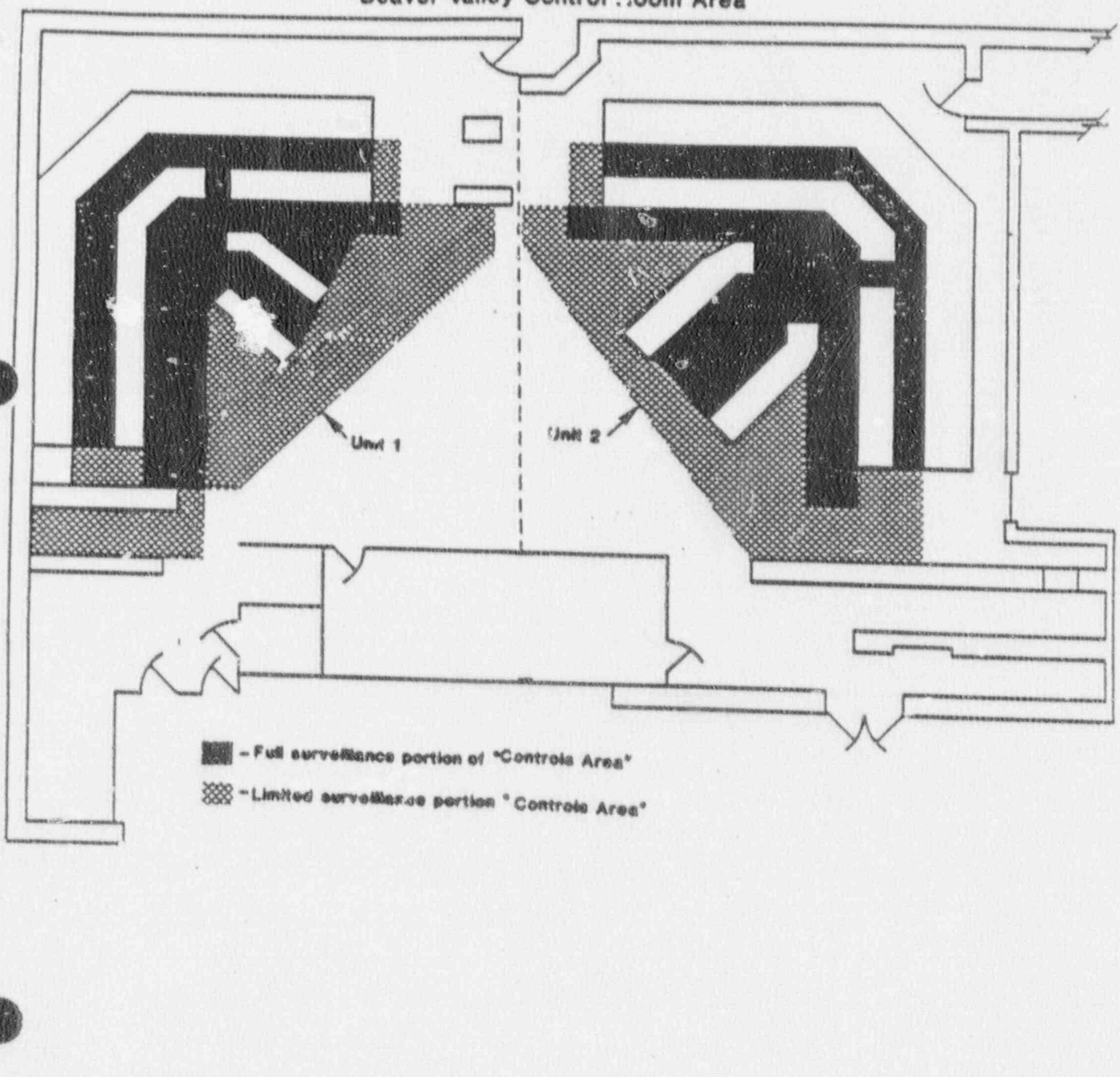
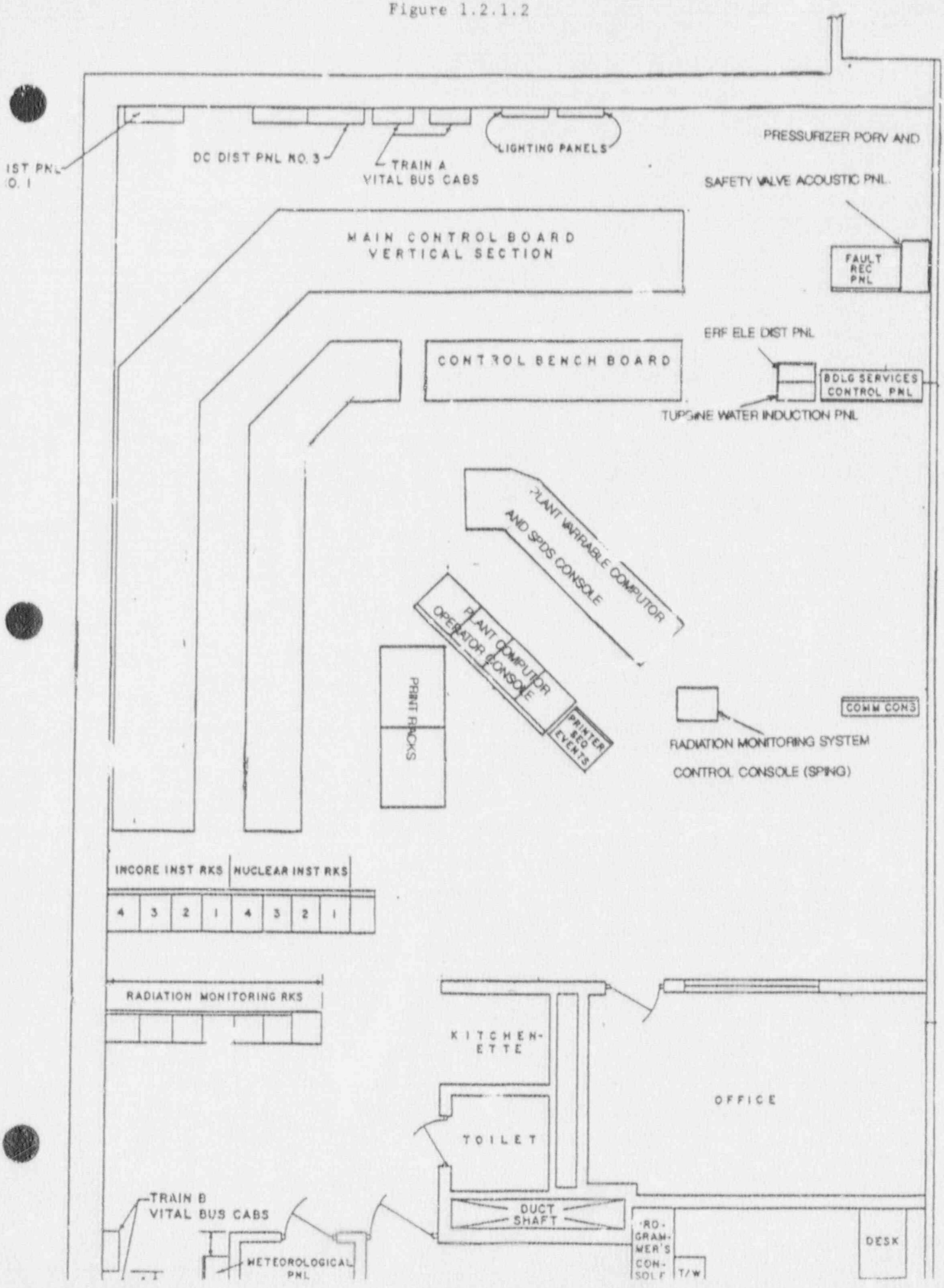


Figure 1.2.1.1

Figure 1.2.1.2


IST PNL
O. 1
DC DIST PNL NO. 3
TRAIN A
VITAL BUS CABS
LIGHTING PANELS
PRESSURIZER PORV AND
SAFETY VALVE ACOUSTIC PNL
MAIN CONTROL BOARD
VERTICAL SECTION
FAULT
REC
PNL
ERF ELE DIST PNL
CONTROL BENCH BOARD
BDLG SERVICES
CONTROL PNL
TURBINE WATER INDUCTION PNL
PLANT VARIABLE COMPUTOR
AND SPDS CONSOLE
PLANT COMPUTOR
OPERATOR CONSOLE
PRINT RACKS
PRINTER
SEQ
EVENTS
COMM CONS
RADIATION MONITORING SYSTEM
CONTROL CONSOLE (SPING)
INCORE INST RKS
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4
3
2
1
4
3
2
1
RADIATION MONITORING RKS
KITCHEN-
ETTE
OFFICE
TOILET
TRAIN B
VITAL BUS CABS
DUCT
SHAFT
RO-
GRAM-
MER'S
CON-
SOLE
T/W
DESK
METEOROLOGICAL
PNL

Beaver Valley Power Station
Unit 1 Simulator

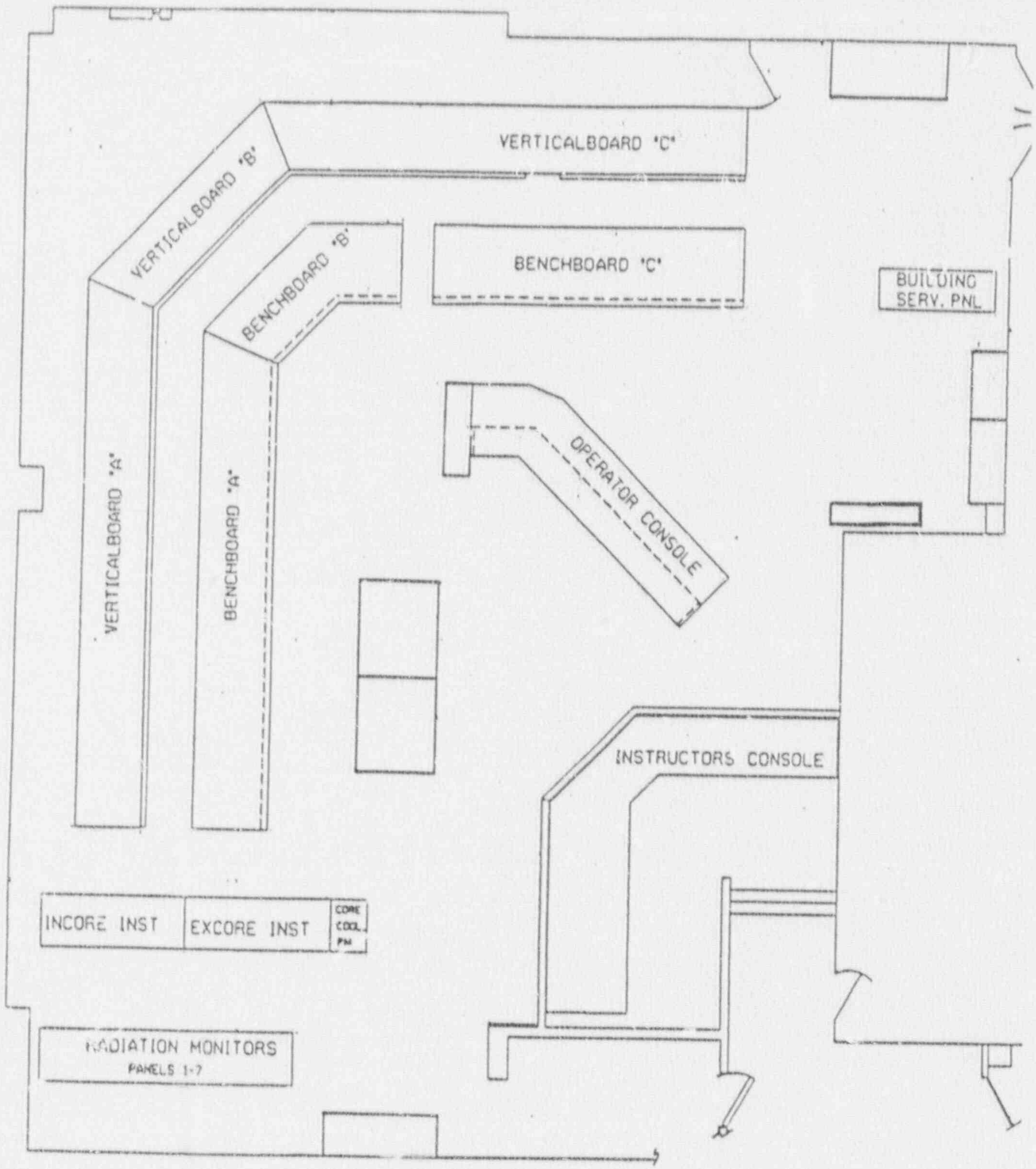

Figure 1.2.3

1.2.1A Panel/Equipment Not Included in Controls Area

The following are layout or major panel differences between the Unit I controls area and the Unit I simulator.

1. Plant P-250 computer operator console and associated support equipment.
2. Electrical Fault Monitoring Panel.
3. Pressurizer PORV and safety valve acoustic monitoring panel.
4. ERF electrical distribution/turbine water induction panel.
5. Radiation monitoring system control console.
6. Sequence of events computer printer.

1.2.1B Resolution of Control Area Differences

1. Plant Process Computer (P-250)

The simulator was ordred without a fully scoped plant process computer because the Unit I plant had intended to upgrade the plant computer hardware. The simulator plant process computer hardware is only partially modeled. Also not installed are the alarm and trend typewriters, which interface though the P-250 computer. Not all parameter trends are available to the operator while training with the simulator. Examples of some of the parameter trends used during normal operation are:

a. Main generator hot gas temperatures

b. Main feed pump motor temperatures

However, any data needed by the operators, is provided by the computer engineer, role-played by the simulator instructor. The current scope of the plant computer installation does not impact the operators ablity to correctly use emergency or abnormal procedures.

Unit I is to install a new plant computer system during the next refueling outage scheduled in the spring of 1991. The Unit I simulator be upgraded to replicate the new computer system. The new hardware will be installed in the simulator following installation in Unit I. This acton is being tracked by CR 0093.

2. Electrical Fault Monitoring Panel

The equipment mounted within the panel is for reviewing post electrical distribution faults. The system uses magnetic tape for recording and must be read off-site.

The electrical fault monitoring equipment has no training value or direct impact on operations during normal or emergency procedures. The committee determined that there would be no training value in panel installation.

3. Pressurizer P.O.R.V. and Safety Valve Acoustic Monitoring Panel

This panel houses interface equipment between field-mounted acoustic monitors and control room area alarms and indication. The panel also supplements the plant's annunciation system with its own local alarm, alarm reset and acknowledge push-buttons. Alarm reset functions are performed by the simulator instructor via a local operator action (LOA). The committee directed that the local panel alarm has limited training value. The Pressurizer P.O.R.V. Valve Acoustic Monitoring panel that require operator actions are addressed in alarm response procedures. The committee directed that a simulation of the noise generated by a lifting valve be installed. This additional feature of the Unit I Simulator is tracked by CR 77.

4. <u>Emergency Response Facility (E.R.F.)/Turbine Water Induction Panel</u>

This one panel has controls mounted on both sides. One side is the E.R.F. black diesel controls and indication. On the other side of the panel is mounted the turbine water induction equipment. The design change for water induction has been cancelled and the ERF distribution panels are being phased out. The panel will be retired in place. Located on the turbine water induction panel are switches for heater excess vent valves. These switches are addressed in normal operations procedures for turbine start up. This function is performed by using a local operation (LOA) feature of the simulator. The committee determined that the panel need not be installed as there is no impact on training.

5. <u>Radiation Monitoring System Control Console</u> (Sping)

This console gathers and processes data from three ventilation particulate monitors, three ventilation noble gas monitors and the steam generator blowdown monitor. These particulate and noble gas radiation monitors are not addressed in any normal or emergency operating procedures. The steam generator blowdown radiation monitor was later installed on this console due to a recent plant modificaton which added a new blowdown system. This steam generator blowdown radiation monitor is addressed in the Unit I emergency operating procedures and abnormal procedures as an indicator for steam generator tube leaks or rupture. The committee recommended the installation of the SPING Radiation Console with the features required to use this blowdown radiation monitor. (CR-149)

6. <u>Sequence of Events Computer Printer</u> (SER)

The Sequence of Events Computer Printer is a high speed sequence recorder which has 1400 digital inputs and 200 thermocouple analog inputs. The digital inputs operate on contact change of state and print in sequence to the nearest 2 milliseconds.

There are no normal or EOP procedures that address the use of the Sequence of Events Computer/Printer. This system is used primarily as a diagnostic tool for post plant upsets, and therefore, has limited training value. Information to support training is provided by the simulator instructor during simulator operations. The committee did not recommend the installation of the SER, as instructor supplied information adequately replaces the hardware, based upon training experience and feedback from the Unit I operations staff.

1.2.2 Control Area Equipment Differences

The Beaver Valley Power Station Unit I simulator controls area comparison was conducted using actual plant photographs and check sheets for each control switch, controller, indicator recorder and meter.

A detailed review of hardware, meters, recorders controllers, control switches, indicators annunciators and other displays that would function during normal, abnormal and emergency evolutions were reviewed by the committee.

The committee's review of control board switches included the following details:

- Switch type
- Lable color, wording, letter size
- Location
- Available positions

The committee's review of indicators, recorders and meters included the following details:.

Correct scale

Correct engineering units

Lable color, wording, letter size

Calibration sticker color

Location

Pointer color and shape

Placement of operator aids

A review of each annunciator window and status light was conducted with the following details reviewed for each:

Annunciator location

Wording and wording size

Annunciator window color (green or red)

Status light color

The committee concluded that none of the differences are of a significance that would cause an operator to take any different action in the simulator than in the Unit I control room. The committee did recommend that actions be taken to correct some minor differences in scale demarcations and lettering. These actions are being tracked by the Simulator Discrepancy Reporting and Resolution System.

1.2.3 Systems Not Modeled or Not Fully Modeled

The Beaver Valley Power Station Unit 1 Simulator models most of Unit I control room operated systems. The following systems are not modeled or not fully modeled in the Simulator. These systems provide information to the control room operator during normal, abnormal or emergency operating procedure usage.

1. Fire Protection (Not Modeled)
2. Radiation Monitoring System Control Console (Sping) (Not Modeled)
3. Plant Variable Computer (Partial)
4. Plant Computer System P-250 (Partial)
5. Pressurizer PORV and safety (Acoustic Monitor) (Partial)
6. Sequence of Events Recorder (Not Modeled)
7. Safety Parameter Display System (SPDS) (Partial)
8. Liquid Waste (Partial)
9. Gaseous Waste (Partial)
10. CTMT Wide Range H_2 Analyzer (Partial)
11. Main Generator Systems (Partial)
12. Auxillary Building Ventilation (Partial)

1.2.3 (Con't)

In order for the operator to take expected actions during normal, abnormal and emergency operations during simulator training and evaluation sessions, the committee reviewed systems controlled from the control room or system interfaces that would be observable to the control room operator.

Their recommendations are as follows:

1. Fire Protection

   Add deluge valve operation ano it's effects. (CR-132)

2. Radiation Monitoring System Control Console (Sping)

   Add Sping console and interactively model steam generator blow down rad monitor. (CR-149)

3&4. Plant Variable Computer

   Access the P-250 upgrade to determine training impact of removing current P-250 features then upgrade PVC to Unit I. (CR-93)

5. Pressurizer PORV and Safety Valve Acoustic Monitoring Panel

   Research methods available to simulate noise of liting PORV or safety. (CR-77)

6. Sequence of Everts Recorder

   The committee found that the current method of simul ion was adequate.

7. Safety Parameter Display System (SPDS)

   Determine why; it is necessary to depress the "SHIFT" key in order to page when using the simulator's SPDS - correct if possible. (TR-324)

8&9. Liquid Waste and Gaseous Waste

   The committee found these systems to be adequate in present scope.

1.2.3 (Con't)

10. Hydrogen Analyzer

After the analyzer is started (via LOA feature), a set value is recorded - committee suggested that a calculated value be recorded based on LOCA size and activity. (CR-143)

11. Main Unit Generator

Include "Backfeed" feature and the means to monitor generator gas temperatures with the new plant computer upgrade. (CR-154)

12. Ventilation System

Considering adding feature for vibration cutout for containment fans. (CR-154)

Items 6, 8, 9 - The committee found these systems to be adequate in present scope.

1.2.4 Simulator Control Room Environment

The Beaver Valley Power Station Unit 1 Simulator replicates the Unit I control room environment with differences as noted. The plant communication systems that an operator needs to communicate with an auxiliary operator or other in-plant support activities are present and operational in the simulator. This communication equipment includes Bell Telephone, plant paging system, PAX phone and system operator phone. The plant's radio system is physically simulated but not operable. All annunciator panels are operable and have identical tones as the Unit I panels.

1.2.4A

Existing differences in Controls Area Environments are:

BVPS-1 Simulator	BVPS Unit I
1. Computer flooring	Carpet covered
2. Limited AC emergency lighting	DC emergency lighting
3. Flourescent lighting	Non-glaze full spectrum tube lighting
4. Unit II simulator will be installed in a separate building	Unit II control room separated by glass partition
5. Small video camera and several small overhead microphones	Four large overhead T.V. cameras
6. Phones - 1 Bell, 1 system operator	Phones - EPP direct ringdown (2), Mansfield (1), Red NRC phone (1), Bell phones (4)
7. No noise upon CREBAPS initiation	Air in-rush noise upon CREBAPS initiation

1.2.4B Resolution of Environment Differences

1. The actual control room floor was fully carpeted in 1988 to reduce overall noise. The simulator floor is standard computer flooring, and has remained uncovered. Committee determined that there was no training impact involved with this item and recommended no furter action.

2. Simulated emergency lighting is limited to partially deenergizing normal fixtures. This adequately lowers lighting levels during evolutions involving losses of associated power sources. Committee recommended no further action.

3. Actual control room flourescent fixtures were recently relamped using non-glaze, full spectrum tubes. As a result, the existing simulator ambient light level is relatively brighter. However, this does not detract from training. Committee recommended no further action.

4. Since the Unit II simulator was not planned as part of the original Unit I simulator building layout. The Unit II simulator will be located in an adjacent building. Since simulator exercises involve phone or page communication between units, visual contact is in not necessary. Committee recommended no further action.

5. The simulator video camera and microphones are used to record crew performance for reviews and critiques. The four large cameras in the actual control room were originally used for remote ERF (Emergency Response Facility) viewing of controls during abnormal/accident conditions.

1.2.4B (Con't)

These cameras are currently retired in place. The size and appearance difference does not affect operator line-of-sight. Committee determined there was no training impact and recommended no further action.

6. Although the simulator telephone capability is less than the control room, adequate equipment to all support activities (via instructor booth) is supported. Currently, plans are to install multiple phone channels to simulate calling specific groups; this will enhance the simulator instructor's ability to act as these groups/individuals. Also, the committee recommended that a non-functional Red NRC phone be acquired, if available, and installed on the communications console.

7. Control Room Emergency Bottled Air Pressurization System (CREBAPS) actuation in the control room yields a noticeable sound. CREBAPS actuations on the simulator result in changes in associated control and indications. The committee felt that the lack of audible noise upon initiation had limited training impact. The committee recommended the installation of simulated noise. (CR-77)

1.3 Instructor Interface

1.3.1 Initial Conditions

The Beaver Valley Power Station Unit 1 Simulator has 30 protected initial conditions with the capacity of an additional 24 initial conditions to be used by the instructor when required to store non-protected initial conditions. Additionally, the simulator has backtrack capabilities to backup the simulator from 5 to 30 minutes. A list of initial conditions can be found in Appendix 1.

1.3.2 Malfunctions

The Beaver Valley Power Station Unit 1 Simulator presently has approximately 200 malfunctions. These malfunctions can be entered in sequence or simultaneously. The insertion of malfunctions cannot be detected by the trainee on the floor. The number of malfunctions can be expanded to approximately double the current number or approxmately 400. The Malfunction Test Abstracts are included in Section 3.0. The Malfunction Test Abstracts provide a brief overlook of variations, ramp time, leak magnitude and provides initial and final conditions.

The malfunctions available on the simulator to create the conditions required by the ANSI/ANS-3.5-1985, Section 3.1.2 follows:

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corresponding to the ANSI requirement
1. Loss of coolant:	
a. Significant PWR S/G tube leaks	a. RCS-3
b. Inside/outside primary containment	b. RCS-1, RCS-2, RCS-4, RCS-5 RCS-6, RCS-7, CHS-3, CHS-11, CHS-12, CHS-16 SIS-13, CCW-9, CCW-2
c. Large/small Rx coolant breaks (including saturation condition)	c. PRS-5, CRF-6, RCS-1, RCS-2,
d. Failure of safety/relief valves	d. PRS-1, PRS-2, PRS-3, PRS-4

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corresponding to the ANSI requirement
2. Loss of instrument air to the extent that the whole system or individual headers can lose pressure and affect the plant's static or dynamic performance.	2. AUX-1, AUX-2, AUX-3, AUX-4, CCT-1, CCT-3, CCT-4
3. Loss or degraded electrical power to the station, including loss of offsite power, loss of emergency power, loss of emergency generators, loss of power to the plant's electrical distribution buses and loss of power to the individual instrumentation buses (AC as well as DC) that provide power to control room indication or plant control functions affecting the plant's response.	3. EPS-1, EPS-2, EPS-3, EPS-4, EPS-5, EPS-6, EPS-7, EPS-8, EPS-9, EPS-11, EPS-13, EPS-14, EPS-17, EPS-12, EPS-15, EPS-16, EPS-18, TUR-5, TUR-4, TUR-15
4. Loss of forced core coolant flow due to single or multiple pump failure.	4. RCS-5, RCS-6, RCS-8, RCS-9, RCS-10

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corrresponding to the ANSI requirement
5. Loss of condenser vacuum including loss of condenser level control.	5. AUX-6, CND-8, CND-9, CND-12, CND-13, CND-1, CND-17, CND-18
6. Loss of service water or cooling to individual components	6. AUX 10, AUX-12
7. Loss of shutdown cooling	7. RHR-1, RHR-2, RHR-5
8. Loss of component cooling system or cooling to individual components	8. CCW-2, CCW-4, CCW-5, CCW-1, CCW-6, CCW-3, CCW-8, CCW-9 AUX-10, AUX-12
9. Loss of normal feedwater or normal feedwater system failure	9. CND-1,CND 3, CND 14, FWM-1, FWM-2, FWM-3, FWM-5, FWM-4, FWM-6, FWM-7, FWM-8, FWM-9

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corresponding to the ANSI requirement
10. Loss of all feedwater (normal and emergency)	10. FWM-11, FWM-13, FWM-1, CND-1, MSS-17
11. Loss of protective system channel	11. RCS-14, RCS-16, RCS-19, PRS-6, PRS-8, SIS-10
12. Control rod failure including stuck rods, drifting rods, rod drops, and misaligned rods.	12. CRF-4, CRF-5, CRF-11, CRF-3
13. Inability to drive control rods	13. CRF-2, CRF-6,
14. Fuel cladding failure resulting in high activity in reactor coolant or off gas and the associated high radiation alarms	14. RCS-11
15. Turbine trip	15. TUR-1, TUR-8, TUR-6

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corresponding to the ANSI requirement
16. Generator trip	16. EPS-18
17. Failure in automatic control system(s) that affect reactivity and core heat removal	17. CRF-6, CRF-7, CRF-14, SIS-8, CHS-7, CHS-8, CHS-9, CHS-10, CHS-20, CHS-17, CHS-19
18. Failure of reactor coolant pressure and volume control systems (PWR)	18. CHS-1, CHS-2, CHS-4, CHS-5, CHS-6, CHS-13, CHS-14, CHS-15, CHS-21, CHS-22, CHS-24, PRS-7, PRS-13
19. Reactor trip	19. CRF-14

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corresponding to the ANSI requirement
20. Main steam line as well as main feed line break (both inside and outside containment)	20. MSS-1, MSS-2, MSS-6, MSS-12, MSS-17, FWM-3, FWM-4, CND-3
21. Nuclear instrumentation failure(s)	21. NIS-1, NIS-2 NIS-3, NIS-4, NIS-5, NIS-6, NIS-7, NIS-8
22. Process instrumentation, alarms, and control system failures	22. MSS-14, MSS-15, MSS-16, MSS-9, MSS-7, MSS-10, MSS-11, MSS-12, MSS-13, EPS-6, EPS-8, CRF-6, CRF-7, CRF-8, CRF-10, FWM-14, FWM-15, FWM-16

ANSI/ANS-3.5-1985 Section 3.1.2	Simulator Malfunctions corresponding to the ANSI requirement
22. (Con't)	PRS-6, PRS-7, PRS-8, PRS-9, PRS-10, PRS-11, PRS-12, PRS-13, RCS-15, RCS-17, RCS-20, TUR-18, TUR-12, TUR-14, RHR-3, RHR-4, SIS-14, RCS-18
23. Passive malfunctions in systems, such as engineered safety features feedwater systems	23. SIS-13, SIS-11, SIS-7, SIS-4, SIS-1, MSS-17, FWM-13
24. Failure of the automatic reactor trip system	24. CRF-12
25. Reactor pressure control system failure	N/A BWR

1.3.3 Controls provided for component operation outside of the control room.

The Unit I Simulator has the capability to duplicate the actions taken by operators outside the Unit I control room during normal and emergency operations. Appendix 2 is a listing of Local Operator Actions (LOA's) for the Unit I simulator.

1.3.4 Additional special instructor/training features available

a. Backtrack

As previously mentioned, the Beaver Valley Power Station-1 Simulator has the capability of backtracking. Normally, the students can be backtracked anywhere from 5 to 30 minutes. However, the time frame for tracking the backtrack snapshots is adjustable so that, if the instructor desires, he can offer a backtrack capability of 6 discrete steps. The time between discrete step is variable, but is normally set at 5 minutes.

b. Freeze

The Beaver Valley Power Station Unit 1 Simulator has the capability to freeze the dynamic simulation.

c. Simulator Speed

The Beaver Valley Power Station Unit 1 simulator has the capability to vary the speed of simulation.

1.3.4 (Con't)

This feature can be used to slow down the simulation to allow the observation of parameters at less than real time for training discussions and for model trouble shooting. The simulator has the capability for fast time, but this capability is limited to specific models, ie. Xenon, RCS and pressurizer heatup rate.

d. Override

The Beaver Valley Power Station Unit 1 Simulator has the capability of failing any control board panel control switch or light either in the on or off position. In addition, each control board meter can be overriden to various positions.

e. Annunciator

The Beaver Valley Power Station Unit 1 Simulator has the capability of failing any driven annunciator either on or off.

1.3.4 (Con't)

f. Plant Parameters

The Beaver Valley Power Station Unit 1 Simulator also uses plant parameters which give the instructor the flexibility to modify parameters which are outside the operating staff's control. Examples include atmospheric temperature, pressure and river water temperature. This feature is primarily used for the setup of initial conditions.

g. Local Operator Action

The Beaver Valley Power Station Unit 1 Simulator has the capability which enables the instructors to operate selected remote valves, pumps, air compressors, etc. The LOA listing is included in Appendix 2.

h. Remote Control

The remote control device permits the instructor to initiate various commands from the simulator floor. Which provides him additional opportunity to interface with the students.

1.3.4 (Con't)

Some of the remote control devices keys (e.g., run, freeze, horn on/off, and annunciator acknowledge) provide direct simulator response without any advance preparation at the instructors console preparation at the console keyboard.

The other 12 keys, however, must be assigned at the instructor's console.

1.4 Operating Procedures for Reference Plant

Simulator training is performed using the Beaver Valley Power Station Unit 1 operating procedures for all normal, abnormal and emergency operating procedures. Therefore, there are no significant differences.

1.5 Changes Since Initial Delivery

The following list is the Change Requests which have been installed in the Beaver Valley Power Station Unit 1 simulator as a result of design change packages or training requests to facilitate training.

There are currently change requests being tracked by the Simulator Data Base Tracking Changes and Modifications procedure which is presented in Appendix 5. Change Requests can exist in several conditions: in-progress, under review, waiting installation in the plant or cancelled.

The following list is the Change Requests which have been fully implemented in the Beaver Valley Power Station Unit I Simulator.

BVPS UNIT I SIMULATOR
INSTALLED CHANGES

Change Number	Date Completed	Description
	01/19/90	Simulator Annunciator Window Changes
2	05/23/85	Reactor Protection System Inhibit
3	11/07/86	Annunciator Window Changes
4	10/22/85	A & B USST Tap Changes
5	08/08/85	Removal of Emergency Bus Supply Brk U.V. Lockout
6	11/04/85	Modified S/G Trip Valve Logic
8	09/06/85	Adjusted Stroke Time for Feed Water Recirc Valves
9	10/22/85	Diesel Air Compressor Unloader Addition
10	09/06/85	Added Boron Concentration to Containment Model
11	10/18/85	Aux Fw Flow Control Valve Stroke Time
12	08/23/85	SI Actuation Status Light Logic Change
13	08/23/85	PORV Open Alarm Logic
15	02/05/87	MSIV Closes on Loss of Air
16	10/22/85	Loss of Chill Water to Containment Air Compressors
17	10/22/85	Added Out of Service Control Room Annunciators
18	10/17/85	Turbine Trip Logic Change
20	10/17/85	Turbine Lube Oil System Trip Setpoint
21	10/18/85	Reorganize LOA File
23	06/16/88	Under Voltage Reactor Trip Power Supply Change
24	08/26/86	New S/G Blowdown System Installation
25	04/30/87	Added Dedicated Aux Feed Pump and Tank
26	08/26/86	Added Black Diesel
28	04/16/87	Removed Reactor Trip/Trip Open Signal to Steam Dump Logic
29	01/14/86	IRPI Power Supply Back Up Addition
30	01/14/86	Aux Feed Pumps Auto Start Logic Change
31	04/09/87	Power Range NIS Rate Setpoint Change
32	06/11/87	EDG Governor Valve Indication Change
34	01/08/87	Added Reactor Trip Breaker Position Indication to Bench Board
36	03/17/86	Control Room Air Bottle Indication Change
37	03/17/86	Malfunction CCW 2 Logic Change
38	03/17/86	Change Rod Drop Alarm Power Supply
39	03/17/86	Change Rod Bottom Light Power Supply
40	03/17/86	Rad Monitor Response After Being Isolated
41	03/17/86	Aux Steam Condensate Rad Monitor Logic Change
42	03/26/86	Dump Control Power Supply Change
43	03/26/86	Steam Dump Logic Change

Change Number	Date Completed	Description
44	03/26/86	SI Accumulator Drain Down Effects
45	04/01/86	Flow Transmitter Power Supply Change
46	08/03/87	PAB Auto Sprinkler Protection Annunciator Window
47	04/07/86	Added Anti Motoring Turbine Trip
49	05/01/86	Malfunction RCS 19 Loop Flow Failure
50	04/18/90	Improve Response of Feed Water Bypass Valve
52	01/13/89	Added Control Room Rad Monitor
54	03/06/87	Changed Condensor Vacuum Setpoint
56	05/08/89	Inadequate Core Cooling Monitor
57	01/09/87	Install Core 6
58	07/30/87	Added Turbine Supervisory Instruments
59	01/08/87	CH142 Position Ind Lights Addition
60	03/28/89	Delete PT-BR-102B/111 Instruments
61	06/13/88	Added Refueling Cavity Annunciator Alarm
62	04/15/88	Added AMSAC System Logic
65	08/10/87	Added Aux Building Ventilation Flow Recorder
67	02/10/88	Loose Parts System Removal
68	03/20/89	Instrument Air Dryer Installation
70	02/25/88	Added Steam Header Rad Monitors
71	02/08/88	Changed Containment Pressure Setpoints
72	02/08/88	Added Inverter Static Switches to Electrical Model
73	04/14/90	Main Feed Pump New Impeller
74	03/14/88	Fast Bus Transfer Logic Change
76	04/07/90	Heater Drain System Pressure Reduction
79	02/29/88	P-9 Setpoint Changed
81	06/30/88	Aux Steam Supply Added from Unit 2
82	07/19/88	CNMT Press & RWST Level Setpoint Change
83	02/19/89	NIS Miscellaneous Drawer Added Plexiglass Plate
84	08/22/88	Simulator Running Lights Removal
85	01/20/90	SPDS Color Mods
86	09/19/88	MFR Valve Stroke Time Change
88	01/13/90	Modify Core Bypass Flow
91	101/2/88	Chlorine Leak Detection Logic Addition
94	04/20/90	SPDS/Bailey Terminal Clear Screen
95	01/05/89	SG Level Shrink/Swell Effects
96	01/29/90	Auto Spnkl Protection Annunciator Window
97	02/07/89	AFW Initiating Signal Deletion
98	04/07/90	STM/FW Flow Selector Switches
100	02/08/88	DC Bus 1-5 Battery Breaker Trip Logic Change
103	05/03/89	Malfunction RCS-15 & 17 Increase Range of Malfunction

Change Number	Date Completed	Description
109	01/13/90	RWST Setpoints Changed
110	01/13/90	Turbine Overspeed Protection Controller
111	01/29/90	Turbine EHC Controller Modification
112	01/18/90	Unit I Core 8 Upgrade
113	01/19/90	Simulator Limits Alarm
114	10/27/89	Instructor Booth Recorder Power Supply Switch
116	01/11/90	Annunciator Window Labelling
126	04/14/90	Added L.O.A. for MOV-1FW-150 A & B
128	04/07/90	Switch Check Addition

2. <u>Simulator Design Database</u>

Information from which upgrading has been based and will be based for future changes is primarily plant design change information generated from the plant's engineering section. The procedure is included in Appendix 5 Data Base Tracking

Information supplied to the vendor from which the simulator was designed is included for reference within this section.

VENDOR TECHNICAL MANUALS

TITLE

Unit I Instruction Book Index

Air Operatead Control Valves (7.62)

Air Operated Control Valves (7.65)

Air Operated Control Valves (7.62)

Aurora vertical Submerged Pumps

Autotransformer (1.81-28A)

Autotransformer 2-4 Renewal Parts (1.1-3A)

Auxiliary Boiler Chemical Feed Pump & Phosphate Feed Pump (2.72)

Auxiliary Boiler Condensate Pump (2.45)

Auxiliary Boiler Fuel Oil Pumps (2.44)

Auxiliary Feed Pump Turbine Drive (2.18)

Auxiliary Heat Exchanges (4.10)

Auxiliary Steam Generating Equipment (Erie City) (5.50)

Auxiliary Steam Generating Equipment (Zurn) (5.50)

Back-Panel Remote Alarm (7.71-2)

Blowdown Drain Heat Exhanger (4.20-73)

Booster Pump or Vacuum Deaerator (PG-P-1) Pump & Motor (1/29-22A)

Boric Acid Transfer Pumps (2.30)

Boron Injection Recirculation Pump (2.54)

Boron Recovery and Liquid Waste/Misc Pumps (2.38)

Boron Recovery and Waste Disposal Evaporation Circ Pump (2.34)

Boronmeter (3.41-1A)

Carbon Steel Valves 1-12" and Larger (6.48)

VENDOR TECHNICAL MANUALS

TITLE

Centrifugal Fans (10.1-13A through 186B)
Centrifugal Fan Unit Heaters (10.1)
Centrifugal Fan Unit Heaters (10.1-47B)
Centrifugal Fan Unit Heaters (10.1-223A)
Centrifugal Pumps - 16 x 18 x 24 B (2.40)
Centrifugal Sump Pumps - (2.25-100A)
Centrifugal Water Chillers (10.1-56A)
Centrifugals (2.11)
Centrifugals (2.82)
Ceramic Heat Pipe Heat Exchanges (1.30-34B)
Charging Pumps (2.31)
Charging & Safety Injection Pump
Chilled Water Circ Pumps A/C Cond Water Booster PJMP (2 52)
Circuit Breaker - 345 KV (1.83-22B)
Circulating Water Flow Instruments (BV-707) (7.11)
Class 1E Instrument Design and Test Requirements (7.72-235)
Class VOC Pumps (2.39)
Composite Instruction Bok for Foxboro Equipment (7.75)
Composite Instr Manual for Trans & Indicator. (7.71, 7.72, 7.73)
Composite Instr Manual for Pressure & Flow Trans (7.71, 7.72, 7.73
Computer Systems (7.50-10A)
Condensate Pumps (Byron-Jackson) (2.41)
Condensate Pumps (Ingersoll-Rand) (2.41)
Consolidated Safety Relief Valves (6.39)
Containment Recirculation Spray Pump - Inside Containment (2.51)
Containment Recirculation Spray Pump - Outside Containment (2.51A)

VENDOR TECHNICAL MANUALS

TITLE

Containment Vaccum Ejector (2.99)

Containment Vacuum Pump (2.43)

Control & Protection Instrumentation System - Volume I (7.70-1B)

Control & Protection Instrumentation System - Volume II (7.70)

Control Rod Drive Mechanism-Connector Crimp Procedures (1.28-261A)

Control Systems for Auxiliary Steam Generating (5.50)

Controlled Leakage Pump Test Report (1.10)

Cooling Tower Pump Motors (1.10-101A)

Cooling Tower Pump Motors (2.42)

Cyclo-Phram Metering Pumps (2.39)

Cyclo-Phram (R) Pumps (2.39)

Diesel Driven Fire Pump (10.1-25-39A)

Diesel Generator Ground Switch (1.28-55A)

E-H Control System - Volume III - Book 1 (2.13)

E-H Control System - Voluem III - Book 2 (2.13)

E-H Controller Option List (2.13-15A)

Electro-Motive Power Specifications (1 30-32A)

Electric Motor-Operated Gate Valves (6.48-92A)

Electro-Pane Annunciators (5.50)

Emergency Diesel Generators - 999 System (130-30A)

Environmental Radiation Monitor(7.503)

Feedwater Control Valves (6.26)

Feedwater Control Valves (7.81)

Feedwater Flow lements (7.19)

Feedwater Heaters (4.22)

Feedwater Vibration Monitoring Procedure (1.55-6)

VENDOR TECHNICAL MANUALS

TITLE

Field Assembly of Multi-Piece Stator-Main Generator (1.13-124A)
Fire Protection Pressure Main Pump (10.1)
Flow Indicator Meter (7.13-1A)
Flow Instruments (7.71)
Flow Sight Glasses (7.17)
Flux Mapping Miniature Detectors (1.213A)
Full Length Control Rod Drive Mech (5.15)
Full Length Rod Control System - Volume I (5.10)
Full Length Rod Control System - Volume II (5.10)
Full Length Rod Control System - Volume III (5.10)
Gate Valves, 20" L900C, 16" & 6" L900 (1.25)
General Step-Up Transformer (1.14-89A)
Gylcol-Chilled Water Heat Exchangers (10.1-261A)
Heat Exhangers (1.30-4A)
Heater Bypass Control Valve (7.67-58-A)
Heater Drain Pumps (2.41)
Heavy-Duty Single-Stage Compressors (2.62)
High Pressure Feedheater (4.22)
High Range Contaiment Monitor 875 (1.56-198)
Hot & Chilled Water Centrigugal Pumps (10.1-115A through 118A)
Hot Water Heating System Heat Exchangers (10.1-263A)
Hot Water Heating System Heat Exchangers (10.1-264A)
Hydrazine, Morpholine & Phosphate Feed Pumps (2.39)
Hydrogen Containment Monitor (5.31-26)
Hydrogen Inner-Cooled Turbine Generator (1.13-124A)
Hydrogen Inner-Cooled Turbine Generator (2.15, 2.14, 2,13, 1.13)

VENDOR TECHNICAL MANUALS

TITLE

Hydrogen Inner-Cooled Turbine Generator (2.14)
Hydrogen Recombiners (4.31)
In-Core Instrumentation - Volume I (7.79 through 12)
In-Core Instrumentation - Volume II (7.79 through 12)
Indicating & Recording Pressure Gauges (7.34)
Induction Motors (1.28-257A)
Inside Recirculation Spray Pump Motor (1.10-118A)
Installation & Maintenance Instructions for Nuclear Valves (6.43)
Instrument Transformers (1.18-123A)
Instrumentation & Control Block Diagrams (7.7)
Large AC Motors - Vertical Induction Motor (1.10)
Large Motors (1.10)
Large Motors & Generator (1.10)
Linear Mass Flow Meters (7.503)
Local Pressure Indicators (7.33-25)
Low Head Safety Injection Pump - Ingersol Rand (2.29)
Low Head Safety Injection Pump - Westinghouse (2.29)
Low Pressure Carbon Dioxide Fire Protection System (10.1-288B)
Magnetic Amplified Controlled Voltage Regulator (1.30-36A)
Magnetic Flow Meters (7.19)
Main Control Board Instr, Flow Press & Level Vol I (7.1 through 7.5)
Main Control Board Switches (1.12-140A)
Main Steam Atmospherc Dump Pumps (6.49)
Main Transformer (1-14-88A)
Main Transformer (1-14-91A)
Manually Operatead Bellows Valves (7.45)

VENDOR TECHNICAL MANUALS

TITLE

Mechanalysis Models 1224 & 1225 Vibration Monitoring (7.551)
Miscellaneous Pumps (2.30)
Model 999 System Generating Plants (1.30-35A)
Model 3196-STD & 3197-STD Pumps (2.20)
Model XS & XSL Self-Priming Centrifugal Pumps (2.65)
Model Control Center Install, Oper, Main Instr (1.16-78A)
Motor Control Centers (1.13)
Motor Equipment (1.10)
Motor Operated Angle Stop Valves (6.48)
Motor Operated Valve S-867A, B (6.48-108A)
Motor Operated Valve QS-104A, B (6.48-112A)
Nameplate List - 125 VDC Switchboards, 1-5 (1.26-68A)
Nuetron Shield Tank (3.61)
Nuclear Counting Systems (7.503)
Nuclear Instrumentation Manual (7.78-1A)
Nuclear Instrumentation System (1.21-214A)
Nuclear Steam Supply System Startup Manual - Volume I (5.10)
Nuclear Steam Supply System Startup Manual - Volume II (5.10)
Nuclear Steam Supply System startup Manual - Volume III (5.10)
Nuclear Steam Supply System Startup Manual - Volume IV (5.10)
Oil Circuit Breakers - 138 KV (1.84-5A)
Operating Procedure for PWR Hydrogen Control System (4.31)
P250 Computer Continuous Monitoring Systems SG-2 Series (7.93-11A)
P250 Computer Software Manual (7.93-6A)
P250 Process Computer System Design Information Part III (7.93)

VENDOR TECHNICAL MANUALS

TITLE

Part Length Control Rod Driven Manual - Model 121J001 (5.15)
Part Length Control Rod Driven Manual - Model 121J380 (5.15)
Performance Curve for A/C Chilled Water Unit 5COHP (1.10-52A)
Power Plant Motors (1.10)
Power Range Uncompensated Ionization Chamber (1.20-467A)
Pressure Indicator System (7.33-8A)
Pressure Transmitters - Model 1153 (7.31-25)
Pressurizer - 1400 Ft (4.15)
Pressurizer Relief/Safety Valve (6.39-24B)
Pressurizer Spray Valves (7.83-10B)
Primary Plant Component Cooling Heat Exchangers (4.11-D)
Primary Plant Cooling Water Pumps (2.27)
Primary Water Storage Tank Heaters
Pumps (2.22-2.24)
Radiation Analysis Design Manual (5.12)
Raw Water Pumps (2.42-21)
Reactor Coolant Loop Stop Valves (6.44)
Reactor Coolant Pump, Controlled Leakage Seal (2.31)
Reactor Coolant Pumps (2.31)
Reactor Trip Switchgear (1.11-235A)
Reactor Vessel (5.11)
Recirculation Spray Water Cooler (4.21)
Refueling Water Circulating Pump (2.30-3B)
Refueling Water Pump (2.30)
Residual Heat Removal Pumps (2.28)
River Water Pumps (2.42)
Rod Control Cluster Change Fixture (2.101)
Rod Control Reactor Trip Switchgear (1.20-493A)
Rod Position Indication System (7.75)
Seal Injection Pumps (2.42-24A)

VENDOR TECHNCIAL MANUALS

TITLE

Seal Maintenance Feasibility Study of Model 93A RCP (2.31)
Secondary Component Cooling Water Pumps (2.27)
Seismic Acceptance on Poorly Welded TB Support - BB A (1.12-150A)
Seismic Qualifications, MCB Vertical Sections (1.12-137A)
Sequential Event Recorder - Model 5000 (1.23-71A)
Series & Chempump (4.18)
Soft Wtr Chlorination Booster, Seal Wtr & Brine Sol. Pumps (2.30)
Source & Intermediate Range Housing (1.20-468A)
Speed Torque Curve or A/C Chilled Water Unit Motors (1.10-53A)
Standard Program Descriptions (7.93)
Steam Flow Elements (7.71-1A & 2A)
Steam Generator - 51 Series (4.13)
Steam Generator Auxiliary Feed Pump (2.40)
Steam Generator Drain Pumps (2.49)
Steam Turbine Auxiliary Equipment - Volume I (2.10-2.17)
Steam Turbine Auxiliary Equipment - Volume II (2.10-2.17)
Storage Tank Heater Pumps (2.30-23A)
Storage Tank Heaters (4.20-5B)
Switchboard Watthour & Demand Meters (1.50-56A)
Switchgear Diagram Legend (1.15-12B)
Switchyard (1.75)
Technical Support Complex System Installation Guide (1.22-354)
Temperature Switches (7.46-1A, 2A, 3A)
Test Report for Steam Generator Feed Pump Motor (1.10-114A)
Thermal Limit Curves - Auxiliary Feed Pump (1.10-46A)
Thermal Limit Curves - Circulating Water Pump (1.10-45A)
Thermal Limit Curves - Circulating Water Pump (1.10-45A)
Thermal Limit Curves - Circulating Water Pumps (1.10-29A)

VENDOR TECHNICAL MANUAL

TITLE

Thermal Limit Curves - Condensate Pump (1.10-47A)
Thermal Limit Curves - Heater Drain Pump (1.10-48A)
Thermal Limit Curves - Outside Recirculation Spray Pump (1.10-30A)
Thermal Limit Curves - Outside Recirculation Spray Pump (1.10-43A)
Thermal Limit Curves - Primary Plant CCW Pump (1.10-44A)
Thermal Limit Curves - Raw Water Pump (1.10-41A)
Thermal Limit Curves - Secondary CCW Pumps (1.10-40A)
Thermal Limit Curves - Steam Generator Feed Pump (1.10-42A)
Thermowell Actuated Temperature Indicators (7.43)
Transistorized Annunciator System, Series 5000 Constalert (1.23)
Turbine Generator Preservation Manual Nuclear PWR Units (2.10-2.17)
Two Step Demineralizer - Volume 1 of 2 (2.68)
Two Step Demineralizer - Volume 2 of 2 (2.68)
Two Way Internal Pilot Operated Solenoid Valves (7.66)
Type EKC-2 Oil Switch (1.28-154A)
Type RG/RGS Induction Motors (1.28-256A)
Type W SW - Board Item 20 (1.12-135A)
Unit Station Service Transformer (1.14-46A)
Vaccum Priming Pump (2.43)
Valveline Mark I Motor Control (1.16-6A)
Valve Operators (6.47)
Valve Positioner and Motion Transmitter (6.49)
Velan Motor Operated & Manual Valves (6.43-5B-8C)
Vibration & Loose Parts Monitoring System (1.55-30A)
Virbation Testing & Analyss of 7700 Line (1.16)
Volume Control Tank (7.83)
Wafer Type Butterfly Valves - 8", 14", 16", (6.42)

VENDOR TECHNICAL MANUALS

TITLE

Water Treating Supply & Brine Transfer Pumps (2.30)
WL Switch 600 Volts, 20 Amperes Continuous (1.15-194A)
Zero Leakage Canned Pumps (1.10)
ATA Monitor Panel (1.26-59B)
Cond. Sys. for Boron Concentration (7.54)
Digital Thumb Setters (1.51-46A)
Main Control Board Instruments Flow Pressure & Level
7.1 to 7.5)
Main Control Board Switches Outlines (1.12-139A)
Main Control Board Switches (1.12-138A)
Model E1124E Multipoint Recorder (7.14)
Multipoint Temperature Recorder (7.44)
Speedomax G Manual (1.51-54A)
Speedomax GX-X Load Recorder (1.51-53A)
Speedomax Recorder (7.11)
Strip Chart Recorder Model D11E (7.75)
Strip Chart Recorder Model D5E (7.78)
Strip Chart Recorder Model M11B (7.75)
Type 44 Recording (1.50-55A)
Watt and Amp Recorders (1.51-48A)
MU-ZOE Operating Manual
Model 999 System Generating Plant (1.30-32B)
Special 999 Operating Manual (1.30-302)
Operating Manual 999 System (1.30-29B)
Bailey Controls - Human Communications Functions
Bailey Controls - 1055 Sys. Point Data Base Description
Bailey Controls - Plant Variable Computer System
Bailey Controls - Graphic Displays
D⁺.a Base Master Input File
Inplant Computer Log Characteristics

VENDOR TECHNCIAL MANUALS

TITLE

Tank Sump Level/Capacity Data
Precautions, Limitations, Setpoints for NSSS
Reactor Control & Protection
Reactor Excore Instrumentation
Incore Instrumentation System
Plant Process Control System
Main Computer
Sequence of Events Computer
Reactor Coolant System
Chemical and Volume Control System
Boron Recovery and Primary Makeup System
Reactor Plant Vents & Drains System
Risidual Heat Removal System
Safety Injection System
Containment Vacuum
Containment Depressurization System
Reactor Plant Sample System
Turbine Plant Sample System
Post Accident Sample System
Reactor Plant Component and Neutron Tank Cooling Water
Supplementary Leak Collection and Release System
Liquid Waste Disposal System
Solid Waste Disposal System
Gaseous Waste Disposal System
Fuel Pool Cooling and Purification System
Main Steam System
Condensate System
Extraction Steam System
Heater Drain System
Steam Generator Feedwater System
Steam Generator Blowdown System

VENDOR TECHNICAL MANUALS

TITLE

Main Turbine & Condenser
Auxiliary Steam
Turbine Plant Component Cooling Water System
Chilled Water System
River Water System
Circulating Water System
Water Treating
Fire Protection System
Compressed Air Systems
Main Generator and Transformer
4KV Station Service System
480V Station Service System
120 V AC Distribution and Lighting
125 V DC Control System
Station Communication
Building Servie Hot Water Heating System
Bldg Service Glycol Heating System
Domestic Water System
Building and Yard Drains
Warehouse Steam Heating System
Sewage Treatment Plant
Radiation Monitoring Systems
Area Vent-Control Area
Area Vent-Cooling Systems
Area Vent-Containment
Area Vent-Auxiliary Building
Area Vent-Air Conditioning System
Area Vent-Miscellaneous Systems

VENDOR TECHNICAL MANUALS

TITLE

Miscellaneous Safety Related Systems
Post DBA Hydrogen Control System
Containment
Conduct of Operations
Reactor Engineering Procedures
Station Startup
Station Shutdown
General Operating Instructions
Emergency Operations
Abnormal Operating Procedures
Station Logs
Periodic Checks
Injury and Casualty Control
Fire Prevention and Control
Westinghouse P250 Computer Inputs
Bailey 1055 Computer Inputs
Signal Instrument Listing for P250, Bailey 1055 and SPDS
Techncial Specifications
Bill of Materials
Addressable Point Compiler
Technical Support Center Operators Manual
Technical Support Complex Maintenance Manual
Nameplate Indentification
Control Board Labels - Volume 1
Control Board labels - Volume 2
Specifications for BVPS
Control Room Annunciator Windows A-1
Control Room Annunciator Windows A-2
Control Room Annunciator Windows A-3

MISCELLANEOUS INFORMATION

TITLE

Control Room Annunciator Windows A-4
Control Room Annunciator Windows A-5
Control Room Annunciator Windows A-6
Control Room Annunciator Windows A-7
Control Room Annunciator Windows A-8
Control Room Annunciator Windows A-9
Control Room Annunciator Windows A-10
Control Room Annunciator Windows A-11
Control Room Annunciator Windows A-12
Control Room Annunciator Windows A-13
Setpoint Study
Inplant Computer Simulation
Calibration Data - Volume 3
Calibration Data - Volume 4
Calibration Data - Volume 5
Calibration Data - Volume 6
Calibration Data - Volume 7
Calibration Data - Volume 8
Calibration Data - Volume 9
Calibration Data - Volume 10
Calibration Data - Volume 11
Calibration Data - Volume 12
Calibration Data - Volume 13
Calibration Data - Volume 14
Calibration Data - Volume 15
Calibration Data - Volume 16
Test Results - Volume 1
Test Results - Volume 2
Test Results - Volume 3
Test Results - Volume 4
Test Results - Volume 5

MISCELLANEOUS INFORMATION

TITLE

Test Results - Volume 6
Test Results - Volume 7
Test Results - Volume 8
Test Results - Volume 9
Data Void Requests
Design Specifications
P250 Process Computer System - Design Information
Preliminary Installation and Instruction Manual for Radiation Monitoring System
Victoreen Instrument Division - Radiation Monitoring System Instruction Manual
Complete Set of Plant Logics
Heat Balance Diagram
Final Safety Analysis Report

3. Simulator Tests

General Test Guidelines

The certification testing program is controlled by the procedure presented in the Nuclear Group Training Administrative Manual Vol. II, Section 12, Simulator Qualification Tests. This administrative procedure was used for the initial Certification Testing Program. An abstract of the procedure is provided for reference below.

A. PURPOSE

This instruction outlines the method used to ensure that the Beaver Valley Unit I Simulator meets qualification standards based on the requirements of ANSI/ANS/ 3.5 (1985) and USNRC Regulatory Guide 1.149. The purpose of these requirements, and the qualification testing program as a whole, is to establish adequate simulator performance criteria necessary for effective training.

B. DEFINITIONS

1. Best Estimate

   Reference plant response data based upon engineering evaluation or operational assessment.

2. Critical Parameters

   a. Those parameters that require direct and continuous observation to operate the power plant under manual control.

   b. Input parameters to plant safety systems.

3. Real Time

Simulation of dynamic performance in the same time base relationships, sequences, duration, rates and accelerations as the dynamic performance of the reference plant..

4. Reference Plant

Beaver Valley Power Station Unit I was the reference plant from which the simulator control room configuration, system control, arrangement and simulator design data was derived.

5. Negative Training

Simulator responses that would/could cause the operator to misdiagnose the transient in effect.

C. PROCEDURE

This instruction is divided into four major areas of simulator qualification testing, defining each test procedure per ANSI/ANS 3.5 (1985) and/or Reg. Guide 1.149, Rev. 1 (1986).

1. Simulation Real Time Test

A simulation real time test shall be conducted annually to ensure that the simulator operates in real time.

This test shall be conducted in accordance with the Simulation Real Time Test Procedure (SQT-1.0) and documented per Section F.

2. Steady State and Normal Operations Tests

Simulator steady state drift tests shall be conducted annually to ensure that the steady state parameters do not exceed the 2% tolerances of Beaver Valley Power Station Unit I critical parameters and 10% of noncritical parameters.

Normal operations tests shall be conducted annually to ensure that the simulator operates in accordance with selected plant operating procedures. These tests shall be conducted in accordance with the Steady State/Normal Operations Test Procedures (SQT-2.0).

Steady state drift tests shall be conducted at approximately 35%, 75% and 100 % power, or where data is available. The steady state drift test at 100% will be sustained for a continuous duration of at least 60 minutes. Normal operations tests shall use Beaver Valley Power Station Unit 1 normal operating procedures and/or operating surveillance tests as the comparison standards for simulator performance.

These tests shall be documented per Section F of this procedure.

3. Transient Tests

Simulator transient tests shall be conducted annually to ensure that the simulator transient response is similar to the expected response as indicated by actual reference plant results, design data, best estimate, or operational analysis.

All required transient tests shall be conducted at 100% steady state power, equilibrium xenon and decay heat, and with no operator actions, except the main turbine trip, which shall be conducted at less than permissive P-9.

These tests shall be conducted in accordance with Transient Tests Procedures (SQT-3.0) and documented per Section F.

4. Malfunction Tests

Simulator malfunction tests shall be conducted on a four year cycle (25% of the tests will be completed annually) to ensure that proper simulator response and system interaction is obtained for all generic malfunctions. Response shall be compared to the reference plant, best estimate or operational assessment.

These tests shall be conducted in accordance with Malfunction Test Procedures (SQT-4.0) and documented per Section F.

D. TEST METHODOLOGY

The Initial Certification tests were generally performed using a designated Certification Pack. This certification pack was frozen at the commencement of the testing cycle, with no further changes to the software being made. Some exceptions to this methology were necessary because of hardware upgrades completed during the testing phase. Example - Unit 1 simulator hardware was changed to reflect a plant modification that removed the RTD manifolds and associated control board hardware (meters, status lights, etc.). The malfunction testing associated wth these changes were performed on a training pack that had been upgraded to reflect the removal of the RTD manifolds.

1. Simulator Real Time Test

The simulator real time test was conducted using the computer program DSPEXEC, which provides a continuous display of percent execution time for the simulation and peripheral tasks. The test was run with all normal peripherals in service, and utilizes the (LOCA with loss of offsite power). DSPEXEC was continuously monitored during the test to verify that percent execution remained at less than 100%

2. Steady State and Normal Operations Tests

The simulator steady state drift test was conducted by the use of computer program DRIFTEST.

This program:

a. Samples the desired data points (parameters) once per simulator model iteration.

b. Permanently records data to disk file or tape file.

c. Provides a short form summary of data point maximum value, minimum value, maximum deviation and message if parameter exceeds tolerances.

d. Provides long form printout of all data point values and deviations from reference values.

The normal operation tests consists of performing normal Beaver Valley Power Station Unit I operating procedures or operating surveillance tests, and comparing the results to the acceptance criteria of the plant.

The following guidelines are utilized during normal operations testing:

- Any unexpected/unexplained alarms or indications that occur should be noted and Trouble Reports initiated if not consistent with the actual plant.
- All performed steps will be initialed.
- Steps that require the use of the instructor console will have the appropriate LOA or override noted on the procedure close to the actual step.

- o Parameters that must be monitored locally in plant via the use of a variable on the instructor console will be noted on the procedure using the FORTRAN name.
- o Operations that cannot be performed or parameters that c nt be monitored will be noted on the procedure.
- o Dates, start and stop times of various procedures used will be noted on the procedure.
- o Steps requiring approval or communications outside of the Control Room are marked NA.
- o Operational Surveillance Tests (OST's) will be conducted using Beaver Valley Power Station Unit 1 surveillance test procedures utilizing the simulator control board switches, controls and indicators.

The required test of 3.1.1 (7) startup, shutdown and power operations with less than full reactor coolant flow will not be performed as BVPS-Unit 1 is not licensed and does not intend to operate with less than full core flow.

The required test of 3.1.1 (9) core performance testing such as heat balance, determination of shutdown margin are performed using plant operating procedures. Startup from cold shutdown to 100% power, refer to SQT Test Abstract .

The requirement of performing measurement of reactivity coefficients and control rod worth using permanently installed instrumentation are also performed, in part, by performing ECP calculation, refer to SQT Test Abstract. Measurement of rod worth, bank worth doppler, moderator coefficients etc. cannot be performed using installed control room instruments. However, those reactivities are measured when the core model change is performed and documented using existing Change Request (CR) program, refer to Appendix 5 for a description of the Change Request program. Unit I control room does not have a permanently installed reactivity computer to measure those reactivities.

3. Transient Tests

The transient tests shall consists of transient initiation and data collection of the recommended parameters. Each parameter listed in the training administrative manual for the associated transient test shall be continuously recorded and compared to actual reference plant data, best estimate or operational assessment. Operational assessments will be conducted by the BVPS Transient Review Committee. This committee is comprised of a panel of training, licensing and SRO-licensed personal. The resumes of these individuals are in Appendix 6.

4. Malfunction Tests

The simulator malfunction tests shall be conducted using test procedures developed from the original simulator Acceptance Test Procedures (ATPs), where applicable. Appropriate malfunction test parameters shall be recorded on a computer printout for each malfunction test, if applicable. Verification of expected indications and alarms is part of each test, unexpected or unexplained alarms and or indications will be noted and Trouble Reports generated if necessary.

5. Test Procedure Review

All test procedures are reviewed by two levels of supervision for completeness and applicability prio to use. Completed tests are also reviewed and approved for satisfactory performance by two levels of supervision.

6. Revisions

Revisions to the qualification test program such as procedure additions/deletions, modifications required by regulatory changes, etc., shall be recorded on a revision sheet.

Performance tests may be revised during the actual performance of the test, provided that the original intent of the procedure is not altered. The change shall be noted in ink by the designated test performer. These changes are the responsibility of the test performer. Supervision review and approval is necessary for any intent changes.

E. ACCEPTANCE CRITERIA

Acceptance criteria are included in each simulator qualification test procedure, and are generally delineated as follows:

1. Computer Real Time Test - The computer shall be demonstrated to remain in real time during any and all evolutions/transients as defined in Computer Real Time Test Procedure (SQT-1.0).

2. Steady State Drift Test - The simulator shall be demonstrated to have parameter values within ±2% tolerance for critical parameters and ±10% or non-critical parameters when compared to the reference plant data for the same parameters. For the 100% Drift Test, parameters will not drift from the initial value by more than approximately 2%.

3. Normal Operations Tests - The simulator shall be demonstrated to have the proper response and system inter-relationships. Response should be compared to reference plant data as applicable. Acceptance criteria will be the same as plant criteria where applicable.

4. Transient Tests - The simulator shall be demonstrated to have the correct response to required transient evolutions. Parameter changes must correspond to those expected from actual plant response, best estimate, or other available information.

5. Malfunction Tests - The simulator shall be demonstrated to have the proper response and system interaction as specified in the test procedure.

F. DOCUMENTATION

Each simulator qualification test shall be recorded on an approved Simulator Qualification Test Procedure. All pertinent parameter lists, charts, printouts, and other data will accompany the completed procedure.

A hard copy printout of 100% the Steady State Drift Test shall have a maximum resolution of one minute.

Transient tests shall be recorded for each parameter listed in the applicable test procedure. Maximum resolution shall be 0.5 seconds.

G. REFERENCES

1. ANSI/ANS 3.5 (1985)

2. USNRC Regulatory Guide 1.149, Rev. 1 (11/5/86)

3. NUREG 1258 (12/87)

4. Computer program DRIFTEST

3.1 Real Time Test (SOT-1.0)

A simulator real time test was performed as required by ANSI/ANS 3.5-1985 Appendix A.3.1 to test the computer for verification of real time simulation.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Simulation Real Time Test SQT-1.0

REQUIRED BY ASI/ANS 3.5 SECTION: 5.4.2 DATE TESTED:08/24/89

GENERAL DESCRIPTION: The purpose of this test is to verify the Simulator remains capable of operating in real time for a worst case situation which would tax it's capacity. A DBA LOCA combined with a blackout is iniated and IPU and CPU duty cycles are monitored to insure they do not exceed 100%.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-18 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
DBA LOCA and blackout in progress. IPU and CPU recorded Data Collected. Neither value exceeded 100%.

BASELINE DATA: Software Program DSPEXEC

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

3.2 Steady State Tests (SQT-2.0) results

Steady state tests were performed per Appendix B of ANSI/ANS 3.5-1985. A comparison of digital displayed information from the instructors station, and the information displayed on the control board meters identified several meters which required calibration. These meters have been calibrated utilizing the trouble report program identified in Appendix 4. A meter calibration program similar to the plant meter calibration program has been implemented to upgrade the calibration status of the control boards meters.

Test	Description
2.1	Simulator drift test at approximately 100% power.
2.2	Simulator drift test at approximately 75% power.
2.3	Simulator drift test at approximately 30% power.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: 100% Steady State Drift Test SQT-2.1

REQUIRED BY ASI/ANS 3.5 SECTION: 4.1 DATE TESTED:09/13/89

GENERAL DESCRIPTION: This test verifies the simulator's ability to duplicate the BVPS Unit 1 characteristics within tolerance and to maintain stability at 100% for at least a one hour period. A computer program verifies computer variables to plant data and prints out a display noting any problems. Control Board Indication is compared by Tester using an attachment for data gathering and comparison. The computer program also displays any drift from the initial values and flags any drift of 2% or greater.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 2 HRS.
Plant at 100% steady state conditions, all parameters within 2% of initial values.

BASELINE DATA: BVPS Plant Logs dated 07/15/88 points used as acceptance criteria are marked in blue.

DEFICIENCIES: Control Board Meter Calibration, problems found for many meters

CORRECTIVE ACTION/DATE: TR-195 written for meter calibration, calibration schedule implemented. TR-195 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: 75% Steady State Test | SQT-2.2

REQUIRED BY ASI/ANS 3.5 SECTION: 4.1 | DATE TESTED: 10/25/90

GENERAL DESCRIPTION: The simulator is initialized at the 75% I.C. Parameters specified in Appendix B.2.1 are compared to those from the UI Plant. A print out of the required parameters is taken and verified to be within tolerance allowed in ANS-3.5-1985, 4.1.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-35 75% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Use Pack A

FINAL CONDITIONS | TEST DURATION: 1 HRS.

Plant stable at 75% power. Print out of required parameters complete.

BASELINE DATA: Plant Logs 10/5/90 BVPS Unit I
Actual Data used is marked and placed in file.

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: 30% Steady State Test SQT-2.3

REQUIRED BY ASI/ANS 3.5 SECTION: 4.1 DATE TESTED:10/25/90

GENERAL DESCRIPTION: The Simulator is initialized at the 30% I.C. Parameters specified in Appendix B.2.1 are compared to those from the UI Plant. A print out of the required parameters is taken and verified to be within tolerances allowed in ANS-3.5-1985, 4.1.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-34 30% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Use Pack A

FINAL CONDITIONS TEST DURATION: 1 HRS.

Plant stable at 30% power. Print out of required parameters complete.

BASELINE DATA: Plant Logs 10/6/90 BVPS Unit I
Actual Data Used is marked and placed in file.

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

3.3. Normal Operations (SQT-2.4) results

Normal operation tests were performed per Section 3.1.1 of ANSI/ANS-3.5-1985.

Test	Description
2.4.1	Plant shutdown from rated power to Mode 5 per normal procedures
2.4.2	Power Range Surveillance Test OST-1.2.1
2.4.3	Intermediate Range Surveillance Test OST-1.2.2
2.4.4	Source Range Surveillance Test OST-1.2.3
2.4.5	Plant start up from Mode 5 to rated thermal power
2.4.6	Accident Monitoring Instrumentation Surveillance test OST-1.6.7
2.4.7	RCS Leakage Surveillance Test OST-1.6.2
2.4.8	Boric Acid Pump Surveillance Test OST-1.6.1/2
2.4.9	Diesel Generator #1 Monthly Surveillance Test OST-1.36.1
2.4.10	Diesel generator #2 Monthly Surveillance Test OST-1.36.2
2.4.11	Containment Isolation Valve Stroke Surveillance Test OST-1.47.3A
2.4.12	Cold Shutdown Valve Exercise Surveillance Test OST-1.1.10
2.4.13	Main Steam Isolation Valve Stroke Surveillance Test

Test	Description
	OST-21 4/5/6
2.4.14	Auxillary Feedwater Pump Discharge Valves Stroke Time Surveillance Test OST
2.4.15	Motor Driven AFWP Sureillance Test OST-1.24.2/3
2.4.16	Turbine Drive Aux Feedwater Pump Surveillance Test OST-1.24.4
2.4.17	Reactor Trip and Recovery to Rated Power

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Plant Shutdown From 100% to Mode 5 with R.H.R. SQT-2.4.1

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/12/89

GENERAL DESCRIPTION: This test verifies that the operators can, on the simulator, use B.V.P.S. Unit 1 operating procedures to conduct a plant shut down from 100% Pwr. to Mode 5 conditions with the R.H.R. System in service. The test requires each procedure used to be initialed and each Local Operation (LOA) utilized to be documented to verify proper response.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None.

FINAL CONDITIONS TEST DURATION: 24 HRS.

Plant shut down, Mode 5 conditions achieved, RCS cooling being performed by R.H.R. System.

BASELINE DATA: B.V.P.S. Operating Manual Procedures 1.51.4A, B, C, D, E, F

DEFICIENCIES: Incorrect CCT (delta-P), RCS-Pzr unexplained boron changes, 6th point heater low level problems, Exciter Base Adjust not working properly.

CORRECTIVE ACTION/DATE:

Trouble Reports 197, 198, 199 and 200 written. These TR's have been cleared

EXCEPTIONS TAKEN TO ANS. 3.5:

None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Power Range Functional Test OST 1.2.1 SQT-2.4.2

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/13/89

GENERAL DESCRIPTION: This test involves running the Operations Shift Test to verify the operability of the Power Range NIS Channels. The OST 1.2.1 is run the same way it is in the plant, including use of the actual plant procedure, LOA's were used as necessary to simulate process rack bistables.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-40 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 8 HRS.

Test OST 1.2.1 complete, data logged, plant at 100% Steady State Operation, NIS channels returned to operable status.

BASELINE DATA: Operating Shift Test 1.2.1

DEFICIENCIES: Several Trip and Reset Setpoints on the NIS channels did not meet acceptance criteria. Not all computer printouts worked.

CORRECTIVE ACTION/DATE:

Trouble Report 204 Written, T.R. resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Intermediate Range Functional Test OST 1.2.2 SQT-2.4.3

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED: 09/12/89

GENERAL DESCRIPTION: This test involves running the Operating Shift Test to verify the operability of the Intermediate Range NIS Channels. The same procedure as used in the plant is used to test the channels on the simulator.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-51 0% PWR. CORE AGE - MOL
LIS OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

OST 1.2.2 complete, both channels returned to operable status, plant in Mode 3.

BASELINE DATA: Operating Shift Test 1.2.2

DEFICIENCIES: Some Trip and Reset setpoints for N-35 did not meet acceptance criteria.

CORRECTIVE ACTION/DATE:

Trouble Report 202 Written, T. R. resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Source Range Functional Test SQT-2.4.4

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/13/89

GENERAL DESCRIPTION: The test involves running the Operating Shift Test to verify the operability of the Source Range N.I.S. channels. The same procedure is used as used in the plant, LOA's are used to simulate any actions not done on the NIS Rack or Main Control Board.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-51 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Rx Shut Down Mode 3, S.R. NIS Channels returned to operable status.

BASELINE DATA: Operating Shift Test 1.2.3

DEFICIENCIES: Meter Calibration Problems Found

CORRECTIVE ACTION/DATE:

Trouble Report 205 Written/TR cleared 4/18/90.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Plant Start Up From Mode 5 to 100% Power SQT-2.4.5

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/12/89

GENERAL DESCRIPTION: The plant is taken from Mode 5 with R.H.R. in service to 100% power using Unit 1 normal operating procedures. All applicable steps are initialed and LOA's or variables used to determine plant statues are noted. The ability to use plant procedures on the simulator to do this plant start up is verified and any deficiencies are noted.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-6 0% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Plant on R.H.R. in Mode 5.

FINAL CONDITIONS TEST DURATION: 32 HRS.

Plant at 100% power following a normal plant start up.

BASELINE DATA: Plant Operating Procedures 1.52.4A, 1.50.4 (A,B,C,D)

DEFICIENCIES:

TV-GV Transfer did not work correctly, P-11 Permissive not correct.

CORRECTIVE ACTION/DATE:

Trouble Reports 207 and 165 written. TR-207 has been cleared, TR-165 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5:

None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Accident Monitoring Inst. Channel Checks SQT-2.4.6

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/14/89

GENERAL DESCRIPTION: This test checks the operability of the Accident Monitoring Channels for the Core Cooling Monitor, Relief and Safety Valve discharge temp. indication, Containment Sump Indication, P.O.R.V. Indication, Pzr Level and Pressure Channel Checks. This test is performed using the actual plant procedure only the Acoustic Panel test was not done as it is not modeled.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-38 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Plant 100% Steady State, all Accident Monitoring Channels returned to operable status.

BASELINE DATA: Operating Shift Test 1.6.7

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Reactor Coolant System Water Inventory Balance SQT-2.4.7

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/14/89

GENERAL DESCRIPTION: The test procedure requires monitoring of RCS and CVCS tank levels and water makeup to perform an inventory balance using the actual plant procedure OST-1.6.2. Data needed for calculations will be recorded on the printer at 5 minute intervals for review and analysis of results which will have the same acceptance criteria as the actual plant.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

FINAL CONDITIONS TEST DURATION: 3.0 HRS.
Plant steady state at 100% power, all data has been collected for the surveillance test (OST-1.6.2) and compared with actual results.

BASELINE DATA: Unit I OST-1.6.2 R.C.S. Water Inventory Balance

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Boric Acid Transfer Pump Operability Tests SQT-2.4.8

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:09/15/89

GENERAL DESCRIPTION: The Boric Acid Transfer Pump operating characteristics are checked against the plant data using actual plant test procedures and acceptance criteria. The ability to transfer in service Storage Tanks is done using LOA's with the actual plant procedure.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 3 HRS.

Plant at 100% Power, "B" Boric Acid Tank and Pump are in service.

BASELINE DATA: Operating Shift Tests 1.7.1, 1.7.2 and Procedure OM 1.7.4R

DEFICIENCIES: One meter calibration problem noted (LT-CH-108)

CORRECTIVE ACTION/DATE:

Trouble Report 195 Previously Written, TR-195 to be resolved by Dec. 1991

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Emergency Diesel Generator #1 Monthly Surveillance Test SQT-2.4.9

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:11/20/90

GENERAL DESCRIPTION: This test has the operator perform those control room actions necessary to verify operability of the #1 Emergency Diesel Generator and be able to compare the data taken to that required as acceptable in the Monthly Test Acceptance Criteria (OST-1.36.1).

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.

#1 EDG tripped and idling down at approximately 500 RPM. All data that could be taken from the control room has been entered on the OST Form. Test is complete as far as Control Room operator actions are necessary.

BASELINE DATA: Plant Operating Shift Test (OST-1.36.1)

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: #2 Diesel Generator Monthly Test SQT-2.4.10

REQUIREC BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:12/18/89

GENERAL DESCRIPTION: This test uses the Operating Shift Test 1.36.2 to check the operability of the #2 Diesel Generator and compare its performance against actual plant data. The diesel is started, loaded and parameters recorded and verified against OST 1.36.2 acceptance criteria and plant data. Only parameters that can be seen in the control room are verified.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Plant at 100% steady state, #2 Diesel Generator is running at Approx. 500 RPM.

BASELINE DATA: Operating Shift Test 1.36.2

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Containment Isolation Valve OST 1.47.3.A SQT-2.4.11

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.) DATE TESTED: 11/13/89
11/09/89

GENERAL DESCRIPTION: This test verifies containment isolation valve stroke times against actual plant data. The operator uses OST 1.47.3.A to increase stroke times then verifies them in tolerance to actual plant values.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 3.5 HRS.

Plant at same initial conditions with all valves tested returned to original position.

BASELINE DATA: BVPS Operating Shift Test OST 1.47.3.A

DEFICIENCIES: Several valves did not meet stroke time requirements.

CORRECTIVE ACTION/DATE: Trouble Report 216 written. TR-216 has been cleared.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Cold Shut Down Valve Exercise Test SQT-2.4.12

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:08/24/90

GENERAL DESCRIPTION: This test uses appropriate parts of the Operating Shift Test (OST) 1.1.10 to test the valve stroke time of selected power operated or automatic valves specified by Technical Specifications Table 3.6.1 and insure the Simulator performance is within allowable tolerance to the actual plant date.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-51 0% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Open closed valves as necessary to set them up for measurement of their closing time per the OST.

FINAL CONDITIONS TEST DURATION: 5 HRS.

Required sections of OST 1.1.10 completed, valves returned to NSA position.

BASELINE DATA: Plant OST 1.1.10 Valve/Check Valve Summary Log Sheet 1989/1990

DEFICIENCIES: Twenty-nine valve stroke times were out of limits, specific valves are listed on the trouble report.

CORRECTIVE ACTION/DATE: Trouble Report 323 written. To be resolved by December, 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Main Steam Trip Valve Full Closure Test SQT-2.4.13

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:12/20/89

GENERAL DESCRIPTION: This test verifies the stroke time of the Main Steam Isolation Valves and checks the data received against actual plant acceptance criteria and actual values. All three MSIV's are checked using the Operating Shift Test (OST) for each.

AVAILABLE OPTIONS: Loop A,B,C MSIV's

OPTION TESTED: All of the above

INITIAL CONDITIONS: IC-11 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

Pack "O" Used

FINAL CONDITIONS TEST DURATION: .5 HRS.

Rx in Mode 3, all MSIV's closed.

BASELINE DATA: Operating Shift Tests 1.21.4, 1.21.5, 1.21.6

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Aux Feedwater Pump Discharge Valve Exercise Test SQT-2.4.14

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED: 12/18/89

GENERAL DESCRIPTION: The test uses the Plant Operating Shift Test Procedure 1.24.1 to verify the stroke time of the AFW Pump Discharge Valves and verify them operable per actual plant acceptance criteria and actual values. Valves are stroked and times recorded.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Plant at 100% Steady State, AFW Systems returned to normal line up.

BASELINE DATA: Operating Shift Test 1.24.1 (6/5/89)

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Motor Driven AFW Pump Tests SQT-2.4.15

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:12/18/89

GENERAL DESCRIPTION: This test uses OST's 1.24.2 & 1.24.3 to verify the operability of the Motor Driven AFW Pumps. The test basically checks that the pump operates at the correct ΔP. LOA's are used as necessary to set the conditions for conducting the test. Results are compared to plant data.

AVAILABLE OPTIONS: FWP-3A, FWP-3B

OPTION TESTED: FW-P-3A & 3B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Plant at 100% SS, AFW System returned to normal system lino up.

BASELINE DATA: Operating Shift Tests (1.24.2 & 1.24.3)

DEFICIENCIES: Pump ΔP's too high

CORRECTIVE ACTION/DATE:

Trouble Report 235 Written/T. R. cleared 1/19/90

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Driven AFW Pump Test SQT-2.4.16

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:12/21/81

GENERAL DESCRIPTION: This test uses OST 1.24.4 to verify operability of the Terry Turbine AFW Pump ΔP is used as a measure of pump performance and conditions are set up to measure ΔP using L.O.A.'s and following the O.S.T. Procedure, Results are compared to plant data.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC- 18 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2 HRS.

Plant at 100% S.S., AFW System returned to normal line up.

BASELINE DATA: Operating Shift Test 1.24.4 (Plant Procedure)

DEFICIENCIES: ΔP of Pump incorrect

CORRECTIVE ACTION/DATE:

Trouble Report 235 Written/TR-235 has been cleared.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Reactor Start Up Following a Trip SQT-2.4.17

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/10/90

GENERAL DESCRIPTION: The reactor is tripped from 100% power, E-0 and ES.-0.1 have been completed. A post trip reactor start up is conducted using procedures 1.50.4J and 1.50.4D. including ECP calculation and 1/M plot. Ability to conduct the start up using plant procedures on the simulator is verified.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Rx Trip has occurred from 100%, E-0 & ES-0.1 have been completed as necessary to allow a reactor start up.

FINAL CONDITIONS TEST DURATION: 3 HRS.

Reactor start up complete, reactor critical at slightly less than 5% power, Procedure 1.50.4D completed.

BASELINE DATA: Plant Operating Procedures 1.50.4J and 1.50.4.D

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None.

3.4 Transient Tests (SQT-3.0)

Transient tests (TR-1 through 11) were performed per Appendix B.2.2 of ANSI/ANS-3.5-1985.

Test	Description
3.1	Manual reactor trip.
3.2	Complete loss of all feedwater.
3.3	Simultaneous closure of all main steam isolation valves.
3.4	Simultaneous trip of all reactor coolant pumps.
3.5	Trip of one reactor coolant pump.
3.6	Main turbine trip less than P-9 with manual rod control.
3.7	Maximum power ramp (100% to approximately 75% to 100%).
3.8	DBA LOCA with loss of offsite power.
3.9	Maximum steam break inside containment.
3.10	Pressurizer safety valve leak.
3.11	Main Turbine Trip, rod control in auto.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Manual Reactor Trip SQT-3.1

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/05/89

GENERAL DESCRIPTION: A manual reactor trip from 100% power is performed. All alarms received are recorded, parameters required to be recorded are recorded and graphed out for later analysis. Data is collected until N.R. levels are increasing, then the simulator is frozen. No operator actions were taken.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Recording Procedure 3.1.D followed for data collection.

FINAL CONDITIONS TEST DURATION: 2 HRS.

The reactor is tripped, S/G levels are increasing, no SI has occurred, the RCS is cooling down.

BASELINE DATA: BVT-1.1-9.4.6, BVPS Certification Test Review Committee
Sequence of Events Evaluation Program Acceptance Criteria
ES-0.1 Background Document

DEFICIENCIES: S/G level indication on S.P.D.S. does not go below 1% indicated NR, AFW Flow Oscillations, Containment Press. Response not correct.

CORRECTIVE ACTION/DATE: TR-214 Written for S/G Level Indication problem. TR-220 Written for AFW Flow Oscillation problem. TR-218 Written for Containment Press. Response problem. Trouble report 218 and 220 have been cleared. TR-214 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Complete Loss of All Feedwater SQT-3.2

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/05/89

GENERAL DESCRIPTION: At 100% power the Main Feed Pumps are tripped using malfunctions FWM-1A & 1B. The malfunctions for the Aux Feed Pumps were activated previously to prevent their auto start. All alarms received were recorded for review. Simulator was run until loss of heat sink effects could be noted on the RCS or S/G pressure response. Required parameters were recorded for graphs and future Review Group analysis.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Recording Procedure 3.1.D followed for data collection.

FINAL CONDITIONS TEST DURATION: 2 HRS.

Loss of all feedwater still present, RX tripped, SI, CIA, SLI, and FWI have all occurred. Large S/G pressure drop has occurred due to the loss of feedwater with some increase after Steam Line Isolation (SLI).

BASELINE DATA: F.S.A.R. Accident Analysis for loss of feedwater E.O.P. Background Information for FR-H.1 B.V.P.S., Certification Test Review Committee.

DEFICIENCIES: High Pzr. Temperature Alarm not expected, other problems noted but TR's previously written.

CORRECTIVE ACTION/DATE: TR-306 written for High Pzr. Temperature Alarm. Resolution by December 1992.

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Simultaneous Closure of all M.S.I.V.'s SQT-3.3

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/25/89

GENERAL DESCRIPTION: At 100% all MSIV's are failed closed using malfunctions MSS-1A, 1B and 1C at the same time. All alarms received are recorded, all ESF actuations are recorded. Data required by ANS 3.5 is collected. Simulator is run until normal post trip conditions have been established and have stabilized.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE-BOL

LIST OTHER SPECIAL CONDITIONS:

Recording Procedure 3D used to gather data.

FINAL CONDITIONS TEST DURATION: 2 HRS.

Rx tripped, partial FWI, AFW pumps supplying S/G's.
RCS temperature and pressure relatively stable at post trip values.
S/G levels increasing due to AFW flow.

BASELINE DATA: BVPS Certification Test Review Committee
FSAR 14.1.7.1 Loss of Electrical Load/Turbine Trip

DEFICIENCIES: Same problems noted in other tests, no new TR's needed.

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Simultaneous Trip of All Reactor Coolant Pumps SQT- 3.4

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED: 10/23/89

GENERAL DESCRIPTION: Plant is at 100% power when the three RCP's are tripped using Mal RCS-8A, 8B, 8C. All alarms and auto actions are recorded as well as data required by ANS 3.5 being recorded. Simulator is run until natural circulation is established. Data recorded will be graphed for Review Committee analysis.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Procedure 3D followed for data gathering.

FINAL CONDITIONS TEST DURATION: 2 HRS.

All RCP's off, RX tripped, No SI occurrence, partial FWI has occurred, AFW pumps supplying feedwater, natural circulation in progress.

BASELINE DATA: BVT-1.1-10.4.3, BVPS Certification Test Review Committee. FSAR-14.2.9 Complete loss of forced RX coolant flow. EOP - Background document for ES-0.2.

DEFICIENCIES: Alarms for auto bus transfer and auto trip of RCP's did not occur as they should.

CORRECTIVE ACTION/DATE:

Trouble reports 252 and 307 written. TR-252 is resolved, TR-307 to be resolved by December 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Trip of 1 Reactor Coolant Pump SQT-3.5

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/25/89

GENERAL DESCRIPTION: The Loop A Reactor Coolant Pump is tripped at 100% power using Mal RCS-8A. All alarms are recorded, data required by ANS-3.5 is collected for generating graphs. The transient is allowed to run till post trip valves are returning to normal and S/G levels are increasing on N.R. indication.

AVAILABLE OPTIONS: RCP's A, B, or C.

OPTION TESTED: RCP-A.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Procedure 3D followed for data gathering.

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

RCP A off, RCP's B&C running, Rx tripped due to low flow, S/G levels increasing.

BASELINE DATA: LER-88-007
B.V.P.S. Certification Review Committee.

DEFICIENCIES: Containment Press. Alarms not expected, Auto Bus Transfer Alarms not received.

CORRECTIVE ACTION/DATE:

No new TR's required as above problems were previously documented.

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Main Turbine Trip (Rods In Manual) SQT-3.6

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/11/89

GENERAL DESCRIPTION: The plant is reduced in power to below P-9 where a turbine trip will not cause a Rx Trip. The turbine is tripped and selected parameters plotted per the test procedure and all alarms noted. The test is run until stable plant conditions are reached.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-34 50% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Reduce power to less than P-9 prior to turbine trip.
Use Procedure D to set up to record data.

FINAL CONDITIONS TEST DURATION: 3 HRS.

Turbine tripped, Rx critical, AFW supplying the steam generators, Plant at stable power approximately 3 to 5% below initial value.

BASELINE DATA: Abnormal Operating Procedure 1.26.1 "Turbine Trip"
B.V.P.S. Certification Test Review Committee.

DEFICIENCIES: Steam Dump Controller setpoint incorrect - (Tave-Tref)

CORRECTIVE ACTION/DATE: Trouble Report 279 written. TR-279 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Maximum Power Ramp SQT-3.7

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:04/11/89

GENERAL DESCRIPTION: The plant is ramped from 100% to 75% at 5%/min. The plant is stabilized at 75% then ramped back to 100% power at 5%/minute. Monitored parameters are compared to acceptance criteria BVT 1.1-9.4.2 by the Review Committee.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Use Procedure D to set up to record data.

FINAL CONDITIONS TEST DURATION: 3 HRS.

Rx at 100% power, almost equilibrium conditions.

BASELINE DATA: Beaver Valley Test Procedure 1.1-9.4.2 Load Swing Test.
B.V.P.S. Certification Test Review Committee.

DEFICIENCIES: $\Delta \phi$ Alarm not received.

CORRECTIVE ACTION/DATE: Trouble Report 308 written. TR-308 will be resolved by December 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: DBA LOCA with Loss of Offsite Power SQT-3.8

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/11/89

GENERAL DESCRIPTION: A DBA LOCA is initiated in Loop A after a blackout condition is caused using file BLKOUT. Parameters and alarms are recorded as required by the procedure until SI flow stabilizes and containment is at subatmospheric pressure. No operator actions were taken.

AVAILABLE OPTIONS:	Loop "A"	RCS-2D
	Loop "B"	RCS-2E
	Loop "C"	RCS-2F

OPTION TESTED: Loop A RCS-2D

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Procedure D used to set up to record data.

FINAL CONDITIONS TEST DURATION: 2.5 HRS.

LOCA in progress. Rx tripped, CI"A", CI"B", SLI, FWI have occurred. Containment Press is subatmospheric and SI flow is relatively constant.

BASELINE DATA: B.V.P.S. Certification Test Review Committee
FSAR Section 14, DBA LOCA

DEFICIENCIES: Pzr. Temp. spikes too high, Incore Sump Alarm does not come on. Pzr. Control Press low, alarm did not come on, Prz, Relief Line Temp. improper response.

CORRECTIVE ACTION/DATE: Trouble Reports 309, 318, 319 and 320 written. TR-309 will be resolved by December 1992, TR-318, 319 and 320 will be resolved by December 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Break In Containment SQT-3.9

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED: 11/28/89

GENERAL DESCRIPTION: The plant is at 100% power when a steam break of maximum size 1E7 lbm/hr is activated. Required parameters are graphed and all alarms are noted. The transient is run with no operator action. The transient is run out until containment pressure is approximately stable and pressurizes press. is increasing.

AVAILABLE OPTIONS: A, B or C Steam Generator

OPTION TESTED: A Steam Generator

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE -BOL

LIST OTHER SPECIAL CONDITIONS:

Use Procedure D to set up to record data.

FINAL CONDITIONS TEST DURATION: 2.0 HRS.

Rx Tripped, SI in progress, CI "A" and CI "B" activated, containment pressure slowly decreasing, Faulted Steam Generator still blowing down.

BASELINE DATA: OM 53.4 E-2 Background Document
Safety Evaluation Per Amendment 71 to License
BVPS Simulator Certification Test Review Committee

DEFICIENCIES: None, that have not been previously noted on other tests.

CORRECTIVE ACTION/DATE: T.R.'s previously written.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Safety Valve Leak (No HHSI) SQT-3.10

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:11/01/89

GENERAL DESCRIPTION. The test is run at 100% power with the "B" HHSI Pump failed off. The malfunction causes PZR Safety Valve 551 C to fail 100% open. Upon Safety Injection activation, the "A" HHSI Pump is failed off. Required data points are plotted and al(alarms are recorded until the test is terminated upon the Pressurizer going solid and Source Range NIS decreasing.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Use Procedure D to set up to record data.

FINAL CONDITIONS TEST DURATION: 2 HRS.

Rx Tripped, SI, CIA, SLI, FWI have occurred except for HHSI, PZR level ≥ 100% and S.R. NIS counts decreasing.

BASELINE DATA: BVPS Simulator Certification Test Review Committee

DEFICIENCIES: None, not previously noted on othe:- tests.

CORRECTIVE ACTION/DATE: T.R.'s previously written.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Main Turbine Trip (Rods In Auto) SQT-3.11

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.1 DATE TESTED:10/11/89

GENERAL DESCRIPTION: Power is reduced to less than P-9 and the turbine is manually tripped with rod control in auto. Required parameters are plotted and all alarms are recorded. No operator action is taken. The transient is allowed to run until reactor and secondary plant parameters are steady state.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Set up to record data usin', Procedure D.

FINAL CONDITIONS TEST DURATION: 2 HRS.

Turbine Tripped, Plant stable at < 1% Power, with Steam Dumps controlling Tavg.

BASELINE DATA: BVPS Simulator Certification Test Review Committee
Abnormal Operating Procedure

DEFICIENCIES: None not previously noted.

CORRECTIVE ACTION/DATE: T.R.'s previously written.

EXCEPTIONS TAKEN TO ANS. 3.5: None

3.5 Malfunction Tests (SQT-4.0)

The following Malfunctions have been tested in accordance with Section 4.2.1 or 4.2.2 of ANSI/ANS 3.5-1985.

Test	Description
4.1	(AUX-1) Containment instrument air compressor trip.
4.2	(AUX-2) Station Air compressor trip.
4.3	(AUX-3) Instrument air leak (outside containment)
4.4	(AUX-4) Instrument air leak (inside containment)
4.5	(AUX-5) Station air header isolation valve failure.
4.6	(AUX-6) Auxiliary steam header leak.
4.7	(AUX-8) Surge tank effluent leak
4.8	(AUX-9) Gas waste decay tank header leak.
4.9	(AUX-10) River water pump trip.
4.10	(AUX-11) Turbine plant river water pump trip.
4.11	(AUX-12) Auxiliary river water pump trip
4.12	(AUX-13) Containment ventilation fan failure.
4.13	(AUX-14) Radiation monitor failure.

Test		Description
4.14	(CCW-1)	Non-regenerative heat exchanger tube leak.
4.15	(CCW-2)	Reactor coolant pump thermal barrier heat exchanger leak.
4.16	(CCW-3)	Reactor plant componet cooling water pump trip.
4.17	(CCW-4)	Reactor plant component cooling temperature control valve failure.
4.18	(CCW-5)	Non-regenerative heat exchanger temperature control valve failure.
4.19	(CCW-6)	Reactor plant componet cooling pump water suction header leak.
4.20	(CCW-8)	Reactor plant componet cooling supply line to RCP leak.
4.21	(CCW-9)	Reactor coolant pump seal water heat exchanger tube leaks.
4.22	(CND-1)	Condensate pump trip.
4.23	(CND-2)	Feedwater heater bypass valve failure.
4.24	(CND-3)	Condensate pump discharge header leak.
4.25	(CND-5)	Feedwater heater tube leak (2nd point).

Tests		Description
4.26	(CND-6)	Fourth point heater level control valve failure.
4.27	(CND-7)	Fifth point heater control valve oscillation.
4.28	(CND-8)	Air ejector failure.
4.29	(CND-9)	Vacuum breaker leak.
4.30	(CND-10)	Condenser tube leak.
4.31	(CND-12)	Cooling tower pump trip.
4.32	(CND-13)	Cooling tower pump discharge valve failure.
4.33	(CND-14)	Condensate recirculation control valve failure.
4.34	(CND-15)	Hotwell level control valve failure.
4.35	(CND-16)	Heater bypass valve to drain pump suction failure.
4.36	(CND-17)	Vacuum priming pump vacuum breaker valve failure.
4.37	(CND-18)	Vacuum priming pump trip.
4.38	(CRF-1)	Loss of rod drive MG set.
4.39	(CRF-2)	Failure of rods to move.
4.40	(CRF-3)	Improper bank overlap
4.41	(CRF-4)	Dropped rod.
4.42	(CRF-5)	Uncontrolled rod motion.
4.43	(CRF-6)	Automatic rod speed control failure.

Test		Description
4.44	(CRF-7)	Reference temperature (T_{ref}) failure.
4.45	(CRF-8)	Individual rod position indicator - loss of voltage.
4.46	(CRF-10)	Rod position step counter failure.
4.47	(CRF-11)	Stuck rod.
4.48	(CRF-12)	Reactor trip failure.
4.49	(CRF-13)	Rod stop failure.
4.50	(CRF-14)	Reactor trip.
4.51	(CHS-1)	Letdown back pressure regulator valve failure.
4.52	(CHS-2)	Letdown relief valve failure.
4.53	(CHS-3)	Letdown line leak in-containment (unisolable).
4.54	(CHS-4)	Plugged seal water injection filter.
4.55	(CHS-5)	Volume control tank level control valve failure.
4.56	(CHS-6)	VCT degasifier modulating level control valve failure.
4.57	(CHS-7)	RCS boron dilution accident
4.58	(CHS-8)	RCS boration accident.
4.59	(CHS-9)	Boric acid to blender flow transmitter failure.
4.60	(CHS-10)	Blender outlet flow transmitter failure.

Test	Description
4.61	(CHS-11) Charging header leakage.
4.62	(CHS-12) RCS fill header leakage.
4.63	(CHS-13) RCP pump seal injection flow control valve failure.
4.64	(CHS-14) Excess letdown divert valve failure.
4.65	(CHS-15) Hydrogen supply pressure regulator valve failure.
4.66	(CHS-16) Volume control tank leak.
4.67	(CHS-17) Blender outlet valve (FCV-CH-113B failure.
4.68	(CHS-19 Boric acid transfer pump trip.
4.69	(CHS-20) VCT level transmitter failure.
4.70	(CHS-21) Letdown inlet isolation valve failure.
4.71	(CHS-22) Charging flow control valve failure.
4.72	(CHS-24) Letdown high temperature divert valve failure.
4.73	(EPS-1) Station blackout.
4.74	(EPS-2) Unit station service transformer failure.
4.75	(EPS-3) System station service transformer failure.
4.76	(EPS-4) Loss of 4160 volt bus.

Test		Description
4.77	(EPS-5)	Loss of 480 volt bus.
4.78	(EPS-6)	Loss of 120 volt bus.
4.79	(EPS-7)	Loss of 120 vac inverter.
4.80	(EPS-8)	Loss of DC bus.
4.81	(EPS-9)	Grid voltage variation.
4.82	(EPS-11)	Diesel generator trip.
4.83	(EPS-12)	Diesel generator erratic speed control.
4.84	(EPS-13)	Diesel generator erratic volt regulation.
4.85	(EPS-14)	Diesel generator output breaker trip.
4.86	(EPS-15)	Load rejection.
4.87	(EPS-16)	Main generator output breaker failure.
4.88	(EPS-17)	Voltage adjuster setpoint failure.
4.89	(EPS-18)	Main transformer failure.
4.90	(FWM-1)	Main feedwater pump trip.
4.91	(FWM-2)	Heater drain pump trip.
4.92	(FWM-3)	Feedwater leak (inside containment).
4.93	(FWM-4)	Feedwater leak (outside containment).
4.94	(FWM-5)	Feedwater recirculation control valve failure.

Test		Description
4.95	(FWM-6)	High pressure feedwater heater tube leak.
4.96	(FWM-7)	Feedwater regulating valve failure.
4.97	(FWM-8)	Feedwater regulating valve bypass valve failure.
4.98	(FWM-9)	Erratic feedwater flow control.
4.99	(FWM-11)	Auxiliary feedwater pump trip.
4.100	(FWM-12)	Auxiliary feedwater flow control valve failure.
4.101	(FWM-13)	Auxiliary feedwater pump suction leak.
4.102	(FWM-14)	Feedwater flow transmitter failure.
4.103	(FWM-15)	Steam generator programmed level signal failure.
4.104	(FWM-16)	Steam generator level transmitter failure.
4.105	(MSS-1)	Steam leak upstream of main steam isolaton valve.
4.106	(MSS-2)	Steam leak downstream of main steam isolation valve.
4.107	(MSS-3)	Main steam isolation valve drifts shut.
4.108	(MSS-4)	Non-return valve to first point (HP) feedwater heater sticks open or closed.

Test		Description
4.109	(MSS-5)	Non-return valve to third point feedwater heater sticks open or closed.
4.110	(MSS-6)	Selected steam generator safety relief valve fails to reseat.
4.111	(MSS-7)	Steam dump valve fails to operate
4.112	(MSS-8)	Steam dump valve sticks.
4.113	(MSS-9)	Erratic T-average control.
4.114	(MSS-10)	Reference temperature (Tref) signal to steam dumps fails.
4.115	(MSS-11)	Steam pressure signal to steam dumps fails.
4.116	(MSS-12)	Atmospheric steam dump valve fails.
4.117	(MMS-13)	Erratic control of atmospheric steam dump valve.
4.118	(MMS-14)	Steam flow transmitter failure.
4.119	(MMS-15)	Steam pressure transmitter (atmospheric dump control) failure.
4.120	(MMS-16)	Steam pressure transmitter (safeguards logic) failure.
4.121	(MMS-17)	Steam leak in auxiliary feedwater pump supply line.
4.122	(NIS-1)	Source range channel failure.
4.123	(NIS-2)	Intermediate range channel failure.
4.124	(NIS-3)	Power range channel failure.

Test		Description
4.125	(NIS-4)	Intermediate range compensating voltage failure.
4.126	(NIS-5)	Source range high voltage cutoff failure.
4.127	(NIS-6)	Source range fuse blown.
4.128	(NIS-7)	Intermediate range fuse blown.
4.129	(NIS-8)	Power range fuse blown.
4.130	(CCT-1)	CCT pump trip. (cct 1A,1B)
4.131	(CCT-2)	CCT temperature control valve failure. (TCV-CC-215)
4.132	(CCT-3)	CCT supply line to selected component leak.
4.133	(CCT-4)	CCT pump suction header leak.
4.134	(PRS-1)	Pressurizer safety valve leakage.
4.135	(PRS-2)	Pressurizer safety valve failure.
4.136	(PRS-3)	Pressurizer power operated relief valve leakage.
4.137	(PRS-4)	Pressure power operated relief valve reseat failure.
4.138	(PRS-5)	Pressurizer steam space leak.
4.139	(PRS-6)	Pressurizer level transmitter failure.
4.140	(PRS-7)	Pressure reference level signal failure.

Test		Description
4.141	(PRS-8)	Pressurizer pressure transmitter failure.
4.142	(PRS-9)	Pressurizer spray valve failure.
4.143	(PRS-10)	Pressurizer heater control failure (Bank C)
4.144	(PRS-11)	Pressurizer spray valve control failure.
4.145	(PRS-12)	Pressurizer master pressure control failure.
4.146	(PRS-13)	Pressurizer level control failure.
4.147	(RCS-1)	Surgeline leak.
4.148	(RCS-2)	Cold leg leak.
4.149	(RCS-3)	Steam generator tube leak.
4.150	(RCS-4)	Reactor vessel head flange leak.
4.151	(RCS-5)	Reactor coolant pump - Seal No. 1 failure.
4.152	(RCS-6)	Reactor coolant pump - Seal No. 2 failure.
4.153	(RCS-7)	Reactor coolant pump - Seal No. 3. failure.
4.154	(RCS-8)	Reactor coolant pump trip.
4.155	(RCS-9)	Reactor coolant pump locked rotor.
4.156	(RCS-10)	Reactor coolant pump vibration high.

Test		Description
4.157	(RCS-11)	Reactor coolant system activity high.
4.158	(RCS-12)	Fuel handling accident.
4.159	(RCS-14)	Hot leg narrow range temperature sensor failure. (Hot leg RTD)
4.160	(RCS-15)	Hot leg wide range temperature sensor failure.
4.161	(RCS-16)	Cold leg narrow range temperature sensor failure. (Cold leg RTD)
4.162	(RCS-17)	Cold leg wide range temperature sensor failure.
4.163	(RCS-18)	Hot leg pressure transmitter failure.
4.164	(RCS-19)	Loop flow transmitter failure.
4.165	(RCS-20)	In-core thermocouple failure.
4.166	(RCS-21)	Unexplained RCS boron concentration change.
4.167	(RHR-1)	Residual heat removal pump trip.
4.168	(RHR-2)	Relief valve leak. (RV 721)
4.169	(RHR-3)	Residual heat removal flow transmitter failure. (FT-RH-605)
4.170	(RHR-4)	Residual heat removal flow control valve failure.
4.171	(RHR-5	Residual heat removal pump shaft failure.
4.172	(SIS-1)	Refueling water storage tank leak.

Test		Description
4.173	(SIS-2)	Quench spray pump failure.
4.174	(SIS-3)	Recirculation spray pump failure.
4.175	(SIS-4)	Recirculation spray heat exchange tube leaks to river water.
4.176	(SIS-5)	High head safety injection pump failure.
4.177	(SIS-6)	Low head safety injection pump failure.
4.178	(SIS-7)	Containment in-leakage.
4.179	(SIS-8)	Spurious safety injection signal.
4.180	(SIS-9)	Spurious containment isolation Phase A signal.
4.181	(SIS-10)	Automatic safety injection actuation failure.
4.182	(SIS-11)	Accumulator leak.
4.183	(SIS-12)	Safety injection signal fails to selected valves.
4.184	(SIS-13)	Safety injection line leak.
4.185	(SIS-14)	Refueling water storage tank level transmitter failure.
4.186	(SIS-15)	Low-head safety injection pump suction valve failure.
4.187	(TUR-1)	Turbine trip.
4.188	(TUR-3)	Turbine bearing high vibration
4.189	(TUR-4)	Governor valve failure.

Test		Description
4.190	(TUR-5)	Erratic governor valve control.
4.191	(TUR-6)	Main turbine throttle (trip) valve failure.
4.192	(TUR-7)	Erratic main turbine throttle (trip) valve control.
4.193	(TUR-8)	Electrohydraulic control pump trip.
4.194	(TUR-10)	Turbine bearing lift oil pump failure.
4.195	(TUR-12)	Electrohydraulic control speed channel failure.
4.196	(TUR-14)	Turbine runback failure.
4.197	(TUR-15)	Governor valve position limiter failure.
4.198	(TUR-16)	First stage pressure signal loss to electrohydraulic system.
4.199	(TUR-17)	Moisture separated reheater steam supply valve failure.
4.200	(TUR-18)	First stage steam pressure transmitter failure.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Containment Instrument Air Compressor Trip SQT-4.1

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/27/89

GENERAL DESCRIPTION: The operating "A" Air Compressor is tripped, Containment Inst. Air Press. decreases until "B" Air Compressor auto starts. The "B" Compressor is then turned off to verify further system depressurization will occur and then the Station Instrument Air cross connect (IA-90) is opened to verify this system can supply Containment Inst. Air.

AVAILABLE OPTIONS: Aux-1A - A Compressor
Aux-1B - B Compressor

OPTION TESTED: Aux-1A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Plant remains at 100% power. The "A" Compressor remains tripped, the "B" is restarted and returns pressure to normal. The Station Instrument Air cross connect (IA-90) has been closed.

BASELINE DATA: Malfunction Description 6.3.4.1.1
Plant Alarm Response Procedures A6-104, A6-110, A6-79

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Station Air Compressor Trip SQT-4.2

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/27/89

GENERAL DESCRIPTION: The running air compressor is tripped off. Decrease in system pressure is verified and auto start of standby compressor is also verified. The standby diesel is then turned off and proper operation of the diesel compressor is verified.

AVAILABLE OPTIONS: Aux-2A - "A" Compressor
Aux-2B - "B" Compressor
Aux-2C - "C" Compressor

OPTION TESTED: Aux-2A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .9 HRS.
"A" Compressor tripped due to malfunction, "B" Compressor turned off, system pressure decreasing even though the diesel air compressor is running.

BASELINE DATA: Malfunction Description 6.3.4.1.2
Plant Alarm Response Procedure A6-98, A6-97

DEFICIENCIES: Diesel air compressor cannot properly change station air press.

CORRECTIVE ACTION/DATE: TR-244 written. TR-244 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Instrument Air Leak SQT-4.3

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/27/89

GENERAL DESCRIPTION: The malfunction causes a large air leak in the system decreasing pressure and causing the standby air compressor to start, Inst Air is then isolated from Station Air when TV-SA-105 goes shut. All valves that fail upon loss of air are verified to fail in or to that position.

AVAILABLE OPTIONS: 0-2000 cuft/min variable leak rate

OPTION TESTED: 2000 cuft/min

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Open close valves as necessary to verify failed position after loss of inst Air takes place.

FINAL CONDITIONS TEST DURATION: 4.5 HRS.

Rx Tripped, Mode 3, Instrument Air System depressurized with malfunction active, all valves that failed closed with loss of air are closed.

BASELINE DATA: Malfunction Description 6.3.4.1.3
Alarm Response Procedure A6-99

DEFICIENCIES: Improper response for valves TV-DA-108A,
TV-CC-126,
TV-CC-127

CORRECTIVE ACTION/DATE: Trouble Report 321 written. TR-321 will be resolved by December, 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Instrument Air Leak In Containment SQT-4.4

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/17/90

GENERAL DESCRIPTION: A 2000 cuft/min leak is iniated to the Containment Inst. Air System. System pressure loss is verified and auto start of Standby Air Compressor is verified. Failure position of valves supplied by this air system are verified as pressure drops.

AVAILABLE OPTIONS: 0-2000 cuft/min. variable

OPTION TESTED: 2000 cuft/min.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 2 HRS.
Plant tripped and many problems exist due to the air operated valves going to their failed positions. The Pzr. is filling up, RCPs lose cooling, Containment is heating up and the plant trip is due to high Pzr. Press. Air pressure is not restored as the malfunction is still active.

BASELINE DATA: Malfunction Description 6.3.4.1.4

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS 1 SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Station Air Header Isolation Valve Failure SQT-4.5

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/03/90

GENERAL DESCRIPTION: An air leak is iniated in the station air system. As pressure drops to the setpoint at which TV-SA-105 should close, it is verified that it remains open.

AVAILABLE OPTIONS: Open Failure of TV-SA-105
Close Failure of TV-SA-105

OPTION TESTED: Open Failure of TV-SA-105

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .25 HRS.
Air leak in progress, station air pressure decreasing malfunction active with TV-SA-105 remaining open.

BASELINE DATA: Malfunction Description 14.4.7.1.5

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Leak In Aux. Steam Header SQT-4.6

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/03/90

GENERAL DESCRIPTION: A leak of Aux Steam is iniated. Pressure decrease is verified; expected alarm is verified. Components served by Aux Steam are checked to verify correct response to a lack of Aux Steam.

AVAILABLE OPTIONS: 0-10,000 lbm/hr. variable leak size

OPTION TESTED: 8,000 lbm/hr.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Plant remains at power, mal. is still active, i.e., leak is still in progress. The Aux Steam isolation valve HYV-AS-101A is closed isolating Aux Steam to the P.A.B.

BASELINE DATA: Malfunction Description 6.3.4.1.6
Plant Alarm Response Procedure A2-81

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Gaseous Waste Surge Tank Effluent Leak SQT-4.7

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2. DATE TESTED:01/03/90

GENERAL DESCRIPTION: A leak is iniated on the Waste Gas Surge Tank effluent header. The leak is verified by a decreasing tank pressure as well as expected increases in radiation levels due to the leak.

AVAILABLE OPTIONS: 0-1 SCFM variable leak size

OPTION TESTED: 1 SCFM leak rate

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: Flow lined up to "B" Decay Tank
Ch 9 selected on RMS Multipoint Recorder

FINAL CONDITIONS TEST DURATION: 1 HRS.
Malfunction is active, leak in progress, Surge Tank pressure continues to decrease, expected radiation levels increasing.

BASELINE DATA: Malfunction Description 14.4.7.1.8

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Gas Decay Tank Effluent Header Leak SQT-4.8

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/16/90

GENERAL DESCRIPTION: The 1A Gas Decay Tank is lined up for discharge and then the malfunction is activated. The decay tank pressure decrease rate increases. Various radiation monitors in the PAB and ventilation system are monitored for expected increases.

AVAILABLE OPTIONS: Variable Leak Rate 0-1 SCFM

OPTION TESTED: 1 SCFM

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Gas Decay Tank 1A must be lined up for discharge in order for test to work

FINAL CONDITIONS TEST DURATION: 3 HRS.

Malfunction is active but operator actions have been taken to isolate the leak and the Decay Tank Pressure remains constant

BASELINE DATA: Malfunction Description 6.3.4.1.9

DEFICIENCIES: Improper Radiation Monitor Response

CORRECTIVE ACTION/DATE: TR-276 Written. TR-276 will be resolved by December 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: River Water Pump Trip SQT-4.9

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/15/90

GENERAL DESCRIPTION: The "A" operating River Water Pump trips expected flows and pressure changes are verified to River Water Sys. Appropriate automatic actions for back up pump starting and valve operation are also checked. Expected "low press" alarms and "auto start/stop" alarms are also checked.

AVAILABLE OPTIONS: Aux 10-A - Pump A Trip
Aux 10-B - Pump B Trip
Aux 10-C - Pump C Trip

OPTION TESTED: Aux-10A - River Water Pump A Trip

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .5 HRS.
Plant remains at power. The "A" River Water Pump is tripped, the "B" River Water Pump has auto started and is supplying loads. Overall River Water System operation is back to pre-event.

BASELINE DATA: Malfunction Description 6.4.3.1.10
Plant Alarm Response Procedures A1-82, A1-40, A1-59, A1-67, A1-48

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Raw Water Pump Trip SQT-4.10

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/16/90

GENERAL DESCRIPTION: The malfunction is activated to trip the 6A Pump. System pressure and flow initially decrease until the 6B Pump auto starts. Appropriate alarms for pump auto start/stop and low discharge pressure should occur based on component conditions.

AVAILABLE OPTIONS: Aux-11A - Pump 6A
Aux-11B - Pump 6B

OPTION TESTED: Aux-11A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .5 HRS.
Plant at 100% power. The 6A Pump has tripped, the 6B Pump has auto started. Raw Water System Pressure, Flow and Temperature have returned to normal. Expected alarms were received and cleared as appropriate.

BASELINE DATA: Malfunction Description 6.4.3.1.11
Plant Alarm Response Procedures A6-117, A6-118, A6-93

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Aux River Water Pump Trip SQT-4.11

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/16/90

GENERAL DESCRIPTION: The malfunction is actuated, pump is verified tripped via breaker position and pump amps. Auxiliary equipment associated with the pump; discharge valve, screen wash booster pump and traveling screen pump, close or stop as appropriate for this condition.

AVAILABLE OPTIONS: Aux 12A - Pump 9A
Aux 12B - Pump 9B

OPTION TESTED: Aux 12A - Aux River Water Pump 9A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: Aux River Water Pump 9A started prior to test, as it is not normally operating.

FINAL CONDITIONS TEST DURATION: .5 HRS.
Plant operating 100%, no applicable effect on River Water System as River Water Pump 1A is supplying normal system requirements.

BASELINE DATA: Malfunction Description 6.4.3.1.12
Plant Alarm Response Procedure A1-122

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Containment Ventillation Fan Failure SQT-4.12

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/16/90

GENERAL DESCRIPTION: The malfunction activates the fan trip. Pump trip is verified by alarms and indication of amps and breakers. Affect on containment is verified by checking for containment temperature increase.

AVAILABLE OPTIONS: Ventillation Fans 1A, 1B, 1C, 2A, 2B, 2C, 4A, 4B

OPTION TESTED: Ventillation Fan 1A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .25 HRS.
Plant at 100% pwr. Containment Vent. Fan 1A is tripped. Containment temperature is slowly rising.

BASELINE DATA: Malfunction Description 6.34.1.13
Plant Alarm Response Procedure A11-25

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Radiation Monitor Failure SQT-4.13

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/17/90

GENERAL DESCRIPTION: RIS-CC100 (CCW Sys. Rad Monitor) is failed to 100% of scale. Proper meter, recorder and alarm indication is verified correct for this failure. No auto actions are expected.

AVAILABLE OPTIONS: 0-100% scale; for CH101A, CC100, BD100, GW108A, SV100, VS103A, VS204A, RM215A, RM215B

OPTION TESTED: CC100 failed to 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: [illegible]
Plant 100% steady state, CC100 indication normal and alarms clear.

BASELINE DATA: Malfunction Description 6.3.4.1.14
Plant Alarm Response Procedures ARP A4-71, A4-72

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Non Regenatative Heat Exchanger Tube Leak SQT-4.14

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/19/89

GENERAL DESCRIPTION: Malfunction activates a leak in CVCS NRHX, letdown flow increases, VCT level decreases. The leak carries primary water to the CCW system increasing surge tank level and system activity.

AVAILABLE OPTIONS: Variable leak rate 0-100%

OPTION TESTED: 100% leak rate

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .75 HRS.
Malfunction active, letdown flow reduced, VCT level being maintained by auto makeup.

BASELINE DATA: Malfunction Description 6.3.4.2.1
Plant Alarm Response Procedure A6-37

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rx Coolant Pump Thermal Barrier HX Leak SQT-4.15

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/30/89

GENERAL DESCRIPTION: Malfunction causes a leak of seal injection water to the CCW System. Increase in CCW System inventory is verified, decrease in RCS inventory is verified, auto operation of TV-1CC-107 is verified. Overall plant response to loss of RCS make up is also verified to occur.

AVAILABLE OPTIONS: Variable leak 0-200 gpm selectable RCPs
CCW-2A - Loop 1 RCP
CCW-2B Loop 2 RCP
CCW-2C Loop 3 RCP

OPTION TESTED: CCW-2A, leak rate 20 gpm, increased to 80 gpm.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Malfunction active, RCP 1A indications returned to normal except for isolation of thermal barrier CCW flow. VCT is being made up to. CCW surge tank higher than pre-event level conditions.

BASELINE DATA: Malfunction Description 6.3.4.2.2
Plant Alarm Response Procedure A3-73

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCW Pump Trip SQT-4.16

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/30/89

GENERAL DESCRIPTION: The "A" CCW pump is tripped by malfunction. Decrease in CCW flow and press are verified as are indications of pump trip amps and breaker position. Auto response of CCW system components are also verified, i.e., "B" CCW pump auto start.

AVAILABLE OPTIONS: CCW-3A - "A" CCW Pump
CCW-3B - "B" CCW Pump
CCW-3C - "C" CCW Pump

OPTION TESTED: CCW-3A - "A" CCW Pump

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: Turn off the "B" CCW Pump and allow the system to stabilize.

FINAL CONDITIONS TEST DURATION: .45 HRS.
"A" CCW Pump tripped, "B" CCW Pump running after auto starting, CCW system flows and pressures approximately back to pre-event values.

BASELINE DATA: Malfunction Description 6.3.4.2.3
Plant Alarm Response Procedure A6-33

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCW Temperature Control Valve Failure SQT-4.17

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/19/89

GENERAL DESCRIPTION: This malfunction will cause the temperature control valve to open based on a faulty signal at the output of the CCW HX. Actual temperatures should increase as more CCW flow is bypassed around its heat exchanger. Individual components are checked for temperature increases.

AVAILABLE OPTIONS: Selectable range 0-200°F

OPTION TESTED: 50°F

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Temperature indication at CCW HX outlet indicates failed valued. Actual CCW temperatures higher than pre-event.

BASELINE DATA: Malfunction Description 6.3.4.2.4

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: NRHX Temperature Control Valve Failure SQT-4.18

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/30/90

GENERAL DESCRIPTION: Malfunction will cause TI-CH-144 to fail to 50°F, appropriate alarms and auto actions verified. Demineralizers will be bypassed, letdown rad monitor will isolate, cooling water will be cut back to the NRHX Actual letdown line temperature will increase until TCV-CH-144 is operated manually.

AVAILABLE OPTIONS: Variable Range 50-200°F

OPTION TESTED: 50°F

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
Malfunction active, manual operation of TCV-CH-144 is returning letdown line to normal.

BASELINE DATA: Malfunction Description 6.3.4.2.5
Plant Alarm Response Procedure A3-91

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCW Pump Suction Header Leak SQT-4.19

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/19/89

GENERAL DESCRIPTION: Leak should cause CCW surge tank to decrease, CCW pumps should cavitate then trip, temperatures of components supplied by CCW should increase significantly.

AVAILABLE OPTIONS: Variable leak rate 0-200 gpm

OPTION TESTED: 200 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Malfunction active, CCW pumps are cavitating, system component temperatures not increasing as much as might be expected.

BASELINE DATA: Malfunction Description 6.3.4.2.6
Plant Alarm Response Procedure A6-37

DEFICIENCIES: CCW system does not seem to empty, nor do CCW pumps trip after a significant amount of cavitation.

CORRECTIVE ACTION/DATE: TR-278 written. TR-278 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCW To Rx Coolant Pump Leak SQT-4.20

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/20/90

GENERAL DESCRIPTION: Malfunction will cause a leak on the supply line to RCP-A CCW supply line. CCW surge tank level should decrease, flow should decrease to the affected RCP with a noticable temperature increase. Flow to the other components should decrease a small amount.

AVAILABLE OPTIONS: Variable Leak 0-800 gpm, selectable RCPs
CCW-8A - RCP 1A
CCW-8B - RCP 1B
CCW-8C - RCP 1C

OPTION TESTED: 200 gpm leak, RCP-1A selected

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Improper response found. Flow to RCP same as pre-event, flow to other RCPs greater than pre-event. CCW surge tank level decreasing.

BASELINE DATA: Malfunction Description
Plant Response Alarm Procedures A3-75, A3-77, A3-83, A3-37

DEFICIENCIES: Improper flow response in CCW Sys to components.

CORRECTIVE ACTION/DATE: TR-277 written will be resolved by December 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rx Coolant Pump Seal Water HX Tube Leak SQT-4.21

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/30/89

GENERAL DESCRIPTION: When the malfunction is activated, CCW water will leak into the CVCS via the tube leak. A decrease in CCW surge tank level is verified, the dilution caused by CCW water is verified and the back pressure effect causing #1 seal leak off to decrease is verified.

AVAILABLE OPTIONS: Variable rate 0-100%

OPTION TESTED: 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: Line up auto makeup to CCW surge tank.

FINAL CONDITIONS TEST DURATION: 1 HRS.
Malfunction active, CCW system leaking into C.V.C.S. RCS dilution occurring with rods moving in to compensate.

BASELINE DATA: Malfunction Description 6.3.4.2.9

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Condensate Pump Trip SQT-4.22

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/16/90

GENERAL DESCRIPTION: The test is done at 100%, then 25% power. From 100% the 1A pump is tripped, effects on feed flow and press are verified. Alarms should come in for pump trip, low press. and low feed flow as well as for an expected Rx trip. At 25% the test is run with 1B pump off to verify its auto start when the 1A pump trips.

AVAILABLE OPTIONS: CND-1A - 1A Condensate Pump
CND-1B - 1B Condensate Pump

OPTION TESTED: CND-1A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Use IC 45, 25%, BOL for auto start feature test.

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

1st Option - Rx Tripped, 1A Condensate Pump tripped, 1B Condensate Pump running

2nd Option - Plant at 25% pwr., 1A Condensate Pump tripped, 1B Auto started

BASELINE DATA: Malfunction Description 6.3.4.5.1
B.V.P.S. Alarm Response Procedures A7-1, A7-5, A7-6

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Heater Bypass Valve Failure SQT-4.23

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/17/90

GENERAL DESCRIPTION: The malfunction causes the heater bypass valve to open. Feedwater temperature decrease is verified, affects on feedwater flow increase are verified. Rx power increases to the point where a turbine runback occurs.

AVAILABLE OPTIONS: Selectable Position Failure (0-100% Open)

OPTION TESTED: 100% Open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .75 HRS.
Malfunction active, feedwater heater bypass valve open, power reduction in progress due to OP Delta T runback occurrance.

BASELINE DATA: Malfunction Description 6.3.4.5.2.
Plant Alarm Response Procedure A6-88

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Condensate Pump Discharge Header Leak SQT-4.24

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/17/90

GENERAL DESCRIPTION: The malfunction is activated and the effects of the leak on condensate pump discharge pressure and main feed pump suction are verified. Feedwater flow will decrease and S/G levels will decrease to the Rx trip setpoint. Condensate pumps are tripped and a resultant change in vacuum is noted.

AVAILABLE OPTIONS: Variable leak rate 0-10,000 gpm

OPTION TESTED: 10,000 gpm leak rate

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .75 HRS.
Leak in progress, Rx tripped, condenser vacuum decreasing both condensate pumps tripped as well as the 1A main feed pump.

BASELINE DATA: Malfunction Description 6.3.4.5.3
Plant Alarm Response Procedures A7-05 and A7-06

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Heater Tube Leak SQT-4.25

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/17/90

GENERAL DESCRIPTION: The leak occurs and affects on condensate pump discharge press. decrease and M.F.P. discharge press. decrease are verified. Heater drain tank level and pump operation are verified as they try to compensate for the leak.

AVAILABLE OPTIONS: CND-5A (Train A)
CND-5B (Train B)
Variable leak rate 0-10,000 gpm

OPTION TESTED: CND-5A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .75 HRS.
Leak in progress, both heater drain pumps in operation, maintaining adequate suction to the main feed pumps.

BASELINE DATA: Malfunction Description 6.3.4.5.5
Plant Alarm Response Procedures A6-71 and A7-09

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: 4th Point Heater Level Control Value Failure SQT-4.26

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/18/90

GENERAL DESCRIPTION: The valve is failed closed and the heater level should increase, a small temp. effect may be seen on feedwater temperature and possibly a small effect on Rx plant temperatures. A high level alarm will occur on the affected heater and will result in a decreasing hotwell level.

AVAILABLE OPTIONS: CND-6A = FW-E-4A
CND-6B = FW-E-4B 0-100% of valve position

OPTION TESTED: CND-6B, 0% Valve Position

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None.

FINAL CONDITIONS TEST DURATION: 1 HRS.

Malfunction active, 4th Point Heater level increasing, Tavg slightly higher than initial value, Condensor hotwell level increasing.

BASELINE DATA: Malfunction Description 6.3.4.5.6
Alarm Response Procedure A7-13

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: 5th Point Heater Level Control Valve Oscillation SQT-4.27

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/17/90

GENERAL DESCRIPTION: The malfunction is activated and the cycling of the effected heater cycles up and down over the appropriate period. Only a very small effect is expected to be seen in the overall plant response.

AVAILABLE OPTIONS: 0-50% Oscillation, 0-999 sec period
CND-7A Train "A"
CND-7B Train "B"

OPTION TESTED: CND-7B, 50% oscillation, 300 sec period

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Malfunction active, level cycling toward low level alarm setpoint in the 5B feedwater heater.

BASELINE DATA: Malfunction Description 6.3.4.5.7
Plant Alarm Response Procedure A7-15

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Air Ejector Failure SQT-4.28

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 04/18/90

GENERAL DESCRIPTION: When the malfunction is activated, a decrease in vacuum is verified as well as the alarm. Operator action is taken to place the failed air ejector out of service and to place the standby one in service and note a vacuum increase.

AVAILABLE OPTIONS: CND-8A - 1A Air Ejector
CND-8B - 1B Air Ejector

OPTION TESTED: CND-8A - 1A Air Ejector

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: Ensure steam jet air ejector 1A is on line and 1B is secured.

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
Failed air ejector out of service, standby air ejector placed in service, vacuum is increasing.

BASELINE DATA: Malfunction Description 6.3.4.5.8
Plant Alarm Response Procedure A7-03

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Vacuum Breaker Leak SQT-4.29

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/29/89

GENERAL DESCRIPTION: The malfunction is activated and the expected vacuum decrease is verified. The appropriate alarms are verified as well as the expected low low vacuum turbine trip.

AVAILABLE OPTIONS: 0-100% valve position

OPTION TESTED: 50% open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .45 HRS.
Turbine and reactor tripped due to low low vacuum turbine trip.

BASELINE DATA: Malfunction Description 6.3.4.5.9
Plant Alarm Response Procedures A7-03 and A7-04

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Condenser Tube Leak SQT-4.30

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/17/90

GENERAL DESCRIPTION: Malfunction leak is activated, increase in hotwell level is verified. Expected alarms are verified for *hotwell level and *secondary chemistry. Operator action is taken to isolate the faulted water box and proper effects are noted.

* NOTE: Expected alarms don't work on Cert Pack A but work on normally used Trng Pack.

AVAILABLE OPTIONS: Variable Leak 0-1,000 gpm

OPTION TESTED: 1,000 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1.25 HRS.
Malfunction active, faulty water box is isolated, condenser vacuum and hotwell level returning to normal.

BASELINE DATA: Malfunction Description 6.3.4.5.10
Plant Alarm Response Procedures A7-02, A6-127

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE: Expected alarms do work on normal training pack.

EXCEPTIONS TAKEN TO ANS. 3.5: N/A.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Cooling Tower Pump Trip SQT-4.31

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/19/89

GENERAL DESCRIPTION: The pump is tripped by the malfunction and the amps decrease, breaker position and auto stop alarm are verified. Condense vacuum decrease with the resulting electrical generator output decrease are also verified. Cooling tower pump discharge temperatures slowly increase.

AVAILABLE OPTIONS: CND-12A - Pump 1A
CND-12B - Pump 1B
CND-12C - Pump 1C
CND-12D - Pump 1D

OPTION TESTED: CND-12C Cooling tower pump 1C

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
Vacuum decrease has stopped, due to reduction of generator output power. Approximately 20 mwt.

BASELINE DATA: Malfunction Description 6.3.4.5.12
Plant Alarm Response Procedure A6-83

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Cooling Tower Pump Discharge Valve Failure SOT-4.32

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/19/89

GENERAL DESCRIPTION: This test verifies the valve will fail closed when the malfunction is activated and that the cooling tower pump will trip when the valve is closed.

AVAILABLE OPTIONS: CND-13A - Valve 110A
CND-13B - Valve 110B
CND-13C - Valve 110C
CND-13D - Valve 110D

OPTION TESTED: CND-13B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .25 HRS.
Valve 110B closed, B Cooling Tower Pump tripped, condenser vacuum decreasing.

BASELINE DATA: Malfunction Description 6.3.4.5.13
Plant Alarm Response Procedure A6-84

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Condensate Recirc Valve Failure SQT-4.33

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/19/89

GENERAL DESCRIPTION: The malfunction fails FCV-CN101 open. Decreased flow to the main feed pumps is verified. Appropriate alarms associated with the decreased main feed water flow activate. The "A" MFW pump trips and a Rx trip results.

AVAILABLE OPTIONS: Variable 0-100% open

OPTION TESTED: 100% open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.
Reactor has tripped on lo level S/G and Stm flow > feed flow. Recirc flow has been manually established.

BASELINE DATA: Malfunction Description 6.3.4.5.14

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Hotwell Level Control Valve Failure SQT-4.34

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/19/89

GENERAL DESCRIPTION: When LCV-102 fails open, it should cause hotwell level to increase and secondary demin storage tank to decrease. As the level in the hotwell increases, the spill valve should open and limit the amount of increase The operator will then take control to restore levels to normal.

AVAILABLE OPTIONS: Variable 0-100% of full open
CND-15A - LCV-101
CND-15B - LCV-102

OPTION TESTED: CND-15B, 100% open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .45 HRS.
Manual control of the hotwell level using MOV-CN-105. Plant conditions returning to normal.

BASELINE DATA: Malfunction Description 6.3.4.5.15

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Vacuum Priming Pump Vacuum Breaker Valve Failure SQT-4.36

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/19/89

GENERAL DESCRIPTION: The malfunction will cause a slow decrease in condenser vacuum as air begins to build up in the circulating water system. Cooling Tower pumps will eventually cavitate, the auto start of the second vacuum priming pump will not restore conditions to normal.

AVAILABLE OPTIONS: CND-17A - Valve 102A
CND-17B - Valve 102B

OPTION TESTED: CND-17A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .5 HRS.
Condenser vacuum oscillating, Cooling Tower pumps cavitating, vacuum lower than beginning of transient.

BASELINE DATA: Malfunction Description 6.3.4.5.17
Plant Alarm Response Procedure A6-77

DEFICIENCIES: Condenser vacuum oscillates

CORRECTIVE ACTION/DATE: TR-282 written. TR-282 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Vacuum Priming Pump Trip SQT-4.37

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/19/89

GENERAL DESCRIPTION: The operating Priming Pump "A" is tripped. The expected alarm is verified. As vacuum decreases the "B" Vacuum Priming Pump auto starts, restoring vacuum.

AVAILABLE OPTIONS: CND-18A Pump A
CND-18B Pump B

OPTION TESTED: CND-18A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Ensure A Pump in Run, B Pump in Auto

FINAL CONDITIONS TEST DURATION: .25 HRS.

"B" Priming Pump running and restoring vacuum

BASELINE DATA: Malfunction Description 6.3.4.5.18
Plant Alarm Response Procedure A6-68

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loss of Rod Drive MG Set SQT-4.38

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 10/20/89

GENERAL DESCRIPTION: When the first Rod Drive MG Set is tripped the alarm comes on, but no Rx Trip should occur. Upon tripping the second Rod Drive MG Set the CRDM's have no power and rods drop into the core.

AVAILABLE OPTIONS: CRF-1A 1A MG Set Trip
CRF-1B 1B MG Set Trip

OPTION TESTED: Both of the above

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .25 HRS.

Rx Tripped, Both Rod Drive MG Sets Tripped

BASELINE DATA: Malfunction Description
Alarm Response Procedures A4-99, A4-107, A4-97, A5-14

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Failure of Rods to Move SQT-4.39

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/20/89

GENERAL DESCRIPTION: The malfunction is activated to prevent both auto and manual rod motion. When turbine load is reduced 10%, failure of auto rod motion is verified. RCS temperatures & Pzr level will increase. The operator will then take manual control of rods and attempt to move them and they will not move.

AVAILABLE OPTIONS: CRF-2A Auto Motion Failure
CRF-2B Manual Motion Failure

OPTION TESTED: CRF-2A, CRF-2B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .45 HRS.

Power Level ≈ 90%, Tavg higher than Tref due to control rod failure

BASELINE DATA: Malfunction Description 6.3.4.6.2

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TES, ABSTRACT

TEST TITLE: Improper Bank Overlap SQT-4.40

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/20/89

GENERAL DESCRIPTION: The malfunction is set to cause Control Banks B & C to move at the same time during an Rx Start Up. When this occurs, a Rod Control Urgent Alarm stops rod motion. The problem is then corrected and normal overlap operation verified. Improper overlap is then verified between Banks A & B as the Start Up is tried again.

AVAILABLE OPTIONS: CRF-3A Bank A & B Improper Overlap
CRF-3B Bank B & C Improper Overlap
CRF-3C Bank C & D Improper Overlap
Variable Counter-0-999 steps

OPTION TESTED: CRF-3A, CRF-3B
200 steps, 50 steps

INITIAL CONDITIONS: IC-48 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

FINAL CONDITIONS TEST DURATION: .45 HRS.

Plant/Rx Start Up in progress with improper overlap between Control Banks A and B

BASELINE DATA: Malfunction Description 6.3.4.6.3

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Dropped Control Rod SQT-4.41

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/20/89

GENERAL DESCRIPTION: The malfunction caused Rod F-8 to drop into the core. A negative rate trip should cause a Rx trip. Appropriate alarms indicating rod drop are verified as well as the First Out Rx Trip annunciator.

AVAILABLE OPTIONS: Any Control Rod
Stationary or Moveable Coil Failure

OPTION TESTED: Rod F-8, Stationary Coil

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Rx Tripped, all post Rx trip conditions as expected

BASELINE DATA: Malfunction Description 6.3.4.6.4
Plant Alarm Response Procedures A4-126, A4-69, A5-14

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Uncontrolled Rod Motion SQT-4.42

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/25/89

GENERAL DESCRIPTION: Auto outward rod motion is initiated, Tavg increase is verified, change to OP & OT ΔT setpoints verified, turbine runback verified, reactor trip is verified.

AVAILABLE OPTIONS: Rod speed 8-72 steps/min.
(CRF 5A or 5B) Auto or Manual Failure

OPTION TESTED: CRF-5A Auto, 8 steps/min.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Mal RCS-21 is used to cause control Band D rods to go into RIL prior to initiating Mal CRF-5 so as to get maximum transient from this test

FINAL CONDITIONS TEST DURATION: 1 HRS.

Rx tripped due to turbine trip

BASELINE DATA: Malfunction Description 6.3.4.7.5
Abnormal Operating Procedure 1.53.C4.1.1.3

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Automatic Rod Speed Failure SQT-4.43

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/20/89

GENERAL DESCRIPTION: The malfunction is activated, then turbine power is reduced, when rods begin to move in auto the immediately move at and remain moving at 72 steps per minute. When switched to manual rod motion stops and demand speed goes to 48 steps per minute.

AVAILABLE OPTIONS: Variable Speed 0-72 steps/minute

OPTION TESTED: 72 steps/minute

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .25 HRS.

Plant at 85% Power, Rod motion stopped, rods in manual, Tavg ≈ Tref

BASELINE DATA: Malfunction Description 6.3.4.6.6

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Tref Failure SQT-4.44

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/09/90

GENERAL DESCRIPTION: When failure occures rods are verified moving in, Rx Power, Tavg and Pzr Level and Pressure should decrease. ΔI should decrease, turbine load will decrease when the valve position limit is reached. Tavg will reach Tref

AVAILABLE OPTIONS: Variable 547°F - 578°F

OPTION TESTED: 547°

INITIAL CONDITIONS: IC- 42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Rx Critical, Tavg = 547°F Turbine load reduced due to low steam line pressure

BASELINE DATA: Malfunction Description 6.3.4.6.7
Plant Alarm Response Procedure A4-46
Abnormal Operating Procedure 1.53.C.4.1.1.3

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: I.R.P.I. Loss of Voltage SQT-4.45

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/23/90

GENERAL DESCRIPTION: When malfunction is activated Rod M-4 should indicate "0" steps and the rod bottom light should activate. Alarms associated with the rod being on the bottom of the core should activate.

AVAILABLE OPTIONS: Rods J-13, G-7, B-10, F-4, M-4, K-6

OPTION TESTED: Rod M-4

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction active, plant at initial conditions except for failed rod position indicator and associated alarms.

BASELINE DATA: Malfunction Description 6.3.4.6.8

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rod Position Step Counter Failure SQT-4.46

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/23/90

GENERAL DESCRIPTION: A turbine load reduction is performed with rods in auto. Rod motion is verified using IRPI while the failed counter does not move.

AVAILABLE OPTIONS: Various Counters A1, A2, B1, B2, C1, C2, D1, D2
Failure Rate 0, 0.5, 2 times normal

OPTION TESTED: D1, 0

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 Hrs.

Power Reduction stopped, the failed counter has not moved for control bank D while the other has.

BASELINE DATA: Malfunction Description 6.3.4.6.10

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Stuck Rod SQT-4.47

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/23/90

GENERAL DESCRIPTION: A load reduction is conducted and as Control Bank C begins to move; Rod M-4 is verified stuck. Power distribution effects are verified as well as appropriate alarms. The Rx is then tripped and rod M-4 is again verified stuck out.

AVAILABLE OPTIONS: Mode - Electrical or Mechanical
Any rod can be selected

OPTION TESTED: Rod M-4, Mechanical

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: .9 HRS.
The Rx is tripped with Rod M-4 still stuck out

BASELINE DATA: Malfunction Description 6.3.4.6.11
Abnormal Operating Procedure 1.1.6
Alarm Response Procedure A4-76

DEFICIENCIES: Power distribution effects of stuck rod not seen

CORRECTIVE ACTION/DATE: TR-280 written. To be resolved by December 1992.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Reactor Trip Failure SQT-4.48

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/23/90

GENERAL DESCRIPTION: The turbine is tripped via a low condenser vacuum problem which also blocks steam dump operation. The Rx does not trip when the turbine trips, various alarms associated with a Tavg increase are verified, RCS pressure increases and the PORV's open. The Reactor is then tripped using the Rod Drive MG Sets.

AVAILABLE OPTIONS: CRF-12A Auto Trip Failure
CRF-12B Manual Trip Failure

OPTION TESTED: CRF-12A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Control Rods placed in Manual

FINAL CONDITIONS TEST DURATION: 1 HRS.
Rx Tripped via rod drive MG Set trips
Plant conditions normal for post trip conditions

BASELINE DATA: Malfunction Description 6.3.4.6.12
OM Ch 53A FR-S.1 and Background Document

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rod Stop Failure SQT-4.49

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/31/90

GENERAL DESCRIPTION: After the malfunction is activated with rods in auto, the operator borates to decrease Tavg and cause outward rod motion in auto. Movement past the rod stop is verified, manual control is taken then to stop rod movement.

AVAILABLE OPTIONS: N/A

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-45 25% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION:1.75 HRS.
Rx Power ~ 25%, Control Bank "D" Rods Fully Withdrawn Beyond Rod Stop

BASELINE DATA: Malfunction Description 6.3.4.6.16
Plant Alarm Response Procedure A4-125

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Reactor Trip SQT-4.50

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:01/24/90

GENERAL DESCRIPTION: The rods drop in when the "A" Trip Breaker open, then the negative rate trip opens the "B" Breaker. Procedures E-O and ES-0.1 are used to verify all expected post trip responses.

AVAILABLE OPTIONS: CRF-14A Trip Breaker A
CRF-14B Trip Breaker B

OPTION TESTED: CRF-14A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: 1 HRS.
Rx Tripped, E-O and ES-0.1 steps pertaining to the Reactor Trip have been verified and/or carried out.

BASELINE DATA: Malfunction Description 6.3.4.6.14
OM Ch 53 A.1 E-O and Background Document

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Letdown Pressure Regulator Valve Failure SQT-4.51

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/07/89

GENERAL DESCRIPTION: When the valve is failed shut letdown flow is verified to stop. Pressure builds up and the Letdown Relief Valve opens. VCT level should decrease, manual control is taken and should have no effect.

AVAILABLE OPTIONS: Failed Position 0-100% Open

OPTION TESTED: 0% Open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .25 HRS.

Letdown flow stopped, PCV-CH145 in manual but will not open. VCT level decreasing.

BASELINE DATA: Malfunction Description 6.3.4.4.1
Plant Alarm Response Procedure A3-123

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Letdown Relief Valve Failure SQT-4.52

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/07/89

GENERAL DESCRIPTION: When the malfunction activates, Relief Line temperature is verified to increase, letdown flow decrease is verified, VCT level decrease verified and Auto Makeup occurs.

AVAILABLE OPTIONS: None

OPTION TESTED: Valve Fails Open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction Active, Letdown Flow Low, VCT Level Decreasing, PRT Level Increasing

BASELINE DATA: Malfunction Description 6.3.4.4.2
Alarm Response Procedure A3-123

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Letdown Line Leak In Containment SQT-4.53

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/08/89

GENERAL DESCRIPTION: Letdown Flow decreases, PZR Level and Press. decrease Containment Press. increases, Reactor Trip and S.I. occur. Operator carries out E-0 and E-1 and documents steps accomplished.

AVAILABLE OPTIONS: Variable Leak Rate 0-1000 gpm

OPTION TESTED: 350 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2 HRS.

Malfunction Active, Rx Tripped, SI and CIA actuation, E-0 and E-1 completed

BASELINE DATA: Malfunction Description 6.3.4.4.3
OM Ch 53A E-0, E-1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Plugged Seal Water Injection Filter SQT-4.54

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/08/89

GENERAL DESCRIPTION: Seal Injection flow decreases to zero, Low Seal Injection flow alarm actuates, Pressurizer level should decrease. Seal Injection Flow is then isolated, and the malfunction cleared which simulates switching filters.

AVAILABLE OPTIONS: Variable Flow Rate 0-100%

OPTION TESTED: 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

FINAL CONDITIONS TEST DURATION: 1 HRS.

Malfunction Cleared, Seal Header Flow Control Valve restoring seal injection flow to normal

BASELINE DATA: Malfunction Description 6.3.4.4.4
Plant Alarm Response Procedures A3-52, A3-78

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: V.C.T. Level Control Valve Failure SQT-4.55

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/25/90

GENERAL DESCRIPTION: Level Control Valve LCV-CH-115A begins to direct 100% of Letdown Flow to the VCT rather than the Degassifier when the malfunction activates. The VCT level is raised using Makeup to verify LCV-CH-115A does not return Letdown to the Degassifier.

AVAILABLE OPTIONS: 0% - 100%

OPTION TESTED: 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

VCT set for continuous Degas

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

Malfunction, Letdown flow going direct to VCT and not the Degassifier.
VCT Level and Pressure increasing due to Manual Make Up.

BASELINE DATA: Malfunction Description 6.3.4.4.5
Alarm Response Procedure A3-53

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: VCT Degass Level Control Valve Failure SQT-4.56

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/25/90

GENERAL DESCRIPTION: When activated the valve diverts flow to the Coolant Recovery Tank and VCT level will decrease, VCT level will decrease until LCV-CH-115A tries to restore level, level will decrease at a slower rate.

AVAILABLE OPTIONS: 0-100% Flow to VCT

OPTION TESTED: 0% Flow to VCT

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Set up for 60 gpm continuous Degas Flow

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

VCT level ≈ 12%, LCV-CH115A is diverting flow to VCT

BASELINE DATA: Malfunction Description 6.3.4.4.6
Alarm Response Procedure A3-53

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Dilution Accident SQT-4.57

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/15/89

GENERAL DESCRIPTION: The dilution flow will change VCT inventory, the variable for RCS Boron concentration XRCSC will decrease, Tavg will increase and control rods will move in to compensate. This test was run twice with the different letdown flows.

AVAILABLE OPTIONS: Dilution Leak Rate 0-50 gpm

OPTION TESTED: 50 gpm

INITIA'. CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

For second test run set up for 60 gpm letdown flow

FINAL CONDITIONS TEST DURATION: 2.5 HRS.

Dilution in progress with rods moving in to reduce Tavg

BASELINE DATA: Malfunction Description 6.3.4.4.7

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. .5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Boration Accident SQT-4.58

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/15/89

GENERAL DESCRIPTION: The malfunction causes leakage past the Emergency Boration Valve, RCS boron concentration increase (XRCSC) is verified. Tavg begins to drop and control rods move out.

AVAILABLE OPTIONS: 0-20 gpm Boration Flow Rate

OPTION TESTED: 20 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Dilute Rods down to RIL prior to test start

FINAL CONDITIONS TEST DURATION: .5 HRS.

RCS Boron concentration increasing, Tavg decreasing, control rods moving out to restore Tavg

BASELINE DATA: Malfunction Description 6.3.4.4.8

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Boric Acid Flow Transmitter Failure SQT-4.59

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/24/90

GENERAL DESCRIPTION: VCT Level is decreased to the point where make up indicates. The malfunction is then actuated and Boric Acid Flow decreases with a corresponding increase in PG Water Flow.

AVAILABLE OPTIONS: -100%/+100% % of present value change

OPTION TESTED:

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Maximum Letdown Flow is Lined Up To Degassifier and to the Coolant Recovery Tank

FINAL CONDITIONS TEST DURATION: 2.5 HRS.

Malfunction Active, Auto Make Up to the VCT is supplying less Boric Acid then set in due to the Flow Transmitter problem.

BASELINE DATA: Malfunction Description 6.3.4.4.9

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Blender Flow Transmitter Failure SQT-4.60

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/24/90

GENERAL DESCRIPTION: When Auto Make Up begins, the failed Transmitter will indicate 0 gpm. Actual flow will increase to maximum. The Flow Deviation Alarm will stop all blender flow. VCT level will decrease.

AVAILABLE OPTIONS: 0-160 gpm Indication Failure Range

OPTION TESTED: 0 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Letdown flow diverted to Coolant Recovery Tank to insure Auto Make Up takes place.

FINAL CONDITIONS TEST DURATION: 2 HRS.

VCT level decreasing, Auto Make Up Flow stopped

BASELINE DATA: Malfunction Description 6.3.4.4.10
Alarm Response Procedure A3-32

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Charging Header Leakage SQT-4.61

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/03/90

GENERAL DESCRIPTION: When the malfunction activates, charging flow decreases, seal injection flow increases, VCT inventory decreases. Aux Bldg sump and radiation levels should increase. The operator isolates the charging header to isolate the leak and lines up seal injection via the Fill Header

AVAILABLE OPTIONS: Variable Leak Rate 0-500 gpm

OPTION TESTED: 200 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2.5 HRS.

Malfunction Active, leak isolated, seal injection supplied via the Fill Header

BASELINE DATA: Malfunction Description 6.3.4.4.11
Plant Alarm Response Procedure A3-58

DEFICIENCIES: Leakage had no noticeable effect on sumps or radiation levels in the Aux Bldg

CORRECTIVE ACTION/DATE.
Trouble Report 261 Written, TR-261 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Fill Header Leakage SQT-4.62

REC"IRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TEST.D:05/25/90

GENERAL DESCRIPTION: After the Fill Header is placed in service the leak malfunction is activated. Fill Header flow and pressure decreases are verified. VCT level and seal injection flow also decrease. Normal charging flow is then restored and the Fill Header isolated to stop the leak.

AVAILABLE OPTIONS: Variable Leak Rate 0-500 gpm

OPTION TESTED: 150 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Place Fill Header in service prior to beginning test

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

Malfunction Active, Fill Header leak is isolated, normal charging and seal injection are restored

BASELINE DATA: Malfunction Description 6.3.4.4.12

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RCP Seal Flow Control Valve Failure SQT-4.63

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/04/90

GENERAL DESCRIPTION: As the controller output increases the Seal Inj. FCV goes closed, seal flow decreases and the alarm comes on. When the controller output decreases Seal Injection FCV goes open, seal flow increases.

AVAILABLE OPTIONS: Variable Controller Output 0-100%

OPTION TESTED: 100% and 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2 HRS.

For the above mentioned failures the overall plant remains stable, in the first case seal flow remains 0 gpm and for the second case seal flow increases to ≈ 27 gpm.

BASELINE DATA: Malfunction Description 6.3.4.4.13
Alarm Response Procedure A3-78 A3-58

DEFICIENCIES: Instructor Console Malfunction Description Incorrect

CORRECTIVE ACTION/DATE:
TR 300 written, TR-300 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Excess Letdown Divert Valve Failure SQT-4.64

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/04/89

GENERAL DESCRIPTION: The malfunction will cause full excess letdown flow to divert to the #1 Primary Drains Tank. HCV-CH-389 valve position change is noted as well as an increase in DGTK-1.

AVAILABLE OPTIONS: Variable Valve Position 0-100%

OPTION TESTED: 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Place Excess Letdown in service

FINAL CONDITIONS TEST DURATION: 1 HRS.

Excess Letdown in service, diverting to DGTK1 rather than the VCT

BASELINE DATA: Malfunction Description 6.3.4.4.14

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: H_2 Supply Pressure Regulator Failure SQT-4.65

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/26/90

GENERAL DESCRIPTION: When the malfunction activates VCT Press will increase rapidly to supply header pressure. The malfunction is cleared, PCV-CH-109 is closed and the VCT vented to restore pressure to normal.

AVAILABLE OPTIONS: Variable Opening 0-100%

OPTION TESTED: 100% open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Insure H_2 Supply Lined Up To the VCT

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Malfunction active but produced no effect on the VCT. Test terminated.

BASELINE DATA: Malfunction Description 6.3.4.4.15

DEFICIENCIES: Malfunction does not work and another problem was found on PCV-CH-108, it did not work properly

CORRECTIVE ACTION/DATE:
Trouble Reports 270 and 271 written. TR-271 voided, TR-270 has been resolved

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Volume Control Tank Leak SQT-4.66

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/14/89

GENERAL DESCRIPTION: The malfunction is activated, VCT level and pressure are verified decreasing. Low level alarm activates, make up occurs and ultimately charging pump suction switches to the RWST.

AVAILABLE OPTIONS: Variable Leak 0-1000 gpm

OPTION TESTED: 250 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction Active, VCT leaking, Charging Pump suction auto switched to the RWST

BASELINE DATA: Malfunction Description 6.3.4.4.16
Alarm Response Procedure A3-53, A3-54

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Blender Outlet Flow Control Valve Failure SQT-4.67

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/17/89

GENERAL DESCRIPTION: A boration is initiated, after the appropriate time the alarm for improper flow activates, and flow is verified to be 0 gpm.

AVAILABLE OPTIONS: Variable Failure, 0-100% of Full Open

OPTION TESTED: 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

VCT level stable, Blender set up for boration but none occurs

BASELINE DATA: Malfunction Description 6.3.4.4.17
Alarm Response Procedure A3-40

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Boric Acid Transfer Pump Trip SQT-4.68

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/14/89

GENERAL DESCRIPTION: Letdown flow is diverted to the Degassifier to cause VCT level to initiate Makeup. When the Makeup begins the 2A Boric Acid Pump does not start.

AVAILABLE OPTIONS: CHS-19A Pump 2A Trip
CHS-19B Pump 2B Trip

OPTION TESTED: CHS-19A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Insure 2A Boric Acid Pump in Auto

FINAL CONDITIONS TEST DURATION: .5 HRS.

The VCT Makeup demand , present but does not take place as the 2A B.A. Pump is tripped, VCT level is decreasing

BASELINE DATA: Malfunction Description 6.3.4.4.19
Alarm Response Procedure A3-40

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: VCT Level Transmitter Failure SQT-4.69

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/14/89

GENERAL DESCRIPTION: LT-115 indication goes to 0%, auto makeup initiates, VCT level then rises until LCV-CH-112 diverts water to the Coolant Recovery Tanks.

AVAILABLE OPTIONS: CHS-20A LT-112 Variable 0-100%
CHS-20B LT-115

OPTION TESTED: 0% CHS-20B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

LT-115 failed low, VCT level high with LCV-CH-112 diverting water to the Coolant Recovery Tanks

BASELINE DATA: Malfunction Description 6.3.4.4.20
Alarm Response Procedure A3-53

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Letdown Isolation Valve Failure SQT-4.70

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/14/89

GENERAL DESCRIPTION: Valve LCV-460A fails closed. Letdown flow and pressure decrease. VCT level decreases.

AVAILABLE OPTIONS: Open, Closed CHS-21A = 460A
CHS-21B = 460B

OPTION TESTED: CHS- 21A, Closed

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

No Letdown Flow, VCT level decreasing

BASELINE DATA: Malfunction Description 6.3.4.4.21

DEFICIENCIES: Incorrect Letdown Line Temperature Response

CORRECTIVE ACTION/DATE:
Trouble Report 221 Written, TR-221 has been cleared.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I ERTIFICATION TEST ABSTRACT

TEST TITLE: Charging Flow Control Valve Failure SQT-4.71

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/17/89

GENERAL DESCRIPTION: FCV-122 Fails open, charging flow increases, VCT level decreases and Pzr. level increases. Seal injection flow decreases. The operator takes manual control of FCV-122 and closes it, FCV-122 is then isolated and the bypass around FCV-122 used for further charging control.

AVAILABLE OPTIONS: Variable Position 0-100% Open

OPTION TESTED: 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Charging flow normal, being controlled with bypass valve around FCV-122.

BASELINE DATA: Malfunction Description 6.3.4
Alarm Response Procedure A3-58

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Letdown Temp Control Valve Failure SQT-4.72

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/17/89

GENERAL DESCRIPTION: TCV-CH-143 Fully diverts flow to the VCT. No other effects expected.

AVAILABLE OPTIONS: Variable Failed Position 0-100%

OPTION TESTED: 0%, Failed to VCT around demins

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

TCV-CH-143 diverting to VCT

BASELINE DATA: Malfunction Description 6.3.4.4.23

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Station Blackout SQT-4.73

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/20/90

GENERAL DESCRIPTION: Loss of Offsite Power is verified as malfunction progresses, all non emergency busses ultimately lose power with appropriate alarms. EDG's energize the AE and DF busses, the malfunction is then cleared and using LOA's offsite power is restored.

AVAILABLE OPTIONS: None

OPTION TESTED: NA

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: 3 HRS.
Malfunction cleared, Offsite power restored, Rx tripped and natural circulation in progress

BASELINE DATA: Malfunction Description 6.3.4.7.1
Abnormal Operating Procedure 1.35.2
Alarm Response Procedures A8-31, A8-27, A8-70, A8-65, A8-66
OM Ch 53 A1 Attachment 2-D

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Unit Station Service Transformer Failure SQT-4.74

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/15/90

GENERAL DESCRIPTION: When the malfunction activates the 1C transformer undergoes a fault that causes the loads that it supplies to de-energize as well as the 1D to trip and all loads. 1A, 1B, 1C, 1D bus auto transfer to the 1A and 1B transformers.

AVAILABLE OPTIONS: EPS-2A Transformer 1C
EPS-2B Transformer 1D

OPTION TESTED: EPS-2A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

Rx tripped, offsite power supplying onsite 4160 vac busses

BASELINE DATA: Malfunction description 6.3.4.7.2
Alarm Response Procedures A8-75, A8-79, A8-83, A8-87, A8-91
A8-95, A8-99, A8-103

DEFICIENCIES: Some expected alarms did not activate

CORRECTIVE ACTION/DATE: Trouble Report 259 written. TR-259 voided upon further investigation.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: System Station Service Transformer Failure SQT-4.75

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/18/90

GENERAL DESCRIPTION: When the malfunction occurs OCB 92 trips the breakers from the 1A transformer to the 1A & 1B busses trip, the 1A & 1B busses remain de-energized, the AE bus de-energizes until the #1 Diesel starts and picks up the loads.

AVAILABLE OPTIONS: EPS-3A 1A Transformer
EPS-3B 1B Transformer

OPTION TESTED: EPS-3A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Line up 1A & 1B Busses to the 1A Transformer

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
Rx tripped due to low RCS Flow, all RCP's off, 1A & 1B busses de-energized, #1 Emergency Diesel Generator carrying the AE bus

BASELINE DATA: Malfunction Description 6.3.4.7.3
Alarm Response Procedures A8-9, A8-76, A8-84, A8-105, A8-106

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loss of 4160 Volt Bus SQT-4.76

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/16/90

GENERAL DESCRIPTION: The malfunction trips breaker ACB 41C on Overcurrent. The 1A Bus de-energizes as well as the AE bus which will be picked up by the #1 Emergency Diesel Generator. Proper Breaker action as well as appropriate alarms are verified. The malfunction is cleared, and normal power is supplied to 1A then AE busses.

AVAILABLE OPTIONS: EPS-4A Bus A
EPS-4B Bus B
EPS-4C Bus C
EPS-4D Bus D
EPS-4E Bus AE
EPS-4F Bus DF

OPTION TESTED: EPS-4A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE- BOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Malfunction cleared, normal power supply breakers alignment restored to 1A and AE busses

BASELINE DATA: Malfunction Description 6.3.4.7.4
Alarm response procedures A8-73, A8-76, A8-105, A8-106, A8-109
A9-26, A9-81, A9-42, A9-87, A9-58

DEFICIENCIES: Some expected alarms did not come in

CORRECTIVE ACTION/DATE: Trouble Report 258 written. To be resolved by December, 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loss of 480 Volt Bus SQT-4.77

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/16/90

GENERAL DESCRIPTION: The malfunction causes a loss of the 1A 480 vac bus. Expected lost loads are verified, as well as alarms

AVAILABLE OPTIONS: Selectable Busses 1A,B,C,D,E,F,G,H,J,K, 1N,1N1, 1P,1P1

OPTION TESTED: 1 A Bus

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
The Rx tripped unexplainably, 1B 480 volt bus de-energized

BASELINE DATA: Malfunction Description 6.3.4.7.5
Alarm Response Procedure A9-69

DEFICIENCIES: Unexplained Rx Trip, equipment powered from wrong bus

CORRECTIVE ACTION/DATE: Trouble Report 257 written, TR-257 will be resolved by December 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loss of 120 Volt AC Bus Vital Bus SQT-4.78

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/20/90

GENERAL DESCRIPTION: The Vital Bus is deenergized by the malfunction. All expected loads that should be lost are verified de-energized. Expected response of various systems or comments to the loss of #1 Vital Bus are verified using the Alarm Response Procedure.

AVAILABLE OPTIONS: EPS-6A Vital Bus 1
EPS-6B Vital Bus 2
EPS-6C Vital Bus 3
EPS-6D Vital Bus 4

OPTION TESTED: EPS-6A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: 4 HRS.
The plant has tripped due to the loss of the #1 Vital Bus which is still de-energized.

BASELINE DATA: Malfunction Description 6.3.4.7.6
Alarm Response Procedures A1-10

DEFICIENCIES: RCP response to loss of Vital bus incorrect

CORRECTIVE ACTION/DATE: Trouble Report 281 written. TR-281 has been resolved.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loss of Inverter　　　　SQT-4.79

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2　　　　DATE TESTED:04/19/90

GENERAL DESCRIPTION: When this malfunction activates the expected alarms are verified indicating the Vital bus is no longer receiving its normal power.

AVAILABLE OPTIONS: EPS-7A = Inverter 1
EPS-7B = Inverter 2
EPS-7C = Inverter 3
EPS-7D = Inverter 4

OPTION TESTED: EPS-7A

INITIAL CONDITIONS: IC-42　100% PWR.　　CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS　　　　TEST DURATION: .75 HRS.

Malfunction Active, expected alarms A1-10 and A1-18 activated

BASELINE DATA: Malfunction Description 6.3.4.7.7
Alarm Response Procedure A1-10, A1-18

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loss of DC Bus SQT-4.80

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/20/90

GENERAL DESCRIPTION: After the malfunction is activated that deenergizes the #1 DC Bus, all the expected automatic actions that are listed in the ARP for Loss of DC Bus are verified. It will be necessary several times to freeze and re-start simulator to check the effects of the accident under various plant conditions.

AVAILABLE OPTIONS: EPS-8A, B, C, D, E = DC Bus 1, 2, 3, 4, 5

OPTION TESTED: EPS-8A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

FINAL CONDITIONS TEST DURATION: 4.5 HRS.
DC Bus de-energized, Rx tripped

BASELINE DATA: Malfunction Description 6.3.4.7.8
Alarm Response Procedure A9-98

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Grid Voltage Variation SQT-4.81

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/19/90

GENERAL DESCRIPTION: The malfunction causes Grid Voltage to decrease, indicated voltage is verified decreasing components powered by offsite are checked for an increase in current. Generator power factor and VARS are verified changing in the correct direction.

AVAILABLE OPTIONS: 0-200% Selectable

OPTION TESTED: 95%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction Active, Grid Voltage low, Plant remains at 100% power

BASELINE DATA: Malfunction Description 6.3.4.7.9

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Diesel Generator Trip SQT-4.82

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/16/90

GENERAL DESCRIPTION: The malfunction is activated with the #1 Diesel Generator paralleled to the AE Bus. When the malfunction is activated the Diesel is verified tripped and expected alarms are verified. Normal current values from the A to the AE bus return.

AVAILABLE OPTIONS: EPS-11A #1 Diesel Generator
EPS-11B #2 Diesel Generator

OPTION TESTED: EPS-11A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Start and parallel the #1 EDG to the AE Bus prior to beginning of test.

FINAL CONDITIONS TEST DURATION: 1.0 HRS.
The #1 Diesel Generator is tripped and idling, the remainder of the plant is normal and stable.

BASELINE DATA: Malfunction Description 6.3.4.7.11
Alarm Response Procedures A9-1, A9-97

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CER' .FICATION TEST ABSTRACT

TEST TITLE: Emergency Diesel Generator Erratic Speed Control SQT-4.83

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:08/03/90

GENERAL DESCRIPTION: The AE bus is de-energized using Malfunction EPS-4E. The #1 EDG starts and picks up the bus, the malfunction is activated causing speed oscillations, it is verified by observing RPM, Frequency and Diesel Generator Watts. The malfunction is not large enough to cause a trip of the diesel generator.

AVAILABLE OPTIONS: EPS-12A = #1 D/G
EPS-12B = #2 D/G Magnitude 0-1

OPTION TESTED: EPS-12A, .25

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .75 HRS.

Malfunction cleared, Plant stable at 100% with the #1 EDG carrying the A/E Bus.

BASELINE DATA: Malfunction Description 6.3.4.7.12

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Diesel Generator Erratic Voltage Regulation SQT-4.84

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/19/90

GENERAL DESCRIPTION: The diesel is set up to be carrying the AE bus. The malfunction is then activated. Diesel Generator Volt and Amp meter movement is verified correct. The malfunction is then cleared and parameters are verified to be stable.

AVAILABLE OPTIONS: EPS-13A #1 Diesel Generator
EPS-13B #2 Diesel Generator Variable Range 0-10%

OPTION TESTED: EPS-13A, 10%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

EDG #1 paralleled to carry the AE bus

FINAL CONDITIONS TEST DURATION: .75 HRS.

Malfunction cleared, plant stable

BASELINE DATA: Malfunction Description 6.3.4.7.13

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Diesel Generator Output Breaker Trip SQT-4.85

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/18/90

GENERAL DESCRIPTION: After the diesel generator is carrying the AE bus the malfunction is activated. The breaker is verified open and the appropriate alarms should come on. The loads carried by the AE bus are verified de-energized.

AVAILABLE OPTIONS: EPS-14A #1 Diesel Generator
EPS-14B #2 Diesel Generator

OPTION TESTED: EPS-14A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Diesel Generator paralleled to and carrying the AE bus de-energized, Pzr. level decreasing due to loss of charging

FINAL CONDITIONS TEST DURATION: .75 HRS.

Plant at 100%, #1 Emergency Diesel Generator tripped, AE bus de-energized, Pzr. Level decreasing due to loss of charging.

BASELINE DATA: Malfunction Description 6.3.4.7.14
Alarm Response Procedures, A9-1, A9-3

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Load Rejection SQT-4.86

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/18/90

GENERAL DESCRIPTION: The malfunction will cause an 85% load rejection. Electrical Watts, Reactor Power, Turbine Power all decrease, Reactor Power decrease will be slower to decrease due to Steam Dump operation. Rods will step in to control Tavg and without operator action will cause rods to go below RIL and cause Delta-I problems.

AVAILABLE OPTIONS: Variable 0-95%

OPTION TESTED: 85%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant approaching stable conditions at 15% power, Rods below RIL and Delta-I out of limits

BASELINE DATA: Malfunction Description 6.3.4.7.15
Abnormal Operating Procedure 53C4.1.35.2

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Generator Output Breaker Failure SQT-4.87

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/18/90

GENERAL DESCRIPTION: The reactor is tripped. When the turbine and generator trip, PCB-331 is verified to have failed closed.

AVAILABLE OPTIONS: EPS-16A
EPS-16B

OPTION TESTED: EPS-16A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Rx Tripped, Turbine Tripped, Generator Tripped Except for PCB-331 which is still closed

BASELINE DATA: Malfunction Description 6.3.4.7.16
OM Ch 53A E-0 Step 4

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Voltage Adjust Setpoint Failure SQT-4.88

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/19/90

GENERAL DESCRIPTION: The malfunction activates and tends to cause an increase in MVARS, Generator Volts and causes Power Factor to go more lagging. The base adjuster will sense the problem and then adjust the setpoint to half load value.

AVAILABLE OPTIONS: Variable 0-200%

OPTION TESTED: 200%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Plant stable, power level same as pre event, Generator Volts, MVARS and Exciter Current less than pre event

BASELINE DATA: Malfunction Description 6.4.5.7.17
Alarm Response Procedures A7-125, A7-107, A7-111, A7-109

DEFICIENCIES: Expected alarm did not come on

CORRECTIVE ACTION/DATE:

Trouble Report 284 written. TR-284 to be resolved by December 1991

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Main Transformer Failure SQT-4.89

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/19/90

GENERAL DESCRIPTION: When the malfunction activates the main generator trips, various alarms for the transformer problem energize, the turbine and reactor trips followed by the main generator trip. The 4160 volt A,B,C,D busses auto transfer to offsite power sources.

AVAILABLE OPTIONS: None

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Main Generator, Turbine and Reactor tripped, offsite power supplying A,B,C,D busses

BASELINE DATA: Malfunction Description 6.3.4.7.18
Alarm Response Procedures A8-6, A8-5, A7-121, A7-106

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Main Feedwater Pump Trip SQT-4.90

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/30/90

GENERAL DESCRIPTION: The "A" Main Feed Pump is tripped at 100% Power. The breakers are verified tripped open and amps decrease to 0. Feedwater flow will decrease with associated alarms. Steam generator level will decrease and a reactor trip will result.

AVAILABLE OPTIONS: FWM-1A = A Main Feed Pump
FWM-1B = B Main Feed Pump

OPTION TESTED: FWM-1A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

"A" MFW Pump tripped, Rx tripped due to low steam generator level.

BASELINE DATA: Malfunction Description 6.3.4.8.1
Alarm Response Procedures A7-37, A7-39

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Heater Drain Pump Trip SQT-4.91

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/30/90

GENERAL DESCRIPTION: The "B" Heater Drain Pump trips, breaker opens and amps decrease to 0. Initially, feed flow decreases until the "A" Heater Drain Pump auto starts, then feed flow returns to normal.

AVAILABLE OPTIONS: FWM-2A = "A" Heater Drain Pump
FWM-2B = "B" Heater Drain Pump

OPTION TESTED: FWM-2B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Plant stable, feed flows back to normal, "A" Heater Drain Pump running, "B" Heater Drain Pump tripped

BASELINE DATA: Malfunction Description 6.3.4.8.2
Alarm Response Procedure A6-71, A7-06

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Leak In Containment SQT-4.92

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 5/23/90

GENERAL DESCRIPTION: The malfunction will cause the "B" S/G to lose level and depressurize. Feed flow to the "B" S/G will indicate an increase, with a resultant decrease to "A" & "C" as header pressure drops. Containment temp., press. and humidity will increase. The reactor will trip on Lo Lo S/G level and subsequently SI on Lo Steam Line Pressure due to the leak. The operator will perform steps to isolate the leak and verify that the drop in Tavg and RCS pressure can be stopped.

AVAILABLE OPTIONS: FWM-3A = S/G A Variable Rate 0-20 x 10^6 lbm/hr.
FWM-3B = S/G B
FWM-3C = S/G C

OPTION TESTED: FWM-3B 20 x 10^6 lbm/hr.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2 HRS.

The Rx has Tripped, SI, FWI, CI "A" and SLI have occurred. The "B" S/G is depressurized and isolated pe EOP Procedure E-2. Tavg and RCS Press. have stopped decreasing.

BASELINE DATA: Malfunction Description 6.3.4.8.3
EOP Background Document For E-2

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Leak Outside Containment SQT-4.93

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 5/15/90

GENERAL DESCRIPTION: When the malfunction is activated feed flow increases to the affected steam generator. Hotwell level and Turbine Plant Demin Storage Tank level decrease. The Reactor trips due to low S/G levels, Aux Feed Water Pumps start. The operator shuts the isolation valves necessary to isolate the leak and verifies it isolated.

AVAILABLE OPTIONS: FWM-4A = S/G A
FWM-4B = S/G B Variable Rate 0-20 x 10^6 lbm/hr.
FWM-4C = S/G C

OPTION TESTED: FWM-4C 12 x 10^6 lbm/hr.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

Rx Tripped, Leak isolated, AFW supplying the steam generators

BASELINE DATA: Malfunction Description 6.3.4.8.4

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Recirc Control Valve Failure SQT-4.94

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/30/90

GENERAL DESCRIPTION: As the valve fails open it causes feed flow to decrease, the feed reg. valves will open to compensate. The recirc valve misoperation alarm is also verified on.

AVAILABLE OPTIONS: FWM-5A FCV-150A O,C - Open or Closed
FWM-5B FCV-150B

OPTION TESTED: FWM-5A, Open

INITIAL CONDITIONS: IC-35 75% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.2 HRS.

Reactor stable at ≈ 76%, main feed reg. valves are open more than originally to compensate for the open recirc. valve.

BASELINE DATA: Malfunction Description 6.3.4.8.5
Alarm Response Procedure A6-79

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: High Press. Feedwater Tube Leak SQT-4.95

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/3/90

GENERAL DESCRIPTION: When the leak occurs, Feedwater Flow will decrease along with levels on the steam generators. The heater level as well as heater drain receiver and level increase. The heater is then isolated and plant efficiency is verified to decrease. Feed Flows and levels return to normal.

AVAILABLE OPTIONS: FWM-6A = FW-E-1A
FWM-6B = FW-E-1B Variable Leak 0-10,000 gpm

OPTION TESTED: FWM-6A, 3000 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Malfunction Active, 1A Feedwater Heater isolated and bypassed, plant efficiency decrease has been noted.

BASELINE DATA: Malfunction Description 6.3.4.8.6
Procedure OM 1.23A.1.c
Alarm Response Procedure 47.26

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Reg. Valve Failure SQT-4.96

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:05/14/90

GENERAL DESCRIPTION: The malfunction causes the valve to go shut. Feed flow goes to zero. A S/G level decreases to the low level and SF-FF mismatch Rx trip setpoint. After the trip AFW will supply the steam generators.

AVAILABLE OPTIONS: FWM-7A = FCV 478
FWM-7B = FCV 488 Position 0-100% of open
FWM-7C = FCV 498

OPTION TESTED: FWM-7A, 0%

INITIAL CONDITIONS: IC- 42 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Reactor tripped, malfunction active, AFW supplying the steam generator.

BASELINE DATA: Malfunction Description 6.3.4.8.7
Incident Report 1-90-32

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feed Reg Bypass Valve Failure SQT-4.97

REQUIRED BY ASI/ANS 3.5 SECTION: 4.? 2 DATE TESTED:05/23/90

GENERAL DESCRIPTION: "C" Bypass FRV fails full open resulting in increased feed flow to "C" S/G and momentary reduction in flow to "A" & "B" S/Gs. "C" S/G is cooled by the rapid increase in unpreheated feedwater flow resulting in shrink and a reduction in steam flow. Steam flow from "A" and "B" S/Gs increase to compensate resulting in level swell,. Nuclear power increases due to cooling effect of the over fed "C" S/G. "A" and "B" S/G levels are restored to program. "C" S/G level continues to increase toward the P-14 setpoint

AVAILABLE OPTIONS: FWM8A FCV-FW-479 Variable ramp 0-9999 sec
FWM8B FCV-FW-489
FWM8C FCV-FW-499 Fail position 0-100%

OPTION TESTED: FWM8C 100%, 0 sec ramp

INITIAL CONDITIONS: IC-9 10% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:
Bypass FRVs in Auto

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
Test terminated at 70% in "C" S/G and rising
P14 (Turbine trip, FW isolation) setpoint is 75%

BASELINE DATA: Malfunction description 6.3.4.8.8
Alarm Response Procedure A7-61

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Erratic Feedwater Flow Control SQT-4.98

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/17/89

GENERAL DESCRIPTION: "B" S/G MFRV (FCV-FW-488) oscillates over a 50% travel causing feed flow and level oscillations. Feed flow/steam flow mismatch and level deviation annunciators are actuated. By placing FCV-FW-488 in manual the oscillations are stabilized.

AVAILABLE OPTIONS: FWM-9A FCV-FW-478 Oscillation range 0-100%
FWM-9B FCV-FW-488 Oscillation period 0-1000 sec
FWM-9C FCV-FW-498

OPTION TESTED: FWM9B, 50%, 120 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.
S/G levels and feedwater flows stable, power at 100%

BASELINE DATA: Malfunction Description 6.3.4.8.9
Alarm Response Procedure A7-53 A7-50 A7-52

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: AFW Pump Trip SQT-4.99

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/17/89

GENERAL DESCRIPTION: FW-P-2 is tripped due to closure of its trip throttle valve causing STEAM UNAVAILABLE TURBINE DRIVEN FEED PP-FW-P-2 to alarm. Aux feed flow indicates zero on VB-C and S/G levels trend downward. RCS loop ΔT's decrease as S/G effectiveness as a heat sink decreases.

AVAILABLE OPTIONS: FWM-11A FW-P-3A
FWM-11B FW-P-3B
FWM-11C FW-P-2

OPTION TESTED: FWM-11C

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Both MDAFW pump control switches placed in PTL prior to test performance.
Reactor is manually tripped to initiate the test (MALF CRF11A)

FINAL CONDITIONS TEST DURATION: 1.0 HRS.
Rx subcritical with the RCS heating up due to loss of heat sink

BASELINE DATA: Malfunction Description 6.3.4.8.11

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Aux Feedwater Flow Control Valve Failure SQT-4.100

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/16/89

GENERAL DESCRIPTION: When the malfunction is activated, the valve fails shut. The pump associated with that valve is started and the auto open feature of that valve is verified not to work.

AVAILABLE OPTIONS: FWM-12A-F, Valves FWM-151A, 151B, 151C, 151D, 151E, 151F

OPTION TESTED: FWM-12F

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Place FW-P-3B in PTL
Close FW-40 (LOA-FWM3B)

FINAL CONDITIONS TEST DURATION: 1 HRS.

FW-P-3A running, FWM-151F remains closed.

BASELINE DATA: Malfunction Description 6.3.4.8.12
Alarm Response Procedure A7-51

DEFICIENCIES: Test SAT, Instructor Sys. Labeling Problem Found

CORRECTIVE ACTION/DATE:

Trouble Report 210 written, T. R. cleared.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: AFW Pump Suction Leak SQT-4.101

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/16/89

GENERAL DESCRIPTION: Aux feed flows indicated on VB-C drop to zero and pump amps oscillate as FW-P-3B cavitates. WT-TK-10 (normal suction supply) drops to the low level alarm setpoint. Upon realignment of FW-P-3B suction to the backup river water supply (leak isolated), AFW flow is restored, pump amps stabilize, TK-10 level stabilizes.

AVAILABLE OPTIONS: FWM-13A FW-P-3A Leak Rate 0-1000 gpm
FWM-13B FW-P-3B
FWM-13C FW-P-2

OPTION TESTED: FWM-13B, 1000 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE- BOL

LIST OTHER SPECIAL CONDITIONS:
FW-P-3B is manually started upon identification of pump cavitation, LOAs are used to isolate the normal suction piping and align backup river water suction.

FINAL CONDITIONS TEST DURATION: 1.0 HRS.
FW-P-3B flow restored

BASELINE DATA: Malfunction Description 6.3.4.8.13

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Feedwater Flow Transmitter Failure SQT-4.102

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/16/89

GENERAL DESCRIPTION: When activated the indication of the failed transmitter fails high. The feed reg. valve it controls closes, causing an S/G level decrease. After the appropriate alarms activate, the operator takes manual control of the S/G and selects in the non faulted flow transmitter for auto control usage.

AVAILABLE OPTIONS: FWM-14A-F = FT476, FT477, FT486, FT487, FT496, FT497

Variable 0-5x10^6 lbm/hr

OPTION TESTED: FWM-14E 5x10^6 lbm/hr

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2 HRS.

S/G Level and flow returning to normal, with the faulted flow transmitter switched out of the control circuit.

BASELINE DATA: Malfunction Description 6.3.4.8.14
Alarm Response Procedure A7-58

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: S/G Programmed Level Signal Failure SQT-4.103

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/19/90

GENERAL DESCRIPTION: When activated the demand signal for the "A" S/G goes to 100%, feed flow to that S/G increases. The level in the "A" S/G increases till the turbine trips on Hi-Hi S/G level, following the turbine trip the reactor trips also.

AVAILABLE OPTIONS: FWM-15A = AM-FW-478
FWM-15B = AM-FW-488
Variable 0-100% FWM-15C = AM-FW-498

OPTION TESTED: FWM-15A, 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

The reactor is tripped, feedwater partial isolation has occurred, the "A" S/G level is higher than the others.

BASELINE DATA: Malfunction Description 6.3.4.8.15
Alarm Response Procedure A7-45, A5-10

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: S/G Level Transmitter Failure SQT-4.104

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/17/89

GENERAL DESCRIPTION: Channel III of each S/G is the control input to SGWLC. Channel III of B S/G fails high resulting in a 33% high level error to the auto FRV control circuitry. A high-high level alarm is generated and high-high channel trip status light is lit. B MFRV closes in response to the level error which in turn causes an offsetting flow error signal to SGWLC. B S/G level reduces generating appropriate low level alarms. If left unattended, a reactor trip would be generated by the unaffected channels on low-low level. The operator places B MFRV in manual to restore B S/G level to program.

AVAILABLE OPTIONS:

FWM-16A-C	A S/G LTs (3)	Failed Value 0-100%
FWM-16D-F	B S/G LTs (3)	Ramp Time 0-9999 Sec.
FWM-16G-I	C S/G LTs (3)	

OPTION TESTED: FWM-16F, 100%, 0 Sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Failed channel inputting to SGWLC (CH III)

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable at 100%, operator manually controlling B S/G level.

BASELINE DATA: Malfunction Description 6.3.4.8.16
Alarm Response Procedures A7-53, A7-55

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS 1 SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Leak Upstream of MSIV SQT-4.105

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/17/89

GENERAL DESCRIPTION: Upon initiation of the break in a steamline, steam flow in all S/G's rises rapidly with A S/G exceeding B & C. RCS temperature, PZR pressure and level drop rapidly. CNMT pressure, temperature, and humidity increase. The rapid drop in steamline pressure results in a rate compensated low steamline pressure SI and reactor trip. MSLI isolation occurs due to high CNMT pressure. Steam flow from B & C S/G's is essentially stopped. A S/G continues to indicate flow until the S/G boils dry. A CIB and spray signal is actuated on Hi-Hi CNMT pressure. The operator implements Emergency Operating Procedures E-0 and E-2 to verify all automatic actuations have occurred and to identify and isolate the faulted S/G.

AVAILABLE OPTIONS: MSS-1A A S/G Leak Rate 0-1E7 lbm/hr
MSS-1B B S/G Ramp Time 0-9999 Sec.
MSS-1C C S/G

OPTION TESTED: MSS-1A, 1E7 lbm/hr., 0 Sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Plant conditions stabilizing toward SI termination criteria with all flow paths to and from A S/G isolated. A S/G blown has dry.

BASELINE DATA: Malfunction Description 6.3.4.9.1
Emergency Operating Procedures E-0, E-2, ESF Checklists

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Leak Downstream of MSIV SQT-4.106

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/18/89

GENERAL DESCRIPTION: Increased steam flow results in increased Rx power. OPΔT runback activated, but Rx power still reaches the OPΔT trip setpoint. Following the Rx trip excessive steam flow continues to cool and depressurize the S/Gs and RCS. Steamline pressure drops to the SI/STM line isolation setpoint in all S/Gs. Following Isolation RCS and S/G parameters trend toward stable values considering SI has actuated.

AVAILABLE OPTIONS: MSS-2A A Steamline Leak Rate 0-12E6 lbm/hr
MSS-2B B Steamline Ramp time 0-9999 sec
MSS-2C C Steamline

OPTION TESTED: MSS-2B, 12E6 lbm/hr, 60 sec ramp

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Control Rods in Auto

FINAL CONDITIONS TEST DURATION: 2 HRS.
Plant parameters trending toward post-trip/spurious SI anticipated valves

BASELINE DATA: Malfunction Description 6.3.4.9.2
Alarm Response Procedure A4-50

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: MSIV Drifts Shut SQT-4.107

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/18/89

GENERAL DESCRIPTION: "A" MSIV drifts shut resulting in decreased heat removal in the "A" loop and severe level shrink to the Lo-Lo Rx trip setpoint. Prior to the trip "B" and "C" loops attempt to compensate for the load "drop" of the "A" loop. Due to the rapid pressure drop in the "B" & "C" steam generators, a SI and MSLI occurs.

AVAILABLE OPTIONS: MSS-3A TV-MS-101A Ramp Time 0-9999 sec
MSS-3B TV-MS-101B
MSS-3C TV-MS-101C

OPTION TESTED: MSS3A, 60 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: .5 HRS.
Plant parameters trending toward anticipated post-trip/spurious SI values

BASELINE DATA: Malfunction Description 6.3.4.9.3
Alarm Response Procedure A1-56

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Non-Return Valve to 1st Point Heater Fails SQT-4.108

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/10/90

GENERAL DESCRIPTION: Loss of preheat in the 1st point heaters results in introduction of colder feedwater to the S/G's. Increased secondary heat removal and subsequent RCS temperature reduction causes reactor power to increase. Rods receive a withdrawal demand signal, however, a Bank D full withdrawal stop prevents rod motion. The final reactor power and Tavg will be dependent on the magnitude of the power/temperature reactivity coefficients.

AVAILABLE OPTIONS: Failed Position O-Open
C-Closed

OPTION TESTED: MSS-4, C NRV-ES-101 fails closed

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Reactor power stable above 100% power with a reduced Tavg.

BASELINE DATA: Malfunction Description 6.3.4.9.4

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE:

N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Non-Return Valve to 3rd Point Heaters Fails SQT-4.109

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/10/90

GENERAL DESCRIPTION: Reduced feedwater preheat results in a reduction in overall plant efficiency. (The final ratio of Rx power/turbine power increases).

AVAILABLE OPTIONS: MSS-5A NRV-ES-103A Failed Position O-open, C-closed
MSS-5B NRV-ES-103B

OPTION TESTED: MSS-5A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Verify rods in AUTO.

FINAL CONDITIONS TEST DURATION: .75 HRS.

Rx power stable above 100% with a reduced Tavg.

BASELINE DATA: Malfunction Description 6.3.4.9.5

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Generator Relief Valve Fails SQT-4.110

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/20/89

GENERAL DESCRIPTION: Since the RV must initially lift for the malfunction to work, all normal post-trip steam release paths are locally isolated prior to a turbine trip. The turbine is then manually tripped resulting in an immediate Rx trip due to power above P-9 (49%). S/G pressure increase above 1075 psig causing SV's to lift. The operator manually isolates reheat steam IAW EOP's. As RCS temperature and S/G pressures decrease, all but the stuck open SV close. B & C S/G pressures stabilize. A S/G continues to depressurize. The plant will eventually SI on low steamline pressure.

AVAILABLE OPTIONS: (MSS-6A thru O) Selects failed safety valve
Select Leak Rate 0-1000,000 lbm/hr.

OPTION TESTED: MSS-6A, 100,000 lbm/hr.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Isolate steam to FW-P-2 and S/G atmospheric relief valves using LOA's to assure S/G safety valves lift during the test. The condenser steam dumps are defeated.

FINAL CONDITIONS TEST DURATION: 3.0 HRS.

RCS pressure and temperature decreasing, SI has occurred.

BASELINE DATA: Malfunction Description 6.3.4.9.6

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Dump Valve Fails to Operate SQT-4.111

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/10/90

GENERAL DESCRIPTION: The test is initiated using malfunction TUR-15 to cause a 40% load rejection. Although the dumps arm with an open demand signal present, no dumps open. RCS temperature and pressure increase. S/G pressures increase, levels decrease due to shrink. Control rods insert at max. rate to restore Tavg=Tref. An OT Delta-T and/or OP Delta-T rod stop/run back could occur due to excessive RCS Tavg, but did not for this test. Plant oscillations eventually converge.

AVAILABLE OPTIONS: None

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

Plant stable at about 77%, Tavg=Tref., S/G levels return to program.

BASELINE DATA: Malfunction Description 6.3.4.9.7

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Dump Valve Sticks SQT-4.112

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/13/90

GENERAL DESCRIPTION: A main turbine trip is manually initiated which in turn results in a Rx trip due to power > P9. The Rx trip arms the first two banks of steam dumps which pop open due to the Tavg-Tno-load mismatch. Tavg reduces to Tno-load and all but the failed valve modulate closed. Tavg reduces below 547°F. The failed dump valve fails to close in response to operator attempts to use the manual controllers or Train A and B off switches. Local closure of the dump header manual isolation valves terminates steam dump. Plant conditions stabilize.

AVAILABLE OPTIONS: MSS-8A thru R 18 Steam dump valves
Failed Position 0-100%

OPTION TESTED: MSS-8A, 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Main turbine is manually tripped to initiate the transient.
Steam dump is selected to STM Press mode after recognition of stuck open dump valve.
Steam dumps are subsequently selected to Off
Steam header manual isolation valve is closed via a LOA to stuck open dump valve

FINAL CONDITIONS TEST DURATION: .75 HRS.
Plant stable in Hot Stby

BASELINE DATA: Malfunction description 6.3.4.9.8

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Erratic Tavg Control SQT-4.113

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/09/90

GENERAL DESCRIPTION: Control rods move in and out as Tavg signal oscillates. All major primary and secondary system parameters respond as predicted. After placing rod control in manual the primary and secondary system oscillations damper.

AVAILABLE OPTIONS: Range 0-10°F
Oscillation period 0-1000 sec

OPTION TESTED: 10°F, 300 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Rods initially in auto, placed in manual after verifying all parameters oscillating

FINAL CONDITIONS TEST DURATION: 1.5 HRS.
Power stabilized at 100%

BASELINE DATA: Malfunction description 6.3.4.9.9

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Tref to Steam Dump Fails SQT-4.114

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/24/90

GENERAL DESCRIPTION: The malfunction is activated and a large Tavg-Tref error signal exists. The operator then initiates a load rejection to arm the dumps. When the dumps arm, they open due to the Tavg-Tref error signal. Steam flow increases, Rx Power increases, due to drop in Tavg and outward rod motion.

AVAILABLE OPTIONS: MSS-10A Turbine Trip Logic Failed Value 540-580°F
MSS-10B Load Rejection Logic

OPTION TESTED: MSS-10A, 540°F

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2.0 HRS.

Malfunction active, steam dumps open, Rx power increasing, Rods moving out to restore Tavg to Tref.

BASELINE DATA: Malfunction Description 6.3.4.9.10

DEFICIENCIES: Tref meter and B/S status light do not work properly.

CORRECTIVE ACTION/DATE: Trouble Report 304 written. TR-304 to be resolved by December, 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Pressure Signal to Steam Dump Fails SQT-4.115

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/24/90

GENERAL DESCRIPTION: In response to the sensed high pressure condition 2 banks of steam dumps modulate full open with Tavg above 543°F. RCS temperature drops as does steamline pressures until the rate sensitive low steamline pressure logic is met resulting in a SI and steam line isolation. All steam dumps trip closed when Tavg reaches P12 (543°F). The operator attempts to reduce steam dump controller output in MANUAL but the action is ineffective. The low-low tavg interlock is manually defeated and the three cooldown dump valves are observed to modulate full open. The dumps are selected to OFF and the three cooldown valves are observed to trip closed.

AVAILABLE OPTIONS: Failed valve 0-1400 psig

OPTION TESTED: 1400 psig

INITIAL CONDITIONS: IC- 48 0% PWR. CORE AGE - MOL

LIST OTHER SPECIAL CONDITIONS:

Steam Dumps selected to STM PRESS mode Steam Dump controller in Auto

FINAL CONDITIONS TEST DURATION: .75 HRS.

Malfunction Description 6.3.4.9.11

BASELINE DATA: Malfunction Description 6.3.4.9.11

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: NA

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Atmospheric Steam Dump Valve Fails SQT-4.116

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/24/90

GENERAL DESCRIPTION: Controller output increases to 25%, PCV-MS-101A opens as indicated by position lights on BB-A. Loop A Tavg and auctioneered high Tavg decrease. Operator action to close PCV-MS-101A. Altnough controller output can be reduced to zero, the valve remains 25% open. Upon local isolation of the PCV, Steam Flow is isolated. RCS/secondary parameters stabilize at no-load conditions.

AVAILABLE OPTIONS:	MSS12A	PCV-MS-101A	Failed position 0-100%
	MSS12B	PCV-MS-101B	
	MSS12C	PCV-MS-101C	Ramp time 0-9999 sec

OPTION TESTED: MSS12A, 25%, 0 sec

INITIAL CONDITIONS: IC-48 0% PWR. CORE AGE - MOL

LIST OTHER SPECIAL CONDITIONS:
Attempt manual control following failure
Locally close manual isolatinn valve via LOA

FINAL CONDITIONS TEST DURATION: 1.0 HRS.
Plant stable in Hot Standby with PCV-MS-101 locally isolated

BASELINE DATA: Malfunction description 6.3.4.9.12

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Erratic Control of Atmospheric Steam Dump Valve SQT-4.117

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/24/90

GENERAL DESCRIPTION: PCV-MS-101A oscillates open and closed over a 50% range with an oscillation frequency of 100 sec. A S/G pressure and flow oscillate as expected causing a net cooldown of the RCS (pump and decay heat input only). The operator takes manual control of PCV-MS-101A. The oscillations stop. S/G parameters stabilize. RCS returns to no-load Tavg.

AVAILABLE OPTIONS:

MSS-13A	PCV-MS-101A	Range 0-100%
MSS-13B	PCV-MS-101B	Period 0-1000 sec.
MSS-13C	PCV-MS-101C	

OPTION TESTED: MSS-13A, 50%, 100 sec.

INITIAL CONDITIONS: IC-48 0% PWR. CORE AGE - MOL

LIST OTHER SPECIAL CONDITIONS:

Selected valve must be in AUTO prior to test initiation

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable at normal no-load conditions.

BASELINE DATA: Malfunction Description 6.3.4.9.13

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Flow Transmitter Failure SQT-4.118

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/31/90

GENERAL DESCRIPTION: Steam flow indiction to 'A' S/G (FT-MS-474) fails high. 'A' MFRV goes open in response to the anticipatory flow error signal generated by SGWLC. 'A' S/G level starts increasing above program resulting in an offsetting level error signal. Upon receipt of a level deviation alarm the operator places 'A' MFRV in manual, matches feed to steam flow. The alternate steam flow channel is selected as the input to SGWLC. 'A' MFRV is then restored to AUTO. Feed flow reduces as 'A' S/G level is restored to program. Feed flow returns to normal.

AVAILABLE OPTIONS:

MSS-14A/B	FT474/475 'A' S/G	Failed Value 0-4.5E6 lbm/hr
MSS-14C/D	FT484/485 'B' S/G	Ramp Time 0-9999 sec.
MSS-14E/F	FT494/495 'C' S/G	

OPTION TESTED: MSS-14A, 4.5E6 lbm/hr. 0 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

The failed channel is selected as the controlling channel for SGWLC prior to malfunction activation.

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100%, all feed reg. valves in AUTO maintaining program level.

BASELINE DATA: Malfunction Description 6.3.4.9.14
Alarm Response Procedure A7-45

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Pressure Transmitter Failure to Atm Dump Valve SQT-4.119

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/24/90

GENERAL DESCRIPTION: 'A' S/G pressure indicators high. PCV-MS-101A opens fully resulting in an increased steam demand of approximately 30%. RCS parameters respond as expected to increased steam demand resulting in an increase of Rx power. An OP Delta-T rod stop is actuated on 'A' Loop but the coincidence of 2/3 is not made. The operator places PCV-MS-101A controller in manual and closes the valve. Steam flow returns to the initial 100% value.

AVAILABLE OPTIONS: MSS-15A PCV-MS-101A Failied Value 0-1200 psig
MSS-15B PCV-MS-101B Ramp Time 0-9999 sec
MSS-15C PCV-MS-101C

OPTION TESTED: MSS15A, 1200 psig, 60 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Atmospheric dump valve controller in AUTO prior to test initiation.

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Plant stable at initial conditions (100%)

BASELINE DATA: Malfunction Description 6.3.4.9.15
Alarm Response Procedure A4-66

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Pressure Transmitter Failure SQT-4.120

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/20/89

GENERAL DESCRIPTION: Channel III of 'A' S/G steam indicates high. 'A' MFRV opens in response to the steam flow/feed flow mismatch. 'A' S/G level increases. Upon receipt of the level deviation alarm, the operator places 'A' MFRV in manual then matches feed flow to steam flow (actual). Operator selects Channel IV steam flow for control then returns 'A' MFRV to AUTO. 'A' S/G level and flows return to normal.

AVAILABLE OPTIONS: MSS-16A/B/C PT-474/475/476 Failed Value 0-1200 psig
MSS-16D/E/F PT-484/485/4C6 Ramp Time 0-9999 Sec.
MSS-16G/H/I PT-494/495/496

OPTION TESTED: MSS-16B, 1200 psig, 20 Sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Channel to be failed is selected as the input to SGWLC

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable at 100%, all MFRV's in AUTO controlling S/G levels on program.

BASELINE DATA: Malfunction Description 6.3.4.9.16

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Leak on AFW Pump Supply Line SQT-4.121

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/24/90

GENERAL DESCRIPTION: The leak occurs on the common supply header upstream of the isolation mov. Two S/G's are normally aligned to supply FW-P-2. The plant responds as expected to the increased steam demand with an eventual OP Delta-T rodstop/turbine runback generated. The operator manually trips the reactor after about 5 minutes. The reactor trip coincident with low taug causes a main feedwater isolation. S/G levels and pressures drop until a low steamline pressure SI is actuated (MSLI also occurs to the low steamline pressure). The operator takes FW-P-3A and 3B out of PTL. Both pumps auto start, providing > 700 gpm AFW flow. Local operator action isolates steam flow to the leak. S/G levels begin to recover.

AVAILABLE OPTIONS: Steam Leak Rate 0-100%

OPTION TESTED: 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Both MDFW pumps are placed in PTL prior to test performance.

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Reactor tripped with SI in progress. Plant conditions stabilizing following steam leak isolation.

BASELINE DATA: Malfunction Description 6.3.4.9.17
Emergency Operating Procedures E-0, E-2

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Source Range Channel Failure SQT-4.122

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/29/89

GENERAL DESCRIPTION: A failure of one channel of SR high exceeding 10^5cps prior to SR being blocked at P-6 (10^{-10} amps) results in a Reactor Trip.

AVAILABLE OPTIONS: NIS-1A N31 Failed Value 10^0-10^6cps
NIS-1B N32 Ramp Time 0-9999 Sec.

OPTION TESTED: NIS-1A, 1E6 cps, 60 Sec.

INITIAL CONDITIONS: IC-48 0 % PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant in Mode 3, Rx tripped on SR High Flux.

BASELINE DATA: Malfunction Description 6.3.4.10.1

DEFICIENCIES: Meter indication was inaccurate low due to meter out of calibration.

CORRECTIVE ACTION/DATE: T.R.-195 written. T.R.-195 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Intermediate Range Channel Failure SQT-4.123

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/29/89

GENERAL DESCRIPTION: The malfunction is initiated when the plant is below P-10, when activated the channel fails high, SUR increases then decays off, the high level bistable causes a plant reactor trip.

AVAILABLE OPTIONS: NIS-2A N-35 Failed Value 1E-11 to 1E-3 amps
NIS-2B N-36

OPTION TESTED: NIS-2A, 1E-3 amps

INITIAL CONDITIONS: IC-13 0% PWR CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

IR Channel 35 failed high, Rx tripped.

BASELINE DATA: Malfunction Description 6.3.4.10.2
Plant Alarm Response Procedure A5-1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Power Range Channel Failure SQT-1.124

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/09/89

GENERAL DESCRIPTION: N-44 pegs high at 100%, the positive rate bistable trips. Control rods insert at maximum speed due to power mismatch (rate) circuit. As the Terror signal builds and the power mismatch signal decays, rods slow and eventually stop. Rod withdrawal is demanded but the 1/4 channel over power rod stop prevents motion. Since this malfunction occurs at the output of the summing and level amp detector current comparison and OP/OT delta T circuitry remains unaffected. A channel deviation alarm is generated. The operator defeats the overpower rod stop on MC&I drawer.

AVAILABLE OPTIONS: NIS-3A N-41 NIS-3D N-44
NIS-3B N-42 Failed Value 0-200%
NIS-3C N-43 Ramp Time 0-9999 Sec.

OPTION TESTED: NIS-3D, 200%, 0 Sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Control Rods in AUTO

FINAL CONDITIONS TEST DURATION: .5 HRS.

Power stable slightly below 100%, Tavg low
Turbine on the GV limiter due to reduced steam pressure.

BASELINE DATA: Malfunction Description 6.3.4.10.3
Abnormal Operating Procedure 1.2.1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Intermediate Range Compensating Voltage Failure SQT-4.125

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/29/89

GENERAL DESCRIPTION: N-35 loss of compensating voltage trips the drawer bistable and actuates the control board annunciator. The operator inserts rods to establish a slightly negative SUR. N35 level indicates higher than N36 and has a smaller SUR indicated. The operator stabilizes power at 1E-11 amps (N36), N35 levels off about 5E-8 amps.

AVAILABLE OPTIONS: NIS-4A N-35 Current Value - 1E-11 to 1E-5, +1E-11 to +1E-5
NIS-4B N-36 Ramp Time 0-9999 Sec.

OPTION TESTED: NIS4A, +5E-8 amps, 0 Sec.

INITIAL CONDITIONS: IC-13 10^{-8} amps 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

Slowly increase power to 1E-7 amps and stabilize prior to malfunction actuation.

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Rx power stable at 2E-11 amps (N36)

BASELINE DATA: Malfunction Description 6.3.4.10.4
Alarm Response Procedure A4-94

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Source Range High Voltage Cutoff Failure SQT-4.126

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/29/89

GENERAL DESCRIPTION: The malfunction results in failure of one channel of SR to de-energize when the SR high flux trips are manually blocked by the operator during a Reactor startup. N32 de-energizes normally when the trip is blocked but N31 remains on. The level trip is blocked, Reactor power continues to increase above P10 but N31 remains energized.

AVAILABLE OPTIONS: NIS-5A N-31
NIS-5B N-32

OPTION TESTED: NIS-5A

INITIAL CONDITIONS: IC-13 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

Perform a Reactor startup IAW OM 50

FINAL CONDITIONS TEST DURATION: .75 HRS.

Reactor power $\geq$ 10% (P-10)

BASELINE DATA: Malfunction Description 6.3.4.10.5

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Source Range Fuse Blown SQT-4.127

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/29/89

GENERAL DESCRIPTION: A reactor trip signal is generated by SSPS due to loss of power to Source Range Channel I input relays. Since the coincidence is 1/2 the reactor trip breakers open. No drawer bistable lights are lit due to a loss of power to the lights.

AVAILABLE OPTIONS: NIS-6A N31 1 - Instrument Power Fuse
NIS-6B N32 2 - Control Power Fuse

OPTION TESTED: NIS-6A.2

INITIAL CONDITIONS: IC-48 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS: None

FINAL CONDITIONS TEST DURATION: .45 HRS.
Rx subcritical, trip breakers open.

BASELINE DATA: Malfunction description 6.3.4.10.6
Abnormal operating procedure 1.2.1

DEFICIENCIES: Drawer fuseholder lights do not light up when the fuse blows.

CORRECTIVE ACTION/DATE: Change Request #120 written, to be resolved by December 1992.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Intermediate Range Blown Fuse SQT-4.128

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/28/89

GENERAL DESCRIPTION: N-35 indication fails low due to loss of detector HV power supply. All drawer bistables trip with appropriate status lights lit (except P6 which goes out when the bistable trips). No trips or rodstops occur due to being blocked when power is raised above 10% (P10).

AVAILABLE OPTIONS: NIS-7A N-35 1 - Instrument Power Fuse
NIS-7B N-36 2 - Control Power Fuse

OPTION TESTED: NIS-7A, 1

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100%.

BASELINE DATA: Malfunction Description 6.3.4.10.7
Abnormal Operating Procedure 1.2.1

DEFICIENCIES: Fuse holder light does not light when the fuse blows.

CORRECTIVE ACTION/DATE: Change Request #121 written/

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Power Range Fuse Blows SQT-4.129

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/28/89

GENERAL DESCRIPTION: N-41 detector currents and channel indication fail low due to loss of detector HV. All drawer bistables trip with associated status lights and alarms generated. Detector and channel current comparators generate deviation alarms which subsequently clear when the operator defeats the failed inputs at the NIS rack. N-41 provides no control function inputs.

AVAILABLE OPTIONS:

NIS-8A	N-41	1 - Instrument Power Fuse
NIS-8B	N-42	2 - Control Power Fuse
NIS-8C	N-43	
NIS-8D	N-44	

OPTION TESTED: NIS-8A, 1

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .3 HRS.

Plant stable at 100% power.

BASELINE DATA: Malfunction Description 6.3.4.10.8
Abnormal Operating Procedure 1.2.1

DEFICIENCIES: Fuse holder light(s) don't light when fuse blows.

CORRECTIVE ACTION/DATE: Change Request #122 written. CR-122 to be installed by December 1992.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCT Pump Trip SQT-4.130

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/29/89

GENERAL DESCRIPTION: Trip of the running CCT pumps causes system pressure to drop. The Standby pump auto starts following a 5-second time delay after sensing the low pressure condition or auto stop of the running pump.

AVAILABLE OPTIONS: CCT-1A CC-P-3A
CCT-1B CC-P-3B

OPTION TESTED: CCT-1A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

CCP-3A off, CCP-3B running after an auto start,
CCT parameters returning to normal.

BASELINE DATA: Malfunction Description 6.3.4.3.1
Alarm Response Procedures A6-57, A6-58, A8-7

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: TCV-CC-215 Fails SQT-4.131

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/18/89

GENERAL DESCRIPTION: When the TCV fails open, most system flow will bypass the CCT heat exchangers. System temperatures will increase until high temperature alarms activate for various components cooled.

AVAILABLE OPTIONS: Failed Position 0-100%
Ramp Time 0-9999 Sec.

OPTION TESTED: 100%, 10 Sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Test terminated due to unsatisfactory response. System temperatures decreasing, pump amps indicate reduced system flow.

BASELINE DATA: Malfunction Description 6.3.4.3.2
Alarm Response Procedures A6-59, A6-98, A6-106, A6-89, A7-127, A7-88, A8-7

DEFICIENCIES: System temperature and flow response incorrect.

CORRECTIVE ACTION/DATE: T.R. #283 written. TR-283 will be resolved by December, 1991.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCT Supply Line Leak SQT-4.132

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/18/89

GENERAL DESCRIPTION: The leak is of sufficient magnitude to exceed the auto makeup capability of the condensate system. System mass drops below the surge tank low level alarm setpoint. When the running pump discharge pressure drops below 60 psig for 5 sec., the standby pump auto starts. System flow drops resulting in insufficient cooling of various components. When the malfunction is cleared, surge tank level increases due to auto makeup.

AVAILABLE OPTIONS: CCT-3A CND PP MTR OIL CLR CCT3D 150 PHASE DUCT
CCT-3B EH CLR CCT3E H_2, VAC PRIME, SAC, CLRS
CCT-3C TUR OIL CLR Leak Rate 0-500 gpm
Ramp Time 0-9999 sec.

OPTION TESTED: CCT-3B, 500 gpm, 0 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Surge tank level recovering.

BASELINE DATA: Malfunction Description 6.3.4.3.3
Alarm Response Procedures A6-61, A7-127, A8-7, A6-57, A6-58

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: CCT Suction Header Leak SQT-4.133

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:12/18/89

GENERAL DESCRIPTION: The leak is of sufficient magnitude to exceed the auto makeup capability from the condensate system. System mass decreases below the surge tank low level alarm setpoint. Continuing loss of mass results in low pump discharge pressure. The standby pump auto starts after a 5 sec. time delay. System flow is insufficient to provide cooling resulting in high temperature alarms and trips (where applicable) of components served.

AVAILABLE OPTIONS: Leak Rate 0-1000 gpm
Ramp Time 0-9999 sec.

OPTION TESTED: 1000 gpm, 0 sec.

INITIAL CONDITIONS: IC-42 100 % PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2.0 HRS.

CCT pumps in PTL, high temperature conditions on various components served.

BASELINE DATA: Malfunction Description 6.3.4..3.4
Alarm Response Procedures A6-61, A6-58, A6-57, A6-59, A7-88, A6-98, A6-108, A6-89, A6-127, A8-7

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Safety Valve Leakage SQT-4.134

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 4/09/90

GENERAL DESCRIPTION: The acoustic monitor and tail pipe temperature provide indication and alarm for the affected valve. PZR level and pressure decrease. PRT conditions indicate RCS leakage.

AVAILABLE OPTIONS: PRS-1A RV-RC-551A Leak Size 0-5%
PRS-1B RV-RC-551B Ramp Time 0-9999 sec.
PRS-1C RV-RC-551C

OPTION TESTED: PRS-1A, 5%, 60 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .75 HRS.

PZR level and pressure decreasing with PRT level, temperature, and pressure increasing.

BASELINE DATA: Malfunction Description 6.3.4.11.1
Alarm Response Procedure A4-6

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Safety Valve Failure SQT-4.135

REQUIRED BY ANSI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 4/09/90

GENERAL DESCRIPTION: The selected safety valve fails full open with appropriate indications on acoustic monitor, tail pipe temperature, and PRT conditions. RCS pressure drops rapidly resulting in a reactor trip and SI. The PZR goes solid in about 8 minutes. The PRT eventually ruptures. CNMT conditions degrade as the RCS continues to blowdown. The operator trips all RCP's IAW Emergency Operating Procedures.

AVAILABLE OPTIONS:	PRS-2A	RV-RC-551A
	PRS-2B	RV-RC-551B
	PRS-2C	RV-RC-551C

OPTION TESTED: PRS-2B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: [illegible] HRS.

Rx tripped, SI/CIA actuated, HHSI flow and S/G's with AFW flow providing core cooling, leak path via stuck open safety valve.

BASELINE DATA: Malfunction Description 6.3.4.11.2
Emergency Operating Procedures E-0, E-1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR PORV Failure — SQT-4.136

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 — DATE TESTED: 7/12/90

GENERAL DESCRIPTION: When the malfunction is activated, the PORV fails open, acoustic indication and PORV open annunciator are verified. Plant response is verified. The block valve for the failed PORV is closed to verify it will isolate the problem.

AVAILABLE OPTIONS:

PRS-3A	PCV-RC-455C	Leak Size 0-5%
PRS-3B	PCV-RC-455D	
PRS-3C	PCV-RC-456	Ramp Time 0-9999 sec.

OPTION TESTED: PRS-3A, 5%, 60 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS — TEST DURATION: 1.0 HRS.

Malfunction active, Pressure Low but increasing, PORV is failed open but isolated by Block Valve. Power is reduced due to OTΔT Runback.

BASELINE DATA: Malfunction Description 6.3.4.11.3
Alarm Response Procedures A4-6, A4-25

DEFICIENCIES: Instructor System Description on Console is incorrect 0-5% should be 0-100%.

CORRECTIVE ACTION/DATE: Trouble Report 268 written. TR-268 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PORV Reseat Failure SQT-4.137

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/12/90

GENERAL DESCRIPTION: With all PZR heaters manually energized and the spray valves in manual and closed PZR pressure will increase to the PORV lift setpoint. Although all PORV's may lift, only the unisolated one effects the RCS reduction. The operator places the spray valve controllers in AUTO. The spray valves open to reduce system pressure below the PORV setpoint, however, the malfunctioning PORV fails to reseat. RCS pressure continues to drop rapidly resulting in a low pressure Rx trip and SI. The PRT eventually ruptures relieving to CNMT. The test is terminated following manual closure of the open PORV's block MOV.

AVAILABLE OPTIONS: PRS-4A PCV-RC-455C
PRS-4B PCV-RC-455D
PRS-4C PCV-RC-456

OPTION TESTED: PRS-4B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Prior to test open block MOV for affected PORV and close the other two block MOV's. Ensure all PZR heaters are energized, spray valve controllers in manual with valves full closed.

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Rx tripped with SI actuated. The leaking PORV is isolated. The PZR is solid and the PRT ruptured.

BASELINE DATA: Malfunction Description 6.3.4.11.4
Emergency Operating Procedures E-0, E-1
Alarm Response Procedures A4-9, A4-10, A4-5, A4-13, A4-25

DEFICIENCIES:

None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Steam Space Leak SQT-4.138

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 3/30/90

GENERAL DESCRIPTION: PZR pressure and level (initially) decrease. Automatic pressure control energizes all heaters in an attempt to restore pressure. CNMT temperature, pressure, and humidity begin to increase. An OTΔT rodstop/turbine runback is actuated, the Rx subsequently trips on OTΔT then SI's on low RCS pressure. PZR level begins to recover and would eventually go solid. RCS pressure stabilizes. CNMT radiation levels (indicated) rise slowly due to inherent lag times in the sample collection system.

AVAILABLE OPTIONS: Leak Rate 0-850 gpm

OPTION TESTED: 850 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Rx tripped and SI in progress.

BASELINE DATA: Malfunction Description 6.3.4.11.5
Emergency Operating Procedures E-0, E-1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Level Transmitter Failure SQT-4.139

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 3/30/90

GENERAL DESCRIPTION: Indicated levels pegs high, PZR level high alarms actuate. Charging flow decreases due to indicated vs programmed level error. Actual PZR level and pressure decrease, PZR heaters energize. Regen. Hx high temp alarms due to minimal charging flow, letdown isolates, heaters de-energize when actual PZR level drops below 14% as sensed by the redundant level channel. The operator selects the alternate level for control. Charging flow increases, PZR level begins to recover.

AVAILABLE OPTIONS: PRS-6A LT-RC-459
PRS-6B LT-RC-460
PRS-6C LT-RC-461 Failed Value 0-100%
PRS-6D LT-RC-462

OPTION TESTED: PRS-6A, 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Prior to test initiation, ensure affected channel is selected for "control" and to the recorder. (except PRS6D)

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Rx plant stable at 100% with PZR level recovering, heaters will restore system pressure once level increases above the low level cutoff point (14%).

BASELINE DATA: Malfunction Description 6.3.4.11.6

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Pressurizer Ref. Level Signal Failure SQT-4.140

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 3/30/89

GENERAL DESCRIPTION: When activated, the malfunction cause the PZR Reference Level Signal to fail to 54%, since actual level is lower than this, the level control system opens FCV-CH-122 and increases charging flow and pressurizer level. Alarms should activate for PZR Level Deviation and High Charging Flow. The operator takes manual control to restore level.

AVAILABLE OPTIONS: Range of 530°F - 630°F

OPTION TESTED: 630°F

INITIAL CONDITIONS: IC-35 75% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction active, operator has taken manual control of FCV-CH-122 returning level to normal.

BASELINE DATA: Malfunction Description 6.3.4.11.7
BVPS Alarm Response Procedure A3-58

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Pressurize Pressurer Transmitter Failure SQT-4.141

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/31/89

GENERAL DESCRIPTION: When activated, the failed transmitter is verified going to the failed value selected. Proper response of the system is verified i.e., spray valves open, Heaters go off, PORV opens and PRT conditions indicate discharge into it. The operator takes manual control and returns conditions to normal.

AVAILABLE OPTIONS: PRS-8A PT-455 PRS-8D PT-444
PRS-8B PT-456 PRS-8E PT-445
PRS-8C PT-457 Range 1700-2500 psig

OPTION TESTED: PRS-8D, 2350 psig

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Insure PORV 455C in service.

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction active, PT-444 indicates 2350 psig, pressure control in manual and being restored to normal.

BASELINE DATA: Malfunction Description 6.3.4.11.8
Plant Alarm Response Procedure A4-10

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR. Spray Valve Failure SQT-4.142

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/16/89

GENERAL DESCRIPTION: When the malfunction activates the spray valve is verified open. RCS pressure decreases until a Low Press Trip causes an SI. After SI occurs the operator trips the "C" RCP to verify stopping it will stop the pressure decrease.

AVAILABLE OPTIONS: PRS-9A 455A
PRS-9B 455B Range 0-100% Open

OPTION TESTED: PRS-9B 100% Open

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

The malfunction is active, the failed spray valve is open, the "C" RCP is tripped, RCS pressure decrease has stopped.

BASELINE DATA: Malfunction Description 6.3.4.11.9
EOP E-0 Background Document

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR. Heater Control Failure SQT-4.143

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/12/90

GENERAL DESCRIPTION: When the malfunction activated, the PZR. Control Heaters came on and a slow pressure increase is verified. Pressure will increase until it is limited by the proper opening of the spray valves.

AVAILABLE OPTIONS: 0-100% of Full Heater Output

OPTION TESTED: 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Malfunction Active, Heaters on, pressure increase limited by spray valves opening.

BASELINE DATA: Malfunction Description 6.3.4.11.10

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Spray Valve Control Failure SQT-4.144

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/09/89

GENERAL DESCRIPTION: When activated, the output of PCV-RC-455A is verified to increase to 100%. PZR pressure decreases, heaters come on, loop OTΔT setpoints decrease. The operator then takes manual control of the spray valve and closes it. PZR pressure begins returning to normal.

AVAILABLE OPTIONS: PRS-11A-455A 0-100% Controller Output
PRS-11B-455B

OPTION TESTED: PRS-11A, 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Ensure PCV-RC-455A is in AUTO.

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction Active, Controller in manual, spray valve closed, pressure returning to normal.

BASELINE DATA: Malfunction Description 6.3.4.11.12
Plant Alarm Response Procedure A4-12

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: PZR Master Pressure Control Failure SQT-4.145

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 11/09/89

GENERAL DESCRIPTION: The controller output goes to zero. Heaters are verified on, spray valves are verified shut, the PORV operated by this controller stays shut. Pressure increases until the PORV-456 opens to stop the pressure increase. (PCV-RC-456 is controlled by another channel).

AVAILABLE OPTIONS: 0-100% of Controller Output

OPTION TESTED: 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction Active, Spray Valves closed, Heaters on, PORV-456 opening as necessary to control pressure increase.

BASELINE DATA: Malfunction Description 6.3.4.11.12
Plant Alarm Response Procedures A4-12, A4-9

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Pressurizer Level Controller Failure SQT-4.146

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/12/90

GENERAL DESCRIPTION: When the malfunction activates it will cause level controller output to go high increasing charging flow. Charging flow increases. PZR level increase and V.C.T. level decrease are verified. Level will continue to increase until a High PZR Level Rx Trip occurs.

AVAILABLE OPTIONS: 0-100% Controller Output

OPTION TESTED: 100%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Malfunction active, Reactor Tripped due to High PZR Level.

BASELINE DATA: Malfunction Description 6.3.4.11.13
Plant Alarm Response Procedures A4-1, A4-2, A4-20, A5-23

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Surgeline Leak SQT-4.147

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/30/90

GENERAL DESCRIPTION: The malfunction is activated, the effects on RCS level and pressure verified. Conta:.ment pressure, temperature and humidity, should increase as well as radiation levels. Auto actuations for ESF Systems are verified and operator actions for E-0, E-1 and thru step 11b of ES-1.2 are done on the simulator prior to completion of test.

AVAILABLE OPTIONS: Variable Rate 0-3000 gpm

OPTION TESTED: 3,000 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Malfunction active, RCS pressure ~ 350 psig, Rx tripped, SI, CI "A", CI "B", actuated but reset, cooldown commenced per step 11.b of ES-1.2.

BASELINE DATA: Malfunction Description 6.3.4.12.1
EOP E-1 Background Document

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Cold Leg Leak SQT-4.148

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:07/30/90

GENERAL DESCRIPTION: When the malfunction is activated the approiate drop in RCS pressure and Pzr. level are verified. Approiate low press. and level alarms are verified. Containment press. and temp. are verified to increase with expected alarms. Proper auto operation of ESF equipment is also verified.

AVAILABLE OPTIONS: RCS-2A Loop A Leak RCS-2D - Loop A DBA
RCS-2B Loop B Leak RCS-2E - Loop B DBA
RCS-2C Loop C Leak RCS-2F - Loop C DBA

OPTION TESTED: RCS-2E DBA

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None.

FINAL CONDITIONS TEST DURATION: 2.5 HRS.

Rx tripped, SI, CIA, CIB, SLI and FWI have taken place
RCS is depressurized with core cooling being done by E.C.C.S.

BASELINE DATA: Malfunction description 6.3.4.12.2
FSAR Accident Analysis DBA LOCA
OM53 EOP Background Document for E-1

DEFICIENCIES: None.

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None.

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Steam Generator Tube Leak SQT-4.149

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 1/18/90

GENERAL DESCRIPTION: The malfunction is activated at 100% power to the "A" S/G at a 400 gpm leak rate. Expected indications and alarms are verified. The operator performs the steps of E-0 and E-3 to the point where the primary to secondary leak is stopped. The ability to perform E-0 and E-3 is verified as part of this test.

AVAILABLE OPTIONS:

RCS-3A	"A" S/G	
RCS-3B	"B" S/G	Variable Leak Rate 0-1000 gpm
RCS-3C	"C" S/G	

OPTION TESTED: RCS-3A, 400 gpm Leak Rate

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 2.25 HRS.

Rx Tripped, SI in progress, RCS pressure less than Ruptured S/G, Malfunction active but leak stopped due to operator actions.

BASELINE DATA: BVPS Malfunction Description 6.3.4.12.3
EOP Background Document for Tube Rupture (E-3)

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Reactor Vessel Flange Leak SQT-4.150

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 1/22/90

GENERAL DESCRIPTION: When the malfunction is activated, the leak is verified by the leak off temp increase and the rising level in DG-TK1. Alarm Response Procedure A3-96 is followed to isolate the leak off line.

AVAILABLE OPTIONS: None

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .75 HRS.

Malfunction active, leak still in progress, leak off line isolated so other line can be placed in service for the other seal.

BASELINE DATA: Malfunction Description 6.3.4.12.4
BVPS Alarm Response Procedure A3-96

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rx Coolant Pump #1 Seal Failure SQT-4.151

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 1/18/90

GENERAL DESCRIPTION: After the malfunction is activated, expected Seal flow and temperature indications are verified on the control board and selected parameters are recorded for later review. Operator actions are taken to isolate seal leak off and verify leak off flow decreases.

AVAILABLE OPTIONS: RCS-5A - RCP-1A Range 0-50 gpm
RCS-5B - RCP-1B
RCS-5C - RCP-1C

OPTION TESTED: RCS-5A, 50 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Initial values of parameters to be checked, need to be recorded prior to malfunction activation.

FINAL CONDITIONS TEST DURATION: 1 HRS.

Malfunction active, seal leak off flow isolated, Seal temperatures are high.

BASELINE DATA: Malfunction Description 6.3.4.12.5
BVPS Alarm Response Procedures A3-87, A3-79, A3-86

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rx Coolant Pump #2 Seal Failure SQT-4.152

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 1/22/90

GENERAL DESCRIPTION: After the malfunction is activated, seal leak off flow is verified decreasing. VCT level decrease is verified, and DG-TK1 level is verified increasing. RCP Leak off flow low and RCP Seal Vert Pot level alarm are verified active. Selected parameters are printed out for transient verification.

AVAILABLE OPTIONS: RCS-6A 1A-RCP
RCS-6B 1B-RCP 0-5 gpm variable rate
RCS-6C 1C-RCP

OPTION TESTED: RCS-6B, 5 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction active, 1B-RCP seal leak off low, VCT level decreasing, DG-TK1 level increasing.

BASELINE DATA: Malfunction Description 6.3.4.12.6
BVPS Alarm Response Procedures A3-79, A3-109

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rx Coolant Pump #3 Seal Failure | SQ: 4.153

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 | DATE TESTED: 1/22/90 & 8/31/90

GENERAL DESCRIPTION: When the malfunction is activated, #3 Seal leak off increases. Seal Vent Pot level is verified decreasing. The operator then adds make up water to the vent pot and level is verified increasing.

AVAILABLE OPTIONS: RCS-7A - 1A-RCP
RCS-7B - 1B-RCP
RCS-7C - 1B-RCP

OPTION TESTED: RCS-7B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Open containment isolation valve for PG Make Up prior to opening MOV-RC-522B

FINAL CONDITIONS | TEST DURATION: .75 HRS.

Malfunction active, #3 Seal Leak Off high, Vent Pot Level increasing due to operator providing make up.

BASELINE DATA: Malfunction Description 6.3.4.12.7
BVPS Alarm Response Procedure A3-111

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Reactor Coolant Pump Trip SQT-4.154

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/24/89

GENERAL DESCRIPTION: The malfunction trips the pump, breaker position and pump amps are used to verify it tripped. RCS loop flow decrease is verified as well as affects on loop temperatures and affected steam generator pressure, level and steam flow. Expected alarms are verified and selected data points plotted out for analysis.

AVAILABLE OPTIONS: RCS-8A 1A RCP
RCS-8B 1B RCP
RCS-8C 1C RCP

OPTION TESTED: RCS-8A

INITIAL CONDITIONS: IC-45 25% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Insure power slightly less than 25% and M.F.R.V.'s are in auto. Set up to plot data using Procedure D.

FINAL CONDITIONS TEST DURATION: 2 HRS.

Malfunction active, RCP's 1 Band 1C operating, 1A Pump Tripped, "B" and "C" Steam Generators providing much more steam flow than "A" Steam Generator.

BASELINE DATA: Malfunction Description 6.3.4.12.8
BVPS Alarm Response Procedure A3-104

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS : SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RCP Locked Rotor Accident SQT-4.155

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:11/10/89

GENERAL DESCRIPTION: The malfunction to activate the "Locked Rotor" occurs at 100% power. Plant parameters and alarms are noted, expected flows, pressures and temperatures are monitored against expected results. Test is stopped when RCS temperature and pressure are relatively stable.

AVAILABLE OPTIONS: RCS-9A RCP-1A
RCS-9B RCP-1B
RCS-9C RCP-1C

OPTION TESTED: RCS-9B

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Set up to monitor selected parameters using Procedure D. to place data on the tape.

FINAL CONDITIONS TEST DURATION: .45 HRS.

Rx Tripped, RCP's 1A and 1C operating, plant stable in Mode 3.

BASELINE DATA: BVPS Malfunction Description 6.3.4.12.9
FSAR Accident Analysis "Locked Rotor Accident"

DEFICIENCIES: RCS Temp/Press. response to accident too small.

CORRECTIVE ACTION/DATE: Trouble Report 287 written. TR-287 will be resolved by December 1992.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Rx Coolant Pump Vibration SQT-4.156

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/24/89

GENERAL DESCRIPTION: The malfunction is activated. The indication on the meter behind VB "B" is verified correct and the two expected alarms are verified on.

AVAILABLE OPTIONS: RCS-10A - RCP-1A
RCS-10B - RCP-1B Range 0-30 mils
RCS-10C - RCP-1C

OPTION TESTED: RCS-10C, 30 mils

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .25 HRS.

Malfunction active, alarms present, vibration indicating 30 mils pump left running.

BASELINE DATA: Malfunction Description 6.3.4.12.10
BVPS Alarm Response Procedures A3-126, A3-127

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RCS Activity High SQT-4.157

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/24/89

GENERAL DESCRIPTION: When the malfunction is activated, an increase in radiation level is verified on RCS-CH-101A and B. Letdown Radiation Monitor, and the Hi and Hi Hi alarms are verified on.

AVAILABLE OPTIONS: Selectable activity 10^{-7} to 10^{-1} uc/gr

OPTION TESTED: 1E-1 uc/gr

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .25 HRS.

Malfunction active, Letdown Rad Monitors reading high and in Alarm status, Hi and Hi Hi.

BASELINE DATA: Malfunction Description 6.3.4.12.11
Alarm Response Procedures A4-71, A4-72

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Fuel Handling Accident SQT-4.158

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:10/24/89

GENERAL DESCRIPTION: This malfunction simulates the expected alarms and radiation monitor indications that would occur if a Fuel Assembly dropped in the Fuel Bldg. The test verified expected alarms, indications and auto actions caused by the simulated radiation level increase in the Fuel Bldg.

AVAILABLE OPTIONS: None

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Main Filter Bank ventilation on Train A

FINAL CONDITIONS TEST DURATION: .5 HRS.

Malfunction Active, radiation level high on RIS-VS-103A & B other expected indication did not rise as expected.

BASELINE DATA: BVPS Malfunction Description 6.3.4.12.12
Abnormal Operating Procedure

DEFICIENCIES: Fuel Bldg. area monitors did not indicate correctly nor did the Main Filter Dampers work correctly.

CORRECTIVE ACTION/DATE: Trouble Report 285 written, TR-285 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Hot Leg N.R. Temperature Sensor Failure SQT-4.159

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:08/03/90

GENERAL DESCRIPTION: After the malfunction is actuated, its affect on Thot meter and recorder instrumentation is verified. Affects on OP Delta-T and OT Delta-T circuits are also verified. Expected alarms due to this failure are verified. The plant itself should not be affected as this fault will not feed thru to any control system.

AVAILABLE OPTIONS:	RCS-14A-412B1	RCS-14D-422B2
	RCS-14B-412B2	RCS-14E-432B1
Variable 520-660F	RCS-15C-422B1	RCS-14F-432B2

OPTION TESTED: RCS-14A, 660F

INITIAL CONDITIONS: IC-18 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
Use Pack J, select HSSTR-412 to Loop 1

FINAL CONDITIONS TEST DURATION: 1 HRS.

Malfunction active, plant steady state at 100%, no effect on plant other than expected alarms, and indication caused by failed detector.

BASELINE DATA: Malfunction Description 6.3.4.12.14
Alarm Response Procedure A4-42

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Hot Leg W.R. Temp. Sensor Failure SQT-4.160

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:08/03/90

GENERAL DESCRIPTION: Wide range Thot provides indication on a Control Room recorder, an input to the plant computer, and an input to the ICCM. All of these indications failed to 700F. The only annunciator to actuate is the Train A ICC Malfunction due to a failed input.

AVAILABLE OPTIONS: RCS-15A Loop A Failed value 0 - 700°F
RCS-15B Loop B
RCS-15C Loop C

OPTION TESTED: RCS-15A, 700°F

INITIAL CONDITIONS: IC-18 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable at 100%

BASELINE DATA: Malfunction Description 6.3.4.12.15
Alarm Response Procedure A3-63

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Cold Leg Narrow Range Temperature Sensor Failure SQT-4.161

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 8/03/90

GENERAL DESCRIPTION: When the malfunction is activated, the appropriate indications and alarms are verified; no automation actions or transient are caused by this failure. Loop 1 Tavg and ΔT should increase, affects on OP and ΔT Trips and Runback circuits are checked.

AVAILABLE OPTIONS: RCS-16A = Loop 1
RCS-16B = Loop 2 Variable 510°F - 630°F
RCS-16C = Loop 3

OPTION TESTED: RCS-16A, 510°F

INITIAL CONDITIONS: IC-18 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Select HSS 1TR412 to Loop 1
Run this test on Pack J

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100%, Malfunction active, all alarms and indication received due to the failure are still present.

BASELINE DATA: Malfunction Description 6.3.4.12.16

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Cold Leg WR Temperature Sensor Failure SQT-4.162
REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 8/03/90

GENERAL DESCRIPTION: The wide range Tcold provides input to the plant computer, vertical board recorder, and Cold Leg loop isolation valves' interlock. When the output of the RTD fails high, all indications go high and a status light indicates a >5°F deviation from the other two loops.

AVAILABLE OPTIONS:

RCS-17A	TE-410 (Loop A)	Failed Value 0-700°F
RCS-17B	TE-420 (Loop B)	
RCS-17C	TE-430 (Loop C)	

OPTION TESTED: RCS-17A, 700°F

INITIAL CONDITIONS: IC-18 100% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100%, Malfunction Active, associated alarm present

BASELINE DATA: Malfunction Description 6.3.4.12.17

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Hot Leg Pressure Transmitter Failure SQT-4.163

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 4/27/90

GENERAL DESCRIPTION: MOV-RH-700 and 720A automatically close to isolate the RHR System due to exceeding the setpoint of 630 psig. One pressurizer PORV opens as a result of a direct input from this transmitter when the cold OPPS is in service. Various control board indicators and annunciators are actuated. The operator attempts to manually open the RHR isolation valves, which do not respond due to the failed transmitter.

AVAILABLE OPTIONS: RCS-18A PT-403 (Loop B) Failed Value 0-3000 psig
RCS-18B PT-402 (Loop C)

OPTION TESTED: RCS18B, 3000 psig, 0 sec

INITIAL CONDITIONS: IC-52 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

Plant S/D, RHR in operation.
RCS pressure <350 psig

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant S/D with the RHR System isolated and RCS pressure decreasing toward PRT pressure due to the open PORV.

BASELINE DATA: Malfunction Description 6.3.4.12.18
Alarm Response Procedure A4-15

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Loop Flow Transmitter Failure SQT-4.164

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 4/27/90

GENERAL DESCRIPTION: 0% flow is indicated on one transmitter for Loop 'A'. A loop 'A' low flow alarm is generated. The affected channel's status light is lit indicating a tripped condition is seen by SSPS but no protective actions are actuated since the 2/3 coincidence is not satisfied.

AVAILABLE OPTIONS:

RCS-19A Loop A	Selected Transmitter	414,424,434	Final Value 0-130%
RCS-19B Loop B		415,425,435	
RCS-19C Loop C		416,426,436	

OPTION TESTED: RCS 19A, Ft-414, 0%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100% with one Loop A flow channel in a tripped condition.

BASELINE DATA: Malfunction Description 6.3.4.12.19
Alarm Response Procedure A3-104

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Incore Thermocouple Failure SQT-4.165

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/27/90

GENERAL DESCRIPTION: The thermocouples input to the plant computer systems for display only. The P250 reads out 700F and outputs an alarm message to the typewriter. SPDS reads 700F. The Train 'A' ICCM indicates 700F for the failed detector as well as a reduced margin to saturation and an increase in the average for the five hottest thermocouples.

AVAILABLE OPTIONS: Select failed thermocouple
Failed Value 0-700F

OPTION TESTED: A08, 700F

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .75 HRS.

Plant stable at 100%

BASELINE DATA: Malfunction Description 6.3.4.12.20

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RCS Boron Concentration SQT-4.166

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 7/26/90

GENERAL DESCRIPTION: RCS boron concentration is increases approximate 1 ppm which adds about -8 pcm of reactivity to the core. Tavg drops as necessary to affect the reactivity added by the boration (magnitude is a function of the moderator temperature coefficient). Pressurizes and VCT boron concentrations slowly increase toward a new equilibrium value. Rods do not move due to the small change in temperature.

AVAILABLE OPTIONS: Final Value 0-2000 ppm
Ramp Time 0-9999 sec.

OPTION TESTED: 975 ppm, 60 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100% with a slightly reduced Tavg and an increased boron concentration.

BASELINE DATA: Malfunction Description 6.3.4.12.21

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RHR Pump Trip SQT-4.167

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/22/90

GENERAL DESCRIPTION: RH-P-1A trips on an overcurrent condition as evidenced by a rapid rise than fall to zero on indicated pump amps and breakers tripped indication. A pump AUTO STOP alarm is actuated. Indicate RHR flow drops and the low flow condition is annunciated. The auto flow control valve opens fully in an attempt to maintain setpoint flow. RHR temperatures slowly decrease due to ambient losses. RCS cooldown ceases.

AVAILABLE OPTIONS: RHR-1A RH-P-1A
RHR-1B RH-P-1B

OPTION TESTED: RHR-1A

INITIAL CONDITIONS: IC-2 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

Establish a small cooldown rate on RHR

FINAL CONDITIONS TEST DURATION: .5 HRS.

RCS heatup in progress. RHR System no longer removing decay heat.

BASELINE DATA: Malfunction Description 6.3.4.13.1
Alarm Response Procedures A1-126, A1-127

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RHR Relief Valve Failure SQT-4.168

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/22/90

GENERAL DESCRIPTION: RV-721 fails to the full open position which yields a nominal flow rate of 1133 gpm at 600 psig to the PRT. RHR System flow is maintained constant by auto flow con' l valve closing. PRT c ditions result in level, pressure, and temperatur ns. RCS pressure and PZR level drop rapidly. VCT level drops as chargir iow increases to maximum. The operator identifies the leak and isolates the RHR System. RCS conditions stabilize. Pressure and level begin to recover.

AVAILABLE OPTIONS: Failed Position 0-100%
Ramp Time 0-9000 sec

OPTION TESTED: 100%, 0 sec

INITIAL CONDITIONS: IC-2 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .5 HRS.

RCS level and pressure increasing.

BASELINE DATA: Malfunction Description 6.3.4.13.2
Alarm Response Procedures A4-36, A4-38

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RHR Flow Transmitter Failure SQT-4.169

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/22/90

GENERAL DESCRIPTION: FT-RH-605 inputs to MOV-RH-605 auto control circuit. In response to the high failure, MOV-RH-605 closes. Closure of RH-605 results in full RHR System flow through the RHR heat exchangers. RHR return temperature decreases. RCS cooldown rate increases.

AVAILABLE OPTIONS: Failed Value 0-8500 gpm
Ramp Time 0-9999 sec

OPTION TESTED: 8500 gpm, 0 sec

INITIAL CONDITIONS: IC-2 0% PWR. CORE AGE - MOL
LIST OTHER SPECIAL CONDITIONS:

Verify MOV-RH-605 IN AUTO prior to Test initiation.

FINAL CONDITIONS TEST DURATION: .5 HRS.

RCS cooldown rate excessive.

BASELINE DATA: Malfunction Description 6.3.4.13.3

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RHR FCV Failure SQT-4.170

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/22/90

GENERAL DESCRIPTION: Since MOV-RH-758 fails as is; no changes in plant parameters occur. When HIC-RH-758 is adjusted to reposition MOV-RH-758, the controller output changes but the valve does not respond. RHR and RCS temperatures do not respond to the control manipulation.

AVAILABLE OPTIONS: RHR-4A 758 (Cooldown valve)
RHR-4B 605 (Recirc. valve)

OPTION TESTED: RHR-4A

INITIAL CONDITIONS: IC-2 0% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Plant in Mode 5 on RHR decay heat removal prior to malfunction actuation

FINAL CONDITIONS TEST DURATION: .25 HRS.

Same as initial conditions

BASELINE DATA: Malfunction Description 6.3.4.13.4
Abnormal Operating Procedure 1.10.1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RHR Pump Shaft Failure SQT-4.171

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/22/90

GENERAL DESCRIPTION: When RH-P-1A shaft shears, RHR system flow drops rapidly initiating a low flow alarm. MOV-RH-605 automatically modulates full open in an attempt to maintain RH System total flow constant. Due to reduced total system flow, the RCS will start to heatup. Decreased RHR heat removal is amplified by the increased amount of flow-by passing the heat exchangers through MOV-RH-605.

AVAILABLE OPTIONS: RHR-5A RH-P-1A Ramp Time 0-9999 sec
RHR-5B RH-P-1B

OPTION TESTED: RHR-A, 0 sec

INITIAL CONDITIONS: IC-2 0% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Plant in CSD on RHR decay heat removal prior to malfunction initiation.

FINAL CONDITIONS TEST DURATION: .25 HRS.

RCS temperature increasing

BASELINE DATA: Malfunction Description 6.3.4.13.5
Abnormal Operating Procedure 1.10.1
Alarm Response Procedure A1-126

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RWST Leak SQT-4.172

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/28/90

GENERAL DESCRIPTION: RWST level drops. Annunciators actuated at appropriate setpoints. The malfunction is then cleared, level reduction stops. The operator initiates RWST refill IAW procedure Q of OM 1.7. Level is observed to be increasing.

AVAILABLE OPTIONS: Leak Rate 0-1000 gpm
Ramp Time 0-9999 sec

OPTION TESTED: 1000 gpm, 0 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 3.5 HRS.

Plant stable, RWST Level increasing

BASELINE DATA: Malfunction Description 6.3.4.14.1
Alarm Response Procedures A6-19, A6-20, A6-21, A6-27

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Quench Spray Pump Failure SQT-4.173

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/28/90

GENERAL DESCRIPTION: Pump amps peg high and the breaker trips open due to the overcurrent condition. Pump amps and discharge pressure drops to zero. The QS-P-1A auto-stop alarm is received.

AVAILABLE OPTIONS: SIS-2A QS-P-1A
SIS-2B QS-P-1B

OPTION TESTED: SIS-2A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

QS-P-1A is manually started for this test.

FINAL CONDITIONS TEST DURATION: .33 HRS.

Plant remained stable at 100% throughout test.

BASELINE DATA: Malfunction Description 6.3.4.14.2
Alarm Response Procedure A1-109

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Recirc Spray Pump Failure SQT-4.174

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/28/90

GENERAL DESCRIPTION: Following a DBA LOCA, a CIB signal starts the RS pumps after a time delay (~210 sec.). Pump current pegs high and the breaker trips open on the overcurrent condition. Pump amps and discharge pressure drop to zero. The RS-P-1A auto-stop alarm stops.

AVAILABLE OPTIONS:

SIS-3A	RS-P-1A
SIS-3B	RS-P-1B
SIS-3C	RS-P-2A
SIS-3D	RS-P-2B

OPTION TESTED:

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

A DBA LOCA is activated to initiate this test.
The malfunction is actuated after the RS pump has auto started.

FINAL CONDITIONS TEST DURATION: .5 HRS.

Rx tripped, LOCA and CIB in progress.

BASELINE DATA: Malfunction Description 6.3.4.14.3
Alarm Response Procedure A1-81

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS 1 SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Recirc Spray Hx Tube Leak SQT-4.175

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 4/16/90

GENERAL DESCRIPTION: Following a DBA LOCA, a CIB signal generated by High Cnmt Pressure causes all four RS pumps to auto start following a time delay (~225 seconds). When the leak occurs, combine river water flow from the heat exchangers increases. The radiation monitor on the 1A Hx outlet increases above its alarm setpoint actuating the common HIGH and HI-HI Control Room annunciators.

AVAILABLE OPTIONS: SIS-4A RS-E-1A
SIS-4B RS-E-1B
SIS-4C RS-E-1C Leak Rate 0-500 gpm
SIS-4E RS-E-1D Ramp Time 0-9999 sec.

OPTION TESTED: SIS-4A, 500 gpm, 0 sec.

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

A RCS DBA LOCA is activated to start the test.
CIB is verified to have actuated prior to activating SIS4

FINAL CONDITIONS TEST DURATION: .5 HRS.

Rx tripped, DBA LOCA in progress, CIB actuated.

BASELINE DATA: Malfunction Description 6.3.4.14.4
Alarm Response Procedures A4-71 and A4-72

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: High Head SI Pump Failure SQT-4.176

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/28/90

GENERAL DESCRIPTION: The running charging/HHSI pump trips; the auto-stop alarm actuates. With no charging pump operating, flow and pressure drop. The charging flow control valve modulates open in an attempt to increase flow. Low discharge flow and pressure annunciators are actuated. PZR level starts decreasing eventually generating a low level deviation alarm. A low seal inj. flow alarm is actuated. Regenerative Hx outlet temperature exceeds its alarm setting due to the loss of charging flow with letdown in-service. The operator manually starts CH-P-1B to restore charging flow and PZR level.

AVAILABLE OPTIONS: SIS-5A CH-P-1A
SIS-5B CH-P-1B
SIS-5C CH-P-1C

OPTION TESTED: SIS-5A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

CH-P-1A is aligned as the in-service charging pump.

FINAL CONDITIONS TEST DURATION: .6 HRS.

Plant stable at 100 %, all parameters restored to normal, CH-P-1B running

BASELINE DATA: Malfunction Description 6.3.4.14.5
Alarm Response Procedures A3-49, A3-50, A3-58, A4-4, A3-78, A3-115

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Low Head SI Pump Failure SQT-4.177

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/28/90

GENERAL DESCRIPTION: SI-P-1A trips generating an AUTO-STOP alarm. Low head flow indiction for the 1A pump drops to zero. Pump amps drop to zero.

AVAILABLE OPTIONS: SIS-6A SI-P-1A
SIS-6B SI-P-1B

OPTION TESTED: SIS-6A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

A DBA LOCA is activated to initiate the test.
SI-P-1A is verified to have auto started.

FINAL CONDITIONS TEST DURATION: .55 HRS.

DBA LOCA in progress with only one train of low head SI flow indicated.

BASELINE DATA: Malfunction Description 6.3.4.14.6

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Containment In-Leakage SQT-4.178

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 2/28/90

GENERAL DESCRIPTION: CNMT air in-leakage quickly exceeds the capacity of the running vacuum pump (~55cfm), pressure increase above the partial pressure high-high alarm setpoint. The operator starts the second vacuum pump but the combined capacity of both pumps is about 100 X less than the air inleak rate. CNMT. pressure stabilizes slightly below atmospheric pressure. The malfunction is clear and CNMT pressure is observed to be reducing.

AVAILABLE OPTIONS: Leak Rate 0-1000 SCFM
Ramp Time 0-9999 Sec.

OPTION TESTED: 1000 SCFM, 0 Sec.

CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

CV-P-1A running, CV-P-1B off

FINAL CONDITIONS TEST DURATION: .5 HRS.

Plant stable at 100% with CNMT pressure reducing.

BASELINE DATA: Malfunction Description 6.3.4.14.7
Alarm Response Procedures A1-35, A1-36, A1-43, A1-44

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Spurious SI Actuation SQT-4.179

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED: 4/25/90

GENERAL DESCRIPTION: Upon receipt of a spurious SI signal the Rx trips and both Trains of SI/CIA equipment actuate. A FWI signal trips the MFP's and closes feedwater isolation valves. Feed is supplied via the 2 MDAFW pumps which start as a direct result of the SI signal and the TDAFW pump which starts due to S/G low-low level caused by the post-trip shrink. PZR drops initially as Tavg reduces then starts to increase due the HHSI flow. Equipment actuation is verified using EOP Attachments. The operator resets the SI signal after the malfunction is cleared. Both trains reset as indicated by status lights on BB-A.

AVAILABLE OPTIONS: None

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.5 HRS.

Rx shutdown, all SI/CIA equipment actuated, PZR level increasing, SI signal manually reset. SI termination criteria is met.

BASELINE DATA: Malfunction Description
Emergency Operating Procedures E-0,
Attachments 1A, 1B & 1C

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Spurious CIA Actuation SQT-4.180

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/25/90

GENERAL DESCRIPTION: Verified all CIA actuated components responded as expected in accordance with Emergency Operating Procedures Attachment 1-B. All systems' parameters responded as expected due to isolation of various flow paths and cooling water supply.

AVAILABLE OPTIONS:

None

OPTION TESTED:
N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable at 100% with the exception of slowly increasing PZR level due to letdown isolation.

BASELINE DATA: Malfunction Description 6.3.4.14.9
Emergency Operating Procedures Attachment 1-B

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Failure of Auto SIS Actuation SQT-4.181

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/25/90

GENERAL DESCRIPTION: Pressurizer pressure drops to the low pressure Rx trip setpoint followed quickly by a low pressure SI signal being generated. All Train A components are observed to be in their pre-SI position. If a component was in its SI position initially, it is placed in the opposite position and verified not to automatically reposition. Additionally Train A CIA components are verified not to have actuated as Train A CIA is auto actuated by Train A SI. Finally Train A SI is manually actuated and all SI/CIA components verified to have actuated.

AVAILABLE OPTIONS:

SIS-10A Train A
SIS-10B Train B

OPTION TESTED:
SIS-10A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

MALF PRS-2A, PZR Safety Valve Failure open is used to initiate the test

FINAL CONDITIONS TEST DURATION: .75 HRS.

LOCA through one stuck open PZR safety valve in progress with both Trains of SI actuated

BASELINE DATA: Malfunction Description 6.3.4.14.10
Emergency Operating Procedures Attachments 1-A and 1-B

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: SI Accumulator Leak SQT-4.182

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/24/90

GENERAL DESCRIPTION: SI-TK-1A level is observed to be decreasing and CNMT sump level increasing. Eventually the low level and low pressure alarms are received. MALF SIS-11A is cleared and SI-TK-1A level is observed to remain constant. The operator implements procedure E of OM 1.11.4 to make up to the accumulator and level & pressure are observed to be increasing.

AVAILABLE OPTIONS:

SIS-11A	SI-TK-1A	Leak Rate 0-200 gpm
SIS-11B	SI-TK-1B	
SIS-11C	SI-TK-1C	Ramp 0-9999 sec

OPTION TESTED:
SIS-11A, 200 gpm, 0 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

SI-TK-1A level and pressure increasing

BASELINE DATA: Malfunction Description 6.3.4.14.11
Normal Operating Procedure OM 1.11.4.E

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: SI Signal Fails To Selected Valves SQT-4.183

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/24/90

GENERAL DESCRIPTION: Each MOV is tested separately and verified not to reposition in response to a SI signal. When the malfunction is cleared with the SI signal still present the MOV is verified to reposition.

AVAILABLE OPTIONS:

SIS-12A	MOV-CH-115B	SIS-12D	MOV-CH-115E
SIS-12B	MOV-CH-115C		
SIS-12C	MOV-CH-115D		

OPTION TESTED:
SIS-12A, 12B, 12C, 12D

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

SI is manually initiated to start test

FINAL CONDITIONS TEST DURATION: .5 HRS.

Rx tripped and SI in progress

BASELINE DATA: Malfunction Description 6.3.4.14.12

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Safety Injection Line Leak SQT-4.184

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/24/90

GENERAL DESCRIPTION: A leak develops down stream of the BIT outlet isolation MOVs. SI flow through the BIT is observed to increase and flow to the cold legs (measured downstream of the leak) is observed to decrease. Because the leak is in the Aux. Bldg., the North Sump LEVEL HIGH alarm comes in. The operator resets SI to allow closure of the BIT isolation MOVs. The leak is isolated. The operator then establishes SI flow via the charging system fill header.

AVAILABLE OPTIONS:

Leak rate 0-500 gpm

OPTION TESTED:
500 gpm

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

SI is manually initiated and SI flow stabilized prior to activating the leak malfunction.

FINAL CONDITIONS TEST DURATION: 1.25 HRS.

SI in progress with HHSI flow through the Fill Header

BASELINE DATA: Malfunction Description 6.3.4.14.13

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: RWST Level Transmitter Failure SQT-4.185

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/26/90

GENERAL DESCRIPTION: Low level alarm: actuated by this transmitter is actuated and level indication is observed to read 5%.

AVAILABLE . .IONS:

SIS-14A	LT-QS-100A	SIS-14D	LT-QS-100D
SIS-14B	LT-QS-100B		
SIS-14C	LT-QS-100C	Failed value 0-100%	

OPTION TESTED:
SIS-14B, 5%

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable at 100%

BASELINE DATA: Malfunction Description 6.3.4.14.14

DEFICIENCIES: PCS did not indicate value observed on VB-C

CORRECTIVE ACTION/DATE: TR# 302 written, TR-302 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: LHSI Pump Suction Valve Failure SQT-4.186

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/26/90

GENERAL DESCRIPTION: Following a DBA LOCA the RWST inventory is pumped to the RCS resulting in reducing RWST level. When RWST reaches 19 feet in conjunction with a SI signal, LHSI pump's suctions are automatically aligned to the containment sump and RWST supply MOVS close. At 19 feet the B LHSI supply from the RWST isolates but the CNMT sump suction valve fails to open resulting in loss of B train LHSI flow and pump cavitation.

AVAILABLE OPTIONS:

SIS-15A MOV-SI-860A SIS-15D MOV-SI-862B
SIS-15B MOV-SI-860B
SIS-15C MOV-SI-862A Failed Position O or C (Open/Closed)

OPTION TESTED:

SIS-15B,C Closed

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

A DBA LOCA is actuated to initiate the test

FINAL CONDITIONS TEST DURATION: 2.0 HRS.

RCS, ECCS, and CNMT in the recirculation mode of post-LOCA cooling except for loss of B Train of LHSI flow

BASELINE DATA: Malfunction Description 6.3.4.14.15

DEFICIENCIES: B LHSI pump does not indicate cavitation with both suction valves closed.

CORRECTIVE ACTION/DATE: CR #136 written. CR-136 to be installed by Dec. 1992.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Turbine Trip SQT-4.187

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/05/90

GENERAL DESCRIPTION: Upon actuation of malf. all TVs, GVs, IVs, & RHSVs close isolating steam flow to the turbine. With a turbine trip signal and Rx Power above P9 (49%) an Rx trip signal is generated and the Rx trips. The Rx trip arms two banks of steam dumps which trip open due to a large Tavg-Tno load mismatch. RCS temperature, pressure, and PZR level respond as expected to the transient. Main FW isolation occurs when Tavg is reduced to 554°F, AFW provides flow to all S/Gs. After a 30 sec TD the generator output breakers and exciter breaker open resulting in a fast bus transfer of all in-house buses to off-site power. As Tavg decreases to Tno-load the steam dumps modulate closed. The turbine coasts down, various support lube oil pumps start as the shaft driven oil pump discharge pressure drops.

AVAILABLE OPTIONS:

None

OPTION TESTED: N/A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Plant stable in Mode 3, Tavg reducing slowly due to maximum AFW flow being supplied to 3 S/Gs

BASELINE DATA: Malfunction Description 6.3.4.15.1
Abnormal Operating Procedure 1.26.1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Turbine Bearing Vibration High SQT-4.188

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/05/90

GENERAL DESCRIPTION: Turbine vibration indication increases to selected value over selected ramp for selected bearing. Vibration of the two adjacent also increases to a lesser degree. When setpoint is reached, the Turbine Supervisory Trouble alarm comes in. The recorders shift to "jump speed", Alert and Danger LEDs light, and the display flashes.

AVAILABLE OPTIONS:
TUR-3A-I Bearings 1 -9

Vibration Amplitude -15 to +15 mils
Ramp Time 0-9999 sec

OPTION TESTED: TUR-3A, +15 mils, 180 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Power stable at 100%

BASELINE DATA: Malfunction Description 6.3.4.15.3
Alarm Response Procedure A7-104

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Governor Valve Failure SQT-4.189

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/05/90

GENERAL DESCRIPTION: Steam flow through the turbine drops resulting in a load rejection. Steam dumps are armed by the drop in impulse pressure and modulate open due to the Tavg-Tref mismatch. Control rods insert to restore Tavg to Tref and dumps modulate shut. Feed flow and steam flow are reduced and the S/G levels undergo a shrink transient. EHC modulates GV-1 further open due to Pimp dropping but the GV limiter takes control to stop any further GV opening.

AVAILABLE OPTIONS:

TUR-4A	GV-1	TUR4D GV-4
TUR-4B	GV-2	Failed Position 0-100%
TUR-4C	GV-3	Ramp Time 0-9999 sec

OPTION TESTED:
TUR-4B, 0%, 5 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Control Rods in auto
EHC in IMP in mode

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Rx plant stabilizes at about 70%.

BASELINE DATA: Malfunction Description 6.3.4.15.4
Abnormal Operating Procedure 1.35.1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Erratic Govenor Valve Control SQT-4.190

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/05/90

GENERAL DESCRIPTION: The malfunction causes the No. 1 Govenor valve to oscillate. Oscillations in steam flow are verified. Reactor Power and Tavg cycle. Compensation by No. 4 Govenor Valve is verified.

AVAILABLE OPTIONS: TUR-5A - Govenor Valve 1 Oscillation Range 0-50%
TUR-5B - Govenor Valve 2
TUR-5C - Govenor Valve 3 Period - 0-1,000 sec
TUR-5D - Govenor Valve 4

OPTION TESTED: TUR-1A, 10%, 60 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.4 HRS.

Plant at ≈ 70% Power, No. 1 Govenor Valve shut but periodically cycling open.

BASELINE DATA: Malfunction Description

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Throttle Valve Failure SQT-4.191

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/06/90

GENERAL DESCRIPTION: Initially failed TV-1 full open. Verified correct response for turbine speed increase, steam flow increase, Tavg decrease, and Rx power increase. OPC actuates to prevent turbine overspeed trip. Next overrode OPC on EHC panel and verified turbine trip actuation at appropriate setpoint and appropriate annunciator actuation.

AVAILABLE OPTIONS:

TUR-6A TV-1 TUR-6D TV-4
TUR-6B TV-2 Variable position 0-100%
TUR-6C TV-3 Variable ramp 0-9999 sec

OPTION TESTED:

TUR-6A failed to 100% with 0 sec ramp

INITIAL CONDITIONS: IC-47 5% PWR. CORE AGE - MOL

LIST OTHER SPECIAL CONDITIONS:

Manually overrode OPC to verify turbine trip occurs

FINAL CONDITIONS TEST DURATION: 2 HRS.

Turbine tripped
Rx plant stable in Mode 2

BASELINE DATA: Malfunction Description 6.3.4.15.6
Alarm Response Procedure A7-100, A7-08, A5-36
Abnormal Operating Procedure AOP 1.26.1

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Erratic Throttle Valve Control SQT-4.192

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/06/90

GENERAL DESCRIPTION: TV1 was selected to oscillate 5% over a 5 second period. The following secondary plant parameters were observed to oscillate in the expected direction:

1) steam flows
2) feed flows
3) S/G levels
4) main generator MW output

AVAILABLE OPTIONS:

TUR-7A TV1	TUR-7D TV4
TUR-7B TV2	Oscillation range 0-50%
TUR-7C TV3	Oscillation period 0-1000 sec

OPTION TESTED: TUR-7A, 5%, 5 sec period

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .2 HRS.

Plant remains critical with primary and secondary parameters oscillating, malfunctions still active

BASELINE DATA: Malfunction Description 6.3.4.15.7

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: EHC Pump Trip SQT-4.193

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/06/90

GENERAL DESCRIPTION: LO-M-9A trips on thermal overload resulting in reducing EH system pressure. LO-M-9B auto starts on reduced system pressure and subsequently restores EH pressure to normal.

AVAILABLE OPTIONS:
- TUR-8A Pump A Trip (LO-M-9A)
- TUR-8B Pump B Trip (LO-M-9B)

OPTION TESTED:
TUR-8A

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: .25 HRS.

EH system pressure restored to normal by operation of the standby EH fluid pump.

BASELINE DATA: Malfunction Description 6.3.4.15.8
Alarm Response Procedure A7-77

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Turbine Bearing Lube Oil Pump Failure SQT-4.194

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/06/90

GENERAL DESCRIPTION:
The turbine was manually tripped and LO-M-8 was observed to fail to automatically start when turbine speed reduced below 600 rpm. The malfunction was subsequently cleared and LO-M-8 was observed to auto start.

AVAILABLE OPTIONS:

Mode 1 - LO-M-8 fails to auto stop when turbine speed > 600 rpm
Mode 2 - LO-M-8 fails to auto start when turbine speed < 600 rpm

OPTION TESTED: Mode 1

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1 HRS.

Malfunction cleared, LO-M-8 running

BASELINE DATA: Malfunction Description 6.3.5.15.10 Abnormal Operating Procedure 1.26.2 Attachment 1.26.1-1, Instruction 7.C.

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: EHC Speed Channel Failure SQT-4.195

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/08/90

GENERAL DESCRIPTION: Due to the sensed difference between actual turbine speed and 1800 rpm reference speed the governor valves open resulting in a megawatt increase turbine control shifts to TURB MAN due to > 150 rpm difference between the main and aux speed channels. SPEED CHAN monitor illuminates. The load swing results in a sensed difference between the impulse pressure signal and the load reference signal causing the LOAD REF CHAN monitor to illuminate.

AVAILABLE OPTIONS: Speed valve selectable 0-1800 rpm
Ramp time 0-9999 sec

OPTION TESTED: 0 rpm, 0 sec

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:
None

FINAL CONDITIONS TEST DURATION: .3 HRS.
Turbine/Rx power stable in TURB MAN mode of EH control

BASELINE DATA: Malfunction Description 6.3.4.15.12
OM 1.26.1

DEFICIENCIES: Emergency Power Supply Status light illuminates

CORRECTIVE ACTION/DATE: TR 301 written 9/25/90, TR-301 has been resolved.

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Turbine Runback Failure SQT-4.196

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/08/90

GENERAL DESCRIPTION: With no runback demand, the turbine runs back at a cyclic rate which prevents the steam dumps from arming. The rods move inward in response to increasing Tavg and Turbine/Rx power mismatch. The Turbine trips due to anti-motoring at a low enough Rx power to prevent a Turbine trip. Steam dumps actuate following the Turbine trip. Taking MANUAL Turbine control does not stop the runback.

AVAILABLE OPTIONS:

O - Open circuit (no runback)
C - Closed circuit (runback occurs independent of demand)

OPTION TESTED:
C

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

During the cyclic runback, Turbine control was placed in MANUAL

FINAL CONDITIONS TEST DURATION: .5 HRS.

Rx plant critical at HZP. Turbine tripped. Decay head removal via condenser steam dumps

BASELINE DATA: Malfunction Description 6.3.4.15.14
Alarm Response Procedure A4-50, A4-54

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Valve Position Limiter Failure SQT-4.197

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:04/27/9C

GENERAL DESCRIPTION: A normal turbine startup was commenced using OM 1.52.4.A. When the turbine was latched, governor valves 2 and 3 travelled 75% open and stopped. Valve position limit indication was verified to indicate 50% and would not respond to the position limit lower control.

AVAILABLE OPTIONS: Final limiter position 0-100%

OPTION TESTED:
50%

INITIAL CONDITIONS: IC-14 5% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

Operator Auto selected
Turbine manually latched

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

GV #2 and #3 stationary at 50% on the valve position limiter, turbine startup terminated.

BASELINE DATA: Malfunction Description 6.3.4.15.15

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: Failure, 1st Stage Pressure Signal to EHC SQT-4.198

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/08/90

GENERAL DESCRIPTION: With EHC selected to IMP In Mode the governor valves modulated shut in response to Pimp failing high. When the deviation between Pimp and the Load Ref Channel becomes excessive EHC shifts to TURB MAN and the LOAD REF CHANNEL monitor light is lit. Operator AUTO can not be reselected. The turbine trips on reverse power due to insufficient steam supply.

AVAILABLE OPTIONS:

Final valve in psig 0-600 psig
Variable ramp 0-9999 sec

OPTION TESTED:
600 psig, 180 seconds

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

None

FINAL CONDITIONS TEST DURATION: 1.0 HRS.

Turbine trip results in Rx trip
Plant in Mode 3 Rx trip controller modulates steam dumps to reduce Tavg to no-load.

BASELINE DATA: Malfunction Description 6.3.4.15.16

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: MSR Steam Supply Valve Failure SQT-4.199

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/19/90

GENERAL DESCRIPTION: FCV-MS-100A fails closed as indicated by BB-C position indication. Temperature of the reheat steam to the left side of the LP turbines decreases resulting in decreased LP turbine efficiency. Generator MW loading drops due to reduced turbine efficiency. FCV-MS-100A fails to respond to manual valve control.

AVAILABLE OPTIONS:

TUR-17A	FCV-MS-100A	Failed Position 0-100%
TUR-17B	FCV-MS-100B	Ramp time 0-9999 sec

OPTION TESTED:
TUR-17 0% 0 sec ramp

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL
LIST OTHER SPECIAL CONDITIONS:

Attempted operation of FCV in MANUAL Mode

FINAL CONDITIONS TEST DURATION: .75 HRS.

Power stable with a resultant net loss of approximately 3 MW

BASELINE DATA: Malfunction Description 6.3.4.15.17

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

BVPS I SIMULATOR CERTIFICATION TEST ABSTRACT

TEST TITLE: 1st Stage Stm Pressure Transmitter Failure SQT-4.200

REQUIRED BY ASI/ANS 3.5 SECTION: 4.2.2 DATE TESTED:02/19/90

GENERAL DESCRIPTION: PT-446 fails to 0 as indicated on VB-C. Tref drops to 547°F resulting in a deviation alarm and a demand signal to steam dumps (not armed) and rod control. Rods insert at maximum rate due to Power and Tavg/Tref mismatch. Actual Tavg decreases. Rod motion eventually stops. Outward rod motion is demanded due to low Tavg but is blocked by C-6. S/G levels reduce to no-load setpoint. Upon selecting PT-447 for control, rods withdraw and feed reg. valves open to restore 100% power conditions.

AVAILABLE OPTIONS:

TUR-18A	PT-446	Variable Range 0-600 pisg
TUR-18B	PT-447	

OPTION TESTED: TUR-18A to 0 psig

INITIAL CONDITIONS: IC-42 100% PWR. CORE AGE - BOL

LIST OTHER SPECIAL CONDITIONS:

PT 446 selected for control

FINAL CONDITIONS TEST DURATION: .5 HRS.

Power stabilized at 100%

BASELINE DATA: Malfunction Description 6.3.4.15.18
Alarm Response Procedure A4-46, A3-20, A7-45, A7-53, A7-61

DEFICIENCIES: None

CORRECTIVE ACTION/DATE: N/A

EXCEPTIONS TAKEN TO ANS. 3.5: None

3.6 Deficiency List and Correction Schedule

Of the deficiencies generataed , change requests or trouble reports, as a result of the certification hardware reviews or testing. None were considered to cause negative training with the exception of the NIS Blown Fuse and Reactor Coolant Pump Locked Rotor Malfunctions. These malfunctions will not be used in training until satisfactorily cleared. The blown fuse malfunctions are being enchanced by Change Requests 120, 121 and 122. The locked rotor malfunction deficiency is being tracked by Trouble Report 287.

The following is a list of the Beaver Valley Power Station-Unit 1 simulator change requests generated as a result of certification testing or the hardware comparison between the Unit 1 control room and the Beaver Valley Power Station-Unit 1 simulator.

BVPS U1 SIMULATOR
CERT CR'S
DATE:11/12/90

CR #	DESCRIPTION
0077	CONTROL ROOM NOISE-CREBAPS,PORV
0093	BVPS-1 PROCESS COMPUTER-P250
0120	MAL NIS-6 BLOWN FUSE INDICATION LIGHTS
0121	MAL NIS7 BLOWN FUSE INDICATION LIGHTS
0122	MAL NIS8 BLOWN FUSE INDICATION LIGHTS
0130	DELETE MAL CHS-15
0131	MAL CND-16
0132	MODEL DIESEL DRIVEN FIRE PUMP
0136	LHSI PUMP-LOSS OF SUCTION
0141	LOA'S OR HTR VENTS
0143	CTMT WIDE RANGE H2 ANALYZER
0149	SPING CONSOLE
0150	MAIN GENERATOR UPGRADE
0154	CN RECIRC FANS VIBRATION TRIP

Change Request Resolution Schedule

1. CR-0077-Control Room Noise Generation for CREBAPS and Safety Valve Actuation. Completion scheduled by January 1992.
2. CR-0093-Beaver Valley Power Station-Unit 1 Process Computer-P250. Hardware will be installed and operable within 18 months of acceptance in the Beaver Valley Power Station-Unit 1 control Room.
3. CR-0120, 0121, 0122-NIS Blown Fuse Indication. Training will not be conducted on these malfunctions until proper indication is provided. Completion scheduled for June 1992.
4. CR-130, 131 deletion of Malfunctions CHS-15 and CND-16. Completed.
5. CR-0132-Model Diesel Driven Fire Pump. Completion scheduled for June 1992.
6. CR-0136-Addition of LHSI Pump Cavitation on Loss of Suction. Completion scheduled for December 1991.
7. CR-0141-Install LOA for Reheater Vent Valves. Completed.
8. CR-0143-Install Integrated Response Feature for CNMT Wide Range H_2 Analyzer. Completion scheduled for June 1992.
9. CR-0144-Installation of SPING Console. Completion within 18 months of authorization to procure the console.
10. CR-0150-Install Upgraded Main Generator Model. Completion scheduled for June 1992.
11. CR-0154-Install CTMT Recirculation Fans Vibration Trip Feature. Investigation will be performed to determine if parts are available. If parts are available, expected completion within 18 months of procurement, if not LOA feature will be added by December 1991.

The following is a list of Trouble Reports generated as a result of certification testing, cross-referenced by SQT number.

REPORT DATE: 11/15/90 STEADY STATE AND NORMAL OPS

SQT NUMBER	TITLE	TR #1	TR #2	TR #3	TR #4	TR #5	TR #6	CR #
2.1.00	100% STEADY STATE DRIFT TEST	195						
2.4.01	PLANT S/D TO MODE 5	197	198	199	200			
2.4.02	P.R. FUNCTIONAL TEST OST 1.2.1	204						
2.4.03	I.R. FUNCTIONAL TEST OST 1.2.2	202						
2.4.04	SOURCE RANGE FUNCTIONAL TEST	205						
2.4.05	PLANT S/U MODE 5 TO 100%	207	165					141
2.4.11	CN ISOL OST-1.47.3A	021	006					
2.4.12	COLD VLV EXER OST-1.1.10	323						
2.4.15	MOTOR AFW PUMP TEST OST1.24.3	235						
2.4.16	TURBINE AFW PUMP TEST OST1.24.	235						

TRANSIENT TESTS

SQT NUMBER	TITLE	TR #1	TR #2	TR #3	TR #4	TR #5	TR #6	CR #
3.001	MANUAL RX TRIP	214	218	220				
3.002	LOSS OF ALL FW	306						
3.004	RCP'S TRIP	252	307					
3.006	TURBINE TRIP RODS-MAN	279						
3.007	MAX POWER RAMP	308						
3.008	DBA LOCA	309	318	319		320		

REPORT DATE : 11/15/90 MALFUNCTION TESTS

SQT NUMBER	TITLE	TR #1	TR #2	TR #3	CR #
4.002	STA AIR COMP. TRIP	244			
4.003	INSTR. AIR LEAK	321			
4.008	WASTE GAS EFF. HEADER LEAK	276			
4.019	CCW SUCTION HDR LK	278			
4.020	CCW TO RCP LEAK	277			
4.036	VAC PRIMING PMP,BKR	282			
4.047	STUCK ROD	280			
4.061	CHARGING HEADER LEAK	267			
4.063	RCP SEAL INJ FCV FAILURE	300			
4.065	H2 SUPPLY PRESS. REG FAILURE	270			130
4.070	LETDN ISO.VLV FAIL.	221			
4.074	UNIT STA TRANS FAILURE	307			
4.076	LOSS OF 4160 VAC BUS	258			
4.077	LOSS 480 VAC BUS	257			
4.078	LOSS OF 120 VOLT BUS	281			
4.088	VOLT ADJ SETPOINT FAILURE	284			
4.100	AUX FW FCV	210			
4.114	T REF TO STM DUMP FAILS	142	304		
4.131	TCV-CC-215 FAILS	283			
4.136	PZR PORV FAILURE	268			
4.155	RCP LOCKED ROTOR	287			
4.158	FUEL HANDING ACC.	285			
4.185	RWST LEVEL TRANSMITTER FAIL	302			
4.188	TURBINE BEARING VIBRATION	286			
4.195	EHC SPEED CHANNEL FAILURE	301			

Trouble Report Resolution Schedule

The following are Trouble Reports that have been resolved and tested, but have not yet been cleared. In order to clear these trouble reports, the changes must be incorporated into the Simulator Design Basis Documents. The documentation will be completed by March of 1991.

165, 197, 198, 199, 200, 202, 204, 205, 207, 210, 214, 216, 218, 221, 235, 244, 252, 267, 268, 270, 279, 278, 281, 282, 285, 300, 301, 302.

The following Trouble Reports will be cleared by December 1991 are:

195, 257, 258, 276, 277, 283, 284, 286, 304, 307, 308, 318, 319, 320, 321, 323.

Trouble Reports that will be cleared by December 1992. when the advance primary system models are incorporated into the simulator are:

280, 287, 306, 309, 324.

4. Simulator Trouble Reports (TR's) Resolution and Change Requests (CR's) Generation

The procedures for the resolution of Trouble Reports (TR's) and for the modification or upgrade of the simulator, through the use of Change Requests (CR's), can be found in Appendix 4 and 5 respectively.

5. Beaver Valley Power Station Unit I Simulator Safety Limit Check Program

Limit Check Program General Description

As required in Section 4.3 of the sta... a software program has been developed to alert the simulator instructor if the simulator is exceeding design limits and/or know operating conditions.

The program warns the instructor if pre-defined conditions occur by comparing variables such as containment pressure to a limit. If any limits are exceeded, a message will appear on the instructor's CRT and annunciator A1-08 will flash until acknowledged.

Functional Description

The following conditions are periodically monitored by the subroutine:

(1) Containment pressure shall not exceed 45 psig.

(2) Pressurizer pressure shall not exceed 2735 psig.

(3) Any one thermocouple shall not exceed 1200^{o}F or fall below 40^{o}F.

(4) Core cooling must be superheated, all reactor coolants pumps must be off, any one thermocouple must be greater than 700^{o}F, and RVLIS full range level must be less than 39%.

(5) RCS cooldown rate > -4000 ^{o}/hr for 5 minutes (CR113).

Operational Requirements

The program runs once per second. Inputs from other models are needed for this program to serve any purpose.

External Interfaces

All variables are located in datapool and messages displayed on the instructor's CRT utilize a call to the subrountine CRTOUT.

References

Status TREE F-0.5, BVPS

Status TREE F-0.2, BVPS

Techncial Specifications, BVPS

Mathematical Description

Data Organization

Calling Frmat and Arguments

IMTCHK is called by the executive every second. All inputs are located in datapool. If a limit is exceeded, a message to the instructor's CRT utilizing the subrountine CRTOUT is displayed.

The argument list for CRTOUT is:

```
CALL CRTOUT (MESSAGE,80,1)
```

Where:

MESSAGE = character * 80 variable

80 = length of output

1 = color (red, integer byte)

Input Variables

Name	Description/Size/Format
PCNM	Containment pressure, psia 1 real word in datapool
PPRSSU	Pressurizer pressure psia 1 real word in datapool
TCFMTC	Incore thermocouple temperatures, DEG F 51 real words in datapool

TRVLSMTA Core cooling temperature subcooling margin

1 real word in datapool

NRCP1A,B,C Reactor coolant pump status

1 integer byte in datapool (=off, 1-on)

BRCSNR RVLIS full range level

1 real word in datapool

Output Variables

JLIMIT is a datapool variable used to flash annunciator A1.08 when a limit has been exceeded. Normally it has a value of FALSE; otherwise if a limit has been exceeded, its value is TRUE.

The messages that may be written to the instructor's CRT are:

(1) ****LIMIT EXCEEDED - Containment Pressure >= 45

(2) ****LIMIT EXCEEDED - Pressurizer Pressure >=2735 psig

(3) ****LIMIT EXCEEDED - Any one T/C Temp <= 40^{0}F or >= 1200^{0}F

(4) ****LIMIT EXCEEDED - RCS RXCOOL >= 0 RCPS OFF

T/C >= 700^{0}F RVLIS >= 39%

(5) ****LIMIT EXCEEDED - RCS Cooldown >-4000^{0}F/HR for 5 minutes

Internal Variables

Name	Description/Size/Format/Contiguity
JLMTEXC	Limit exceeded flag Logical byte array of 12 in datapool Array elements are parallel to message
JLMTMSG	Limit message flag Logical byte array of 12 in datapool Array elements are parallel to message

Constants

NAME	Description/Size/Format/Value
1	Message color (red)
	Local integer byte

APPENDIX 1

Beaver Valley Power Station Unit I Simulator

Training Initial Conditions

IC Number	Core Age	Description
1	Bol	2000 PPM, 145#, 163, Mode 5, Pzr solid
2	Bol	2000 PPM, 110#, 162, Mode 5, ready to fill Pzr
3	Bol	2000 PPM, 220#, 209, ready to enter Mode 5
4	Bol	2000 PPM, 360#, 3[illegible]5, ready for RHR O.M.1.51.4.C
5	Bol	1229 PPM, Rx S/U 3 hours after 100% power trip
6	Bol	1687 PPM, XE free Rx S/U, 100 steps on CBD
7	Bol	1688 PPM, Tur S/U from IC-6, OM 52.4.A Step 1
8	Bol	1686 PPM, Gen S/U from IC-6, OM 52.4.A
9	Bol	1681 PPM, MFRV transfer from IC-6, OM 52.4.A
10	Bol	1358 PPM, 63% power, power to 100% from 47%
11	Bol	1386 PPM, 47% power, EQ XE
12	Bol	1226 PPM, 100% power, EQ XE
13	Mol	1299 PPM, XE free reactor S/U, 100 Steps on CBD
14	Mol	1305 PPM, 10- 10 A from IC-13. OM 50.4.D
15	Mol	1305 Gen S/U from IC-13, OM 52.4.A
16	Mol	998 PPM, 47% power, EQ XE
17	Mol	863 PPM, 30% power from 100%, XE
18	Mol	841 PPM, 100% power, EQ XE

IC Number	Core Age	Description
19	Mol	997 PPM 63% power from 47, XE
20	Eol	265 PPM, 75% power, power from 100%, XE
21	Eol	350 PPM, 63% powe., power from 47% XE
22	Eol	700 PPM, XE free reactor S/U at 90 steps on CBD
23	Eol	230 PPM, reator S/U 14 hours after reactor trip from 100% power
24		
25		
26	Eol	311 PPM, 90% power, power to 100% from 47% XE
27	Eol	379 PPM, 47% power, EQ XE
28	Eol	230 PPM, 100% power, EQ XE
29		
30		

APPENDIX 2

Enclosed within Appendix 2 is a listing of In-Plant Local Operator Actions.

LOCAL OPERATOR ACTION LISTING

```
CCW1      CCR HX-1A INLET AND OUTLET ISOL VLVS        (CCR12,15)
(RCCV12)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW2      CCR HX-1B INLET AND OUTLET ISOL VLVS        (CCR13,16)
(RCCV13)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW3      CCR HX-1C INLET AND OUTLET ISOL VLVS        (CCR14,17)
(RCCV14)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW4

CCW5      RHR HX-1A & P-1A SEAL COOL INLET ISOL VLV   (CCR247)
(RCCV247)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW6      RHR HX-1B & P-1B SEAL COOL INLET ISOL VLV   (CCR248)
(RCCV248)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW7      RHR HX-1A OUTLET ISOL VLV                   (CCR249)
(RCCV249)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW8      RHR HX-1B OUTLET ISOL VLV                   (CCR250)
(RCCV250)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW9

CCW10     SEAL WATER HX CH-E-1 OUTLET THROT VLV       (CCR113)
(RCCV113)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW11     FUEL POOL HX-1A & 1B RETURN HDR ISOL VLV    (CCR108)
(RCCV108)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW12     10" TO 8" CCR SUPPLY HDRS X-CONN             (CCR42)
(RCCV42)      R ANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW13     8" TO 10" CCR SUPPLY HDRS X-CONN            (CCR111)
(RCCV111)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW14     CCR SURGE TANK VENT ISOL VLV                 (CCR37)
(RCCV37)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW15     SG BLOWDOWN DRAIN TK HX OUTLET THROT VLV     (CCR66)
(RCCV66)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CCW16     24 INCH HEADER THROTTLE VALVE                (CCR18)
(RCCW18)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
CRF1      MASTER COUNTER
(MCRFOC)     RANGE 0 TO 2000
CRF2      P/A CONVERTER DISCONNECT
(XINSPAD)    RANGE TRUE  OR  FALSE
CRF3      ROD DRIVE MG SET A OUTPUT BREAKER
(JCRFMGAO)   RANGE T=TRIP F=CLOSED
CRF4      ROD DRIVE MG SET B OUTPUT BREAKER
(JCRFMGBO)   RANGE T=TRIP F=CLOSED
CRF5      P/A CONVERTER CONTROL BANK A
(MINSCA2)    RANGE 0 TO 228
CRF6      P/A CONVERTER CONTROL BANK B
(MINSCB2)    RANGE 0 TO 228
CRF7      P/A CONVERTER CONTROL BANK C
(MINSCC2)    RANGE 0 TO 228
CRF8      P/A CONVERTER CONTROL BANK D
(MINSCD2)    RANGE 0 TO 228
CRF9      IRPI POWER SUPPLY NORMAL OR ALTERNATE
(JCRFALPA)   RANGE   T=ALT.POWER  F=NO ALT POWER
CND1      CONDENSER WATERBOX A INLET ISOL VLV         (CW106A)
(NXCW106A)   RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
```

LOCAL OPERATOR ACTION LISTING

```
CND2      CONDENSER WATERBOX B INLET ISOL VLV           (CW106B)
(NXCW106B)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND3      CONDENSER WATERBOX C INLET ISOL VLV           (CW106C)
(NXCW106C)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND4      CONDENSER WATERBOX D INLET ISOL VLV           (CW106D)
(NXCW106D)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND5      CONDENSER WATERBOX A OUTLET ISOL VLV          (CW100A)
(NXCW100A)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND6      CONDENSER WATERBOX B OUTLET ISOL VLV          (CW100B)
(NXCW100B)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND7      CONDENSER WATERBOX C OUTLET ISOL VLV          (CW100C)
(NXCW100C)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND8      CONDENSER WATERBOX D OUTLET ISOL VLV          (CW100D)
(NXCW100D)  RANGE 0 TO 2  0=STOP  1=OPEN  2=CLOSED
CND9

CND10     COND PUMP 1A DISCH ISOL VLV                      (CN5)
(RCNV005)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND11     COND PUMP 1B DISCH ISOL VLV                      (CN6)
(RCNV006)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND12     COND PUMP 1A MINIMUM FLOW LINE                  (CN40)
(RCNV040)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND13     COND PUMP 1B MINIMUM FLOW LINE                  (CN41)
(RCNV041)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND14

CND15     LP HTR TRAIN A INLET ISOL VLV                   (CN18)
(RCNV018)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND16     LP HTR TRAIN B INLET ISOL VLV                   (CN19)
(RCNV019)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND17     LP HTR TRAIN A OUTLET ISOL VLV                  (CN20)
(RCNV020)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND18     LP HTR TRAIN B OUTLET ISOL VLV                  (CN21)
(RCNV021)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND19

CND20     COND RECIRC (FCV-CN-101) MANUAL BYPASS VLV      (CN64)
(RCNV064)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND21     COND RECIRC (FCV-CN-101) MANUAL ISOL VLV        (CN65)
(RCNV065)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND22     COND RECIRC (FCV-CN-101) FAIL AIR
(JCFWF101)  RANGE T/F   T=CLOSE  F=NORM OP
CND23

CND24     EXHAUST HOOD SPRAY MANUAL BYPASS VLV            (CN48)
(RCNV048)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND25     CONDENSATE TO AIR EJECTORS BYPASS VLV           (CN11)
(RCNV011)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND26     COND DRAIN TO CIRC WATER SYSTEM                 (CN25)
(RCNV025)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CND27

CND28     COND REJECT TO SG BLOWDOWN DEMINS               (CN26)
(RCNV026)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
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LOCAL OPERATOR ACTION LISTING

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CND29     COND MAKEUP FROM SG BLOWDOWN DEMINS              (WT858)
(RWTV858)    RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX1      CCT HX-3A OUTLET ISOL VLV                        (CCT10)
(RCCTV010)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX2      CCT HX-3B OUTLET ISOL VLV                        (CCT11)
(RCCTV011)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX3      CCT HX-3C OUTLET ISOL VLV                        (CCT12)
(RCCTV012)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX4      CCT MINIMUM FLOW RECIRC VLV                      (CCT13)
(RCCTV013)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX5

AUX6      RW TO CCR HX-1A ISOL VLV                         (RW185)
(RRWV185)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX7      RW TO CCR HX-1B ISOL VLV                         (RW186)
(RRWV186)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX8      RW TO CCR HX-1C ISOL VLV                         (RW187)
(RRWV187)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX9      RW SUPPLY HDR X-CONN CCR HX-1A TO CCR HX-1B      (RW183)
(RRWV183)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX10     RW SUPPLY HDR X-CONN CCR HX-1B TO CCR HX-1C      (RW184)
(RRWV184)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX11     RAW WATER TO CCT HX-1A ISOL VLV                   (RW30)
(RRWV030)   RANGE 0 TO   0    1=OPEN  0=CLOSED
AUX12     RAW WATER TO CCT HX-1B ISOL VLV                   (RW31)
(RRWV031)     RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX13     RAW WATER TO CCT HX-1C ISOL VLV                   (RW32)
(RRWV032)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX14     RW TO EDG HX-1A SUPPLY FROM A HDR               (RW113A)
(RRWV113A)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX15     RW TO EDG HX-1A SUPPLY FROM B HDR               (RW113B
(RRWV113B)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX16     RW TO EDG HX-1B SUPPLY FROM A HDR               (RW113C)
(RRWV113C)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX17     RW TO EDG HX-1B SUPPLY FROM B HDR               (RW113D)
(RRWV113D)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX18     RW X-CONN TO RAW WATER                            (RW61)
(RRWV061)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX19     RAW WATER X-CONN TO CIRC WATER AT CCT HXS         (RW55)
(RRWV055)   RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX20

AUX21     STA AIR TO CNM AIR X-CONN                         (SA90)
(RCAV90)    RANGE 0 TO 1.0    1=OPEN  0=CLOSE
AUX22     RESET STATION AIR TRIP VLV TV-105
(JCASRSET)  RANGE T OR F    T=OPEN  F=CLOSED
AUX23     DIESEL DRIVEN AIR COMPRESSOR
(NSAC1D)    RANGE 0 TO 1  1=ON    0=OFF
AUX24

AUX25     CN-EJ-1A 2ND STG STM INLET A SET                 (AS224)
(RASSV224)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
AUX26     CN-EJ-1B 2ND STG STM INLET A SET                 (AS225)
(RASSV225)  RANGE 0 TO 1.0    1=OPEN  0=CLOSED
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LOCAL OPERATOR ACTION LISTING

AUX27 CN-EJ-1A 2ND STG STM INLET B SET (AS226)
(RASSV226) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX28 CN-EJ-1B 2ND STG STM INLET B SET (AS227)
(RASSV227) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX29 CN-EJ-1A 1ST STG STM INLET A SET (AS228)
(RASSV228) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX30 CN-EJ-1B 1ST STG STM INLET A SET (AS229)
(RASSV229) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX31 CN-EJ-1A 1ST STG STM INLET B SET (AS230)
(RASSV230) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX32 CN-EJ-1B 1ST STG STM INLET B SET (AS231)
(RASSV231) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX33 CN-EJ-1A SUCTION VLV FROM COND A SET (AS261)
(RASSV261) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX34 CN-EJ-1B SUCTION VLV FROM COND A SET (AS262)
(RASSV262) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX35 CN-EJ-1A SUCTION VLV FROM COND B SET (AS263)
(RASSV263) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX36 CN-EJ-1B SUCTION VLV FROM COND B SET (AS264)
(RASSV264) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX37

AUX38 HOGGING EJECTOR 2A STM INLET (AS246)
(RASSV246) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX39 HOGGING EJECTOR 2B STM INLET (AS247)
(RASSV247) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX40 HOGGING EJECTOR 2A SUCTION VLV FROM COND (AS265)
(RASSV265) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX41 HOGGING EJECTOR 2B SUCTION VLV FROM COND (AS266)
(RASSV266) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX42 UNIT 2 AUX STM X-CONNECT (AS235)
(RASSV235) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX43 AUX BOILER START AND STM HDR ISOL VLV (AS61)
(RASSV061) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX44 AUX STM TO TURB GLAND (MS42)
(RMSV042) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX45 MAIN STM TO AUX STM PCV (AS100)
(XASSSTPT) RANGE 0 TO 150.PSIG
AUX46

AUX47 CNM EJECTOR SUCTION ISOL VLV (CV151)
(RCVH151) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX48 CNM EJECTOR SUCTION ISOL VLV (CV151-1)
(RCVH1511) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX49 CNM VACUUM BKR VS-D-5-6
(RVSD56) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX50

AUX51 RWST TO CHG AND HYDRO TST PP ISOL VLV (SI26)
(RSI26) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX52 RWST TO LHSI ISOL VLV (SI30)
(RSI30) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX53 RWST COOLER 1A OUTLET ISOL VLV (QS27)
(RCNSV27) RANGE 0 TO 1.0 1=OPEN 0=CLOSED

LOCAL OPERATOR ACTION LISTING

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AUX54      RWST COOLER 1B OUTLET ISOL VLV                      (QS28)
(RCNSV28)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX55      RWST REFRIGERATION UNIT 1A OUTLET ISOL VLV          (QS31)
(RCNSV31)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX56      RWST RECIRC PUMP QS-P-2A
(OVSP1A)      RANGE 0 OR 1    0=OFF   1=ON
AUX57      SIS ACCUM FILL LINE ISOL VLV                        (SI41)
(RSI41)       RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX58      N2 TO ACCUM ISOL VLV                                (SI66)
(RSI66)       RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX59      OUTSIDE RECIRC SPRAY P-2A TO HHSI                   (QS157)
(RCNSV157)    RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX60      OUTSIDE RECIRC SPRAY P-2B TO HHSI                   (QS159)
(RCNSV159)    RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX61

AUX62      CNM HIGH PRESS/LOW PRESS DRAINS X-CONN              (DV6)
(RRDV6)       RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX63      NORTH SUMP TO HIGH LEVEL WASTE                      (DV139)
(RRDV139)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX64      NORTH SUMP TO LOW LEVEL WASTE                       (DV140)
(RRDV140)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX65      VSLO TO DG-TK-1                                     (DV260)
(RRDV260)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX66      VSLO TO PRT                                         (DV261)
(RRDV261)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
AUX67

AUX68      CHARGING PUMP 1A AUX LO PUMP
(NXCHP1A1)   RANGE   T OR F
AUX69      CHARGING PUMP 1B AUX LO PUMP
(NXCHP1B1)   RANGE   T OR F
AUX70      CHARGING PUMP 1C AUX LO PUMP
(NXCHP1C1)   RANGE   T OR F
AUX71

AUX72      VS-D-4-4A CHARG PP CUBICLE ALT EXHAUST
(NXVSD44A)   RANGE 0=CLOSE 1=NEUTRAL 2=OPEN
AUX73      VS-D-4-4B CHARG PP CUBICLE ALT EXHAUST
(NXVSD44B)   RANGE 0=CLOSE 1=NEUTRAL 2=OPEN
AUX74      VS-D-4-3A CHARG PP CUBICLE NORM EXHAUST
(X43ADMP)    RANGE 0=NEUTRAL    1=OPEN    2=CLOSE
AUX75      VS-D-4-3B CHARG PP CUBICLE NORM EXHAUST
(X43BDMP)    RANGE 0=NEUTRAL    1=OPEN    2=CLOSE
AUX76      VS-D-4-11A SAFEGUARDS PIT EXHAUST
(X411ADMP)   RANGE 0=NEUTRAL    1=OPEN    2=CLOSE
AUX77      VS-D-4-11B SAFEGUARDS PIT EXHAUST
(X411BDMP)   RANGE 0=NEUTRAL    1=OPEN    2=CLOSE
AUX78      VS-F-40A CONT RM HVAC RETURN AIR FAN
(NXVSF40A)   RANGE 0=OFF    1=MANUAL    2=AUTO
AUX79      VS-F-40B CONT RM HVAC RETURN AIR FAN
(NXVSF40B)   RANGE 0=OFF    1=MANUAL    2=AUTO
AUX80      VS-P-3A CONT RM HVAC COND WTR CIRC PP
(NXVSP3A)    RANGE 0=OFF    1=MANUAL    2=AUTO
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LOCAL OPERATOR ACTION LISTING

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AUX81     VS-P-3B CONT RM HVAC COND WTR CIRC PP
(NXVSP3B)    RANGE 0=OFF   1=MANUAL   2=AUTO
AUX82     VS-F-42 CONT RM TOILET EXHAUST FAN
(NXVSF42)    RANGE 0=STOP  1=START
AUX83     VS-AC-11A AUX BLDG AIR HANDLING UNIT
(NXVS11A)    RANGE 0=STOP  1=NORM  2=START
AUX84     VS-AC-11B AUX BLDG AIR HANDLING UNIT
(NXVS11B)    RANGE 0=STOP  1=NORM  2=START
AUX85     VS-D-5-3-C CNM PURGE EXHAUST ISOL
(RVSD53C)    RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX86     VS-D-5-5-C CNM PURGE SUPPLY ISOL
(RVSD55C)    RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX87

AUX88     LOW LEVEL WASTE PP-1A & 1B SUCT X-CONN           (LW2)
(RLWV2)      RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX89     LOW LEVEL WASTE DISCH TO HIGH LEVEL WASTE TKS(LW104)
(RLWV104)    RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX90     LIQUID WASTE DISCH FILTER INLET ISOL VLV         (LW12)
(RLWV12)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX91     LIQUID WASTE DISCH FILTER OUTLET ISOL VLV        (LW17)
(RLWV17)     RANGE 0 TO 1     1=OPEN  0=CLOSED
AUX92     LOW LEVEL WASTE P-1A RECIRC TO LW-TK-3A          (LW28)
(RLWV28)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX93     LOW LEVEL WASTE P-1B RECIRC TO LW-TK-3A          (LW29)
(RLWV29)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX94     LOW LEVEL WASTE P-1A RECIRC TO LW-TK-3B          (LW30)
(RLWV30)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX95     LOW LEVEL WASTE P-1B RECIRC TO LW-TK-3B          (LW31)
(RLWV31)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX96     LW-TK-3A RECIRC ORIFICE BYPASS                   (LW32)
(RLWV32)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX97     LW-TK-3B RECIRC ORIFICE BYPASS                   (LW33)
(RLWV33)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX98

AUX99     HI LEV WST LW-TK-2A INLET FROM LO LEV WST        (LW43)
(RLWV43)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX100    HI LEV WST LW-TK-2B INLET FROM LO LEV WST        (LW44)
(RLWV44)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX101    HIGH LEVEL WASTE PP-2A & 2B SUCT X-CONN          (LW46)
(RLWV46)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX102    HIGH LEVEL WASTE DISCH TO WASTE EVAP             (LW55)
(RLWV55)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX103    HIGH LEVEL WASTE P-2A RECIRC TO LW-TK-2A         (LW57)
(RLWV57)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX104    HIGH LEVEL WASTE P-2B RECIRC TO LW-TK-2A         (LW58)
(RLWV58)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX105    HIGH LEVEL WASTE P-2A RECIRC TO LW-TK-2B         (LW60)
(RLWV60)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX106    HIGH LEVEL WASTE P-2B RECIRC TO LW-TK-2B         (LW61)
(RLWV61)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX107    LW-TK-2A RECIRC ORIFICE BYPASS                   (LW59)
(RLWV59)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
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LOCAL OPERATOR ACTION LISTING

AUX108 LW-TK-2B RECIRC ORIFICE BYPASS (LW62)
(RLWV62) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX109 HIGH LEVEL WASTE PP-2A,2B DISCH TO LO LEV WST (LW65)
(RLWV65) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX110

AUX111 LNDRY & DRAINS LW-TK-6A INLET ISOL VLV (LW74)
(RLWV74) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX112 LNDRY & DRAINS LW-TK-6B INLET ISOL VLV (LW75)
(RLWV75) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX113 DRAINS DISCH FILTER INLET ISOL VLV (LW85)
(RLWV85) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX114 DRAINS P-6A RECIRC TO LW-TK-6A (LW97)
(RLWV97) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX115 DRAINS P-6B RECIRC TO LW-TK-6A (LW98)
(RLWV98) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX116 DRAINS P-6A RECIRC TO LW-TK-6B (LW99)
(RLWV99) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX117 DRAINS P-6B RECIRC TO LW-TK-6B (LW100)
(RLWV100) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX118 LW-TK-6A RECIRC ORIFICE BYPASS (LW101)
(RLWV101) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX119 LW-TK-6B RECIRC ORIFICE BYPASS (LW102)
(RLWV102) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX120

AUX121 EVAP TST TKS LW-TK-5A & 5B DISCH TO WST EFFL (LW187)
(RLWV187) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX122 LW-TK-5A RECIRC LINE DEMIN INLET ISOL VLV (LW198)
(RLWV198) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX123 LW-TK-5A RECIRC LINE DEMIN OUTLET ISOL VLV (LW205)
(RLWV205) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX124 LW-TK-5A RECIRC LINE DEMIN BYPASS (LW190)
(RLWV190) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX125 LW-TK-5A RECIRC ORIFICE BYPASS (LW191)
(RLWV191) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX126 LW-TK-5B RECIRC LINE DEMIN INLET ISOL VLV (LW197)
(RLWV197) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX127 LW-TK-5B RECIRC LINE DEMIN OUTLET ISOL VLV (LW204)
(RLWV204) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX128 LW-TK-5B RECIRC LINE DEMIN BYPASS (LW194)
(RLWV194) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX129 LW-TK-5B RECIRC ORIFICE BYPASS (LW195)
(RLWV195) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX130

AUX131 LIQ WST DEMIN LW-I-1 OUTLET TO LW-TK-7A & 7B (LW408)
(RLWV408) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX132 SG DRN TKS LW-TK-7A & 7B DISCH TO WST EFFL (LW305)
(RLWV305) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX133 LW-TK-7A RECIRC ORIFICE BYPASS (LW391)
(RLWV391) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
AUX134 LW-TK-7B RECIRC ORIFICE BYPASS (LW383)
(RLWV383) RANGE 0 TO 1.0 1=OPEN 0=CLOSED

LOCAL OPERATOR ACTION LISTING

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AUX135   SG DRAIN TANK P-12A
(NLWP12A)   RANGE 0 OR 1      1=START 0=STOP
AUX136   SG DRAIN TANK P-12B
(NLWP12B)  RANGE 0 OR 1       1=START 0=STOP
AUX137

AUX138   LIQUID WASTE EVAP DRAIN TO NORTH SUMP          (LW120)
(RLWV120)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX139   LIQUID WASTE EVAP BOTTOMS DISCH TO SOL WST     (LW108)
(RLWV108)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX140

AUX141   WASTE GAS CHAR BED GW-TK-3A INLET ISOL VLV       (GW7)
(RGWV007)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX142   WASTE GAS CHAR BED GW-TK-3B OUTLET ISOL VLV      (GW8)
(RGWV008)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX143   WASTE GAS CHAR BEDS GW-TK-3A & 3B BYPASS VLV     (GW9)
(RGWV009)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX144   WASTE GAS CHAR BED GW-TK-3C INLET ISOL VLV      (GW10)
(RGWV010)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX145   WASTE GAS CHAR BED GW-TK-3D OUTLET ISOL VLV     (GW11)
(RGWV011)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX146   WASTE GAS CHAR BEDS GW-TK-3C & 3D BYPASS VLV    (GW12)
(RGWV012)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX147   HLA KO POT DRAIN ISOL VLV                       (GW35)
(RGWV035)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX148   OUTDOOR DILUTION AIR DAMPER
(RGWVSD2)   RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX149   WASTE GAS SWEEP GAS BLOWER GW-F-2A
(NGWF2A)    RANGE 0 OR 1   0=OFF  1=ON
AUX150   WASTE GAS SWEEP GAS BLOWER GW-F-2B
(NGWF2B)    RANGE 0 OR 1   0=OFF  1=ON
AUX151

AUX152   FUEL POOL PURIF P-4A TO FILTER 1A ISOL VLV      (FC18)
(RSFV18)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX153   FUEL POOL PURIF P-4A TO FILTER 1B ISOL VLV      (FC19)
(RSFV19)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX154   FUEL POOL PURIF P-4B TO FILTER 1A ISOL VLV      (FC20)
(RSFV20)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX155   FUEL POOL PURIF P-4B TO FILTER 1B ISOL VLV      (FC21)
(RSFV21)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX156   FILTER 1B OUTLET TO FUEL POOL                   (FC27)
(RSFV27)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX157   FILTER 1A OUTLET TO FUEL POOL                   (FC28)
(RSFV28)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX158   PURIFICATION RETURN LINE TO FUEL POOL ISOL      (FC30)
(RSFV30)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX159   FUEL POOL PURIF P-4A TO ION EXCH ISOL VLV       (FC40)
(RSFV40)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX160   FUEL POOL PURIF P-4B TO ION EXCH ISOL VLV       (FC41)
(RSFV41)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
AUX161   ION EXCH TO FILTER 1A ISOL VLV                  (FC44)
(RSFV44)    RANGE 0 TO 1.0  1=OPEN  0=CLOSED
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LOCAL OPERATOR ACTION LISTING

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AUX162    ION EXCH TO FILTER 1B ISOL VLV                        (FC45)
(RSFV45)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX163    FUEL POOL TO RWST ISOL VLV                            (FC47)
(RSFV47)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX164    PG WATER SUPPLY TO FUEL POOL                         (FC118)
(RSFV118)    RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX165

AUX166    H2 RECOMBINER A STATUS
(NYRC1A)     RANGE 0 OR 1     0=OFF   1=ON
AUX167    H2 RECOMBINER B STATUS
(NYRC1B)     RANGE 0 OR 1     0=OFF   1=ON
AUX168    H2 ANALYZER A STATUS
(NHY100A)    RANGE 0 OR 1   0=OFF  1=ON
AUX169    H2 ANALYZER B STATUS
(NHY100B)    RANGE 0 OR 1   0=OFF  1=ON
AUX170    NARROW RANGE H2 ANALYZER A STATUS
(NHY101A)    RANGE 0 OR 1     0=OFF 1=ON
AUX171    NARROW RANGE H2 ANALYZER B STATUS
(NHY101B)    RANGE 0 OR 1     0=OFF 1=ON
AUX172

AUX173    RMS FUSE K16
(JRMSK16)  RANGE  T OR F
AUX174    RMS FUSE K12
(JRMSK12)  RANGE  T OR F
AUX175    RMS FUSE K13
(JRMSK13)  RANGE  T OR F
AUX176

AUX177    AUX RIVER WATER SCREENWASH BOOSTER PUMP
(XWRP10)     RANGE 0 TO 2  0=STOP  1=START  2=AUTO
AUX178    AUX RIVER WATER TRAVELING SCREEN MOTOR
(XWRS3)      RANGE 0 TO 2  0=STOP  1=START  2=AUTO
AUX179

AUX180    CCR SAMPLE VLV                                        (SS90)
(RNSSV090)  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
AUX181    CHILLED WATER SYSTEM FILL PUMP VS-P-6
(OVSP6)      RANGE 0 OR 1   0=OFF  1=ON
AUX182    COOLING TOWER PUMPS SEAL INJ PRESS
(PCWS117)    RANGE 10 TO 20 PSIA (NORM=14.8)
AUX183

AUX184    RIVER WATER THROTTLE VALVE RECIRC SPRAY HX          (RW200)
(RRWV200)    RANGE 0 TO 1     0=CLOSED    1=OPEN
RHR1      RHR HX-1A INLET ISOL VLV                              (RH7)
(RRHV007)    RANGE 0 TO 1     0=CLOSED    1=OPEN
RHR2      RHR HX-1B INLET ISOL VLV                              (RH8)
(RRHV008)    RANGE 0 TO 1     0=CLOSED    1=OPEN
RHR3      RHR HX-1A OUTLET ISOL VLV                             (RH9)
(RRHV009)    RANGE 0 TO 1     0=CLOSED    1=OPEN
RHR4      RHR HX-1B OUTLET ISOL VLV                            (RH10)
(RRHV010)    RANGE 0 TO 1     0=CLOSED    1=OPEN
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LOCAL OPERATOR ACTION LISTING

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RHR5

RHR6      RHR RETURN TO RWST                                  (RH15)
(RRHV015)    RANGE 0 TO 1     0=CLOSED     1=OPEN
RHR7

RHR8      RHR PUMP DISCH FLOW LOW ALARM SETPOINT
(IRHR605)    RANGE 1 OR 2     1=3200 GPM   2=7300 GPM
PRS1      PZR SPRAY BYPASS FLOW LOOP 1 (PCV-455A)            (RC51)
(RRCV51)     RANGE 0. TO 1.0   0.=CLOSED 1.=OPEN
PRS2      PZR SPRAY BYPASS FLOW LOOP 3 (PCV-455B)            (RC52)
(RRCV52)     RANGE 0. TO 1.0   0.=CLOSED 1.=OPEN
PRS3

PRS4      PRT VENT TO CONTAINMENT                            (RC292)
(RRCV292)    RANGE 0 TO 1.0    1=OPEN   0=CLOSED
PRS5      PRT N2 SUPPLY PRESSURE
(PPRTPN2)    RANGE 0. TO 100.  0.5(PSIG)=NORMAL
PRS6

PRS7      N2 SUPPLY TO PORV ACCUMULATORS
(JPRSN2SP)   RANGE T OR F     T = FILL HEADER   F = STOP SUPPLY
PRS8

PRS9      ACCOUSTIC VALVE MONITORING SYSTEM ALARM RESET
(JPRSRSET)   RANGE T OR F     T = RESET   F = NORMAL
PRS10     ACOUSTIC MONITOR POWER SUPPLY
(JPRSAMPR)   RANGE T OR F     T=NORMAL    F=ALTERNATE
PRS11     ACCUMULATION RATE OF NON-CONDENSABLES IN PZR (LB/HR)
(WPRSN2)     RANGE 0. TO 1000.  0.=NORMAL
PRS12     KNIFE SW ANNUN A407 (PZR PWR RLF VLV N2 SUP LO PRESS)
(JPRSA407)   RANGE T OR F      T=CLOSED   F=OPEN
NIS1      HIGH FLUX AT SHUTDOWN SETPOINT N31 (LOG)
(ZNISSRS1)   RANGE 0 TO 10.
NIS2      HIGH FLUX AT SHUTDOWN SETPOINT N32 (LOG)
(ZNISSRS2)   RANGE 0 TO 10.
MSS1      SG A BLOWDOWN THROTTLE VALVE                      (BD101A)
(RBDV101A)   RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS2      SG B BLOWDOWN THROTTLE VALVE                      (BD101B)
(RBDV101B)   RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS3      SG C BLOWDOWN THROTTLE VALVE                      (BD101C)
(RBDV101C)   RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS4      SG BLOWDOWN DISCH TO AUX BLDG NORTH SUMP            (BD36)
(RBDV36)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS5      SG BLOWDOWN DISCH TO SG DRAIN TANKS                 (BD56)
(RBDV56)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS6

MSS7      SG A ATMOS DUMP VLV ISOL VLV                        (MS23)
(RMSV23)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS8      SG B ATMOS DUMP VLV ISOL VLV                        (MS24)
(RMSV24)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS9      SG C ATMOS DUMP VLV ISOL VLV                        (MS25)
(RMSV25)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
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LOCAL OPERATOR ACTION LISTING

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MSS10     COND DUMP VLVS TO A COND ISOL VLV                    (MS1)
(RMSV1)      RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS11     COND DUMP VLVS TO B COND ISOL VLV                    (MS2)
(RMSV2)      RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS12     RESIDUAL HEAT RELEASE VLV ISOL VLV                  (MS26)
(RMSV26)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS13

MSS14     SG A BLOWDOWN THROTTLE (NEW BLOWDOWN)
(RSGB102A) RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS15     SG B BLOWDOWN THROTTLE (NEW BLOWDOWN)
(RSGB102B) RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS16     SG C BLOWDOWN THROTTLE (NEW BLOWDOWN)
(RSGB102C) RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS17     BD-P1A,B SUCTION ISOL (NEW BLOWDOWN)
(RBD281)   RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS18     BD-P1A,B DISCH ISOL (NEW BLOWDOWN)
(RBD291)   RANGE 0 TO 1.0    1=OPEN   0=CLOSED
MSS19     TV-BD-108A,B TRIP RESET (NEW BLOWDOWN)
(JSGB108R) RANGE T OR F      T=RESET
EPS1      AUX RIVER WATER PUMP 9A BKR
(JBRK1E2)  RANGE T  OR  F
EPS2      AUX RIVER WATER PUMP 9B BKR
(JBRK1F2)  RANGE T  OR  F
EPS3      RIVER WATER PUMP 1A BKR
(JBRK1E10) RANGE T  OR  F
EPS4      RIVER WATER PUMP 1B BKR
(JBRK1F10) RANGE T  OR  F
EPS5      RIVER WATER PUMP 1C BKR CONNECT
(JRWPCONN) RANGE 0 TO 2  0=DISCON 1=BUSAE 2=BUSDF
EPS6

EPS7      CCR PUMP 1A BKR
(JBRK1E4)  RANGE T  OR  F
EPS8      CCR PUMP 1B BKR
(JBRK1F4)  RANGE T  OR  F
EPS9      CCR PUMP 1C BKR CONNECT
(JCCPCONN) RANGE 0 TO 2  0=DISCON 1=BUSAE 2=BUSDF
EPS10

EPS11     CCT PUMP 3A BKR
(JBRK1A9)  RANGE T  OR  F
EPS12     CCT PUMP 3B BKR
(JBRK1D12) RANGE T  OR  F
EPS13

EPS14     HTR DRAIN PUMP 1A BKR
(JBRK1C9)  RANGE T  OR  F
EPS15     HTR DRAIN PUMP 1B BKR
(JBRK1D9)  RANGE T  OR  F
EPS16

EPS17     CRDM SHROUD FAN 2A BKR
(JBRK8N18) RANGE T  OR  F
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LOCAL OPERATOR ACTION LISTING

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EPS18     CRDM SHROUD FAN 2B BKR
(JBRK9P19) RANGE T  OR  F
EPS19     CRDM SHROUD FAN 2C BKR CONNECT
(JVSF2CON) RANGE 0 TO 2  0=DISCON 1=BUSAE 2=BUSDF
EPS20     CNM AIR RECIRC FAN 1A BKR
(JBRK8N19) RANGE T  OR  F
EPS21     CNM AIR RECIRC FAN 1B BKR
(JBRK9P18) RANGE T  OR  F
EPS22     CNM AIR RECIRC FAN 1C BKR CONNECT
(JVSF1CON) RANGE 0 TO 2 0=DISCON 1=BUSAE 2=BUSDF
EPS23     CNM PURGE EXHAUST FAN BKR
(JBRK4G9)  RANGE T  OR  F
EPS24     LEAK COLL EXHAUST FAN 4A BKR
(JBRK8N5)  RANGE T  OR  F
EPS25     LEAK COLL EXHAUST FAN 4B BKR
(JBRK9P6)  RANGE T  OR  F
EPS26     PURGE SUPPLY DAMPER VS-D-5-3-A BKR
(JLVSD53A)  RANGE T OR F
EPS27     PURGE SUPPLY DAMPER VS-D-5-3-B BKR
(JLVSD53B)  RANGE T OR F
EPS28     PURGE EXHAUST DAMPER VS-D-5-5-A BKR
(JLVSD55A)  RANGE T OR F
EPS29     PURGE EXHAUST DAMPER VS-D-5-5-B BKR
(JLVSD55B)  RANGE T OR F
EPS30     CONTROL ROOM AIR COND CONDENSER 4A BKR
(JBRKCUAX) RANGE T  OR  F
EPS31     CONTROL ROOM AIR COND CONDENSER 4B BKR
(JBRKCUBX) RANGE T  OR  F
EPS32     CONTROL ROOM AHU SUMP FAN 1A BKR
(JBRK8N10) RANGE T  OR  F
EPS33     CONTROL ROOM AHU SUMP FAN 1B BKR
(JBRK9P10) RANGE T  OR  F
EPS34

EPS35     LHSI PUMP 1A BKR
(JBRK1E8)  RANGE T  OR  F
EPS36     LHSI PUMP 1B BKR
(JBRK1F8)  RANGE T  OR  F
EPS37

EPS38     OUTSIDE RECIRC SPRAY PUMP 2A BKR
(JBRK1E13) RANGE T  OR  F
EPS39     OUTSIDE RECIRC SPRAY PUMP 2B BKR
(JBRK1F13) RANGE T  OR  F
EPS40     INSIDE RECIRC SPRAY PUMP 1A BKR
(JBRK8N3)  RANGE T  OR  F
EPS41     INSIDE RECIRC SPRAY PUMP 1B BKR
(JBRK9P4)  RANGE T  OR  F
EPS42     QUENCH SPRAY PUMP 1A BKR
(JBRK8N4)  RANGE T  OR  F
EPS43     QUENCH SPRAY PUMP 1B BKR
(JBRK9P5)  RANGE T  OR  F
EPS44     QUENCH SPRAY CHEM ADD PUMP 4A BKR
(JBRKE5BT) RANGE T OR F
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EPS45 QUENCH SPRAY CHEM ADD PUMP 4B BKR
(JBRKE6VA) RANGE T OR F
EPS46 QUENCH SPRAY CHEM ADD PUMP 4C BKR
(JBRKE5BU) RANGE T OR F
EPS47 QUENCH SPRAY CHEM ADD PUMP 4D BKR
(JBRKE6VB) RANGE T OR F
EPS48

EPS49 CHARGING PUMP 1A BKR
(JBRK1E11) RANGE T OR F
EPS50 CHARGING PUMP 1B BKR
(JBRK1F11) RANGE T OR F
EPS51 CHARGING PUMP 1C BKR CONNECT
(JCHPCONN) RANGE 0 TO 2 0=DISCON 1=BUSAE 2=BUSDF
EPS52 HYDRO TEST PUMP BKR
(JBRK1A4) RANGE T OR F
EPS53

EPS54 RHR PUMP 1A BKR
(JBRK1E3) RANGE T OR F
EPS55 RHR PUMP 1B BKR
(JBRK1F3) RANGE T OR F
EPS56

EPS57 MOV-RH-758 BKR
(JLRH758) RANGE T OR F
EPS58 MOV-RH-605 BKR
(JLRH605) RANGE T OR F
EPS59 MOV-CH-142 BKR
(JLCH142) RANGE T OR F
EPS60 MOV-RH-700 BKR
(JLRH700) RANGE T OR F
EPS61 MOV-RH-701 BKR
(JLRH701) RANGE T OR F
EPS62 MOV-RH-720A BKR
(JLRH720A) RANGE T OR F
EPS63 MOV-RH-720B BKR
(JLRH720B) RANGE T OR F
EPS64

EPS65 MOV-FW-151A BKR
(JLFW151A) RANGE T OR F
EPS66 MOV-FW-151B BKR
(JLFW151B) RANGE T OR F
EPS67 MOV-FW-151C BKR
(JLFW151C) RANGE T OR F
EPS68 MOV-FW-151D BKR
(JLFW151D) RANGE T OR F
EPS69 MOV-FW-151E BKR
(JLFW151E) RANGE T OR F
EPS70 MOV-FW-151F BKR
(JLFW151F) RANGE T OR F
EPS71 MOV-FW-156A BKR
(JLFW156A) RANGE T OR F

LOCAL OPERATOR ACTION LISTING

EPS72 MOV-FW-156B BKR
(JLFW156B) RANGE T OR F
EPS73 MOV-FW-156C BKR
(JLFW156C) RANGE T OR F
EPS74

EPS75 MOV-SI-860A BKR
(JLSI860A) RANGE T OR F
EPS76 MOV-SI-860B BKR
(JLSI860B) RANGE T OR F
EPS77 MOV-SI-862A BKR
(JLSI862A) RANGE T OR F
EPS78 MOV-SI-862B BKR
(JLSI862B) RANGE T OR F
EPS79 MOV-SI-863A BKR
(JLSI863A) RANGE T OR F
EPS80 MOV-SI-863B BKR
(JLSI863B) RANGE T OR F
EPS81 MOV-SI-867A BKR
(JLSI867A) RANGE T OR F
EPS82 MOV-SI-867B BKR
(JLSI867B) RANGE T OR F
EPS83 MOV-SI-867C BKR
(JLSI867C) RANGE T OR F
EPS84 MOV-SI-867D BKR
(JLSI867D) RANGE T OR F
EPS85 MOV-SI-890C BKR
(JLSI890C) RANGE T OR F
EPS86 MOV-SI-885A BKR
(JLSI885A) RANGE T OR F
EPS87 MOV-SI-885B BKR
(JLSI885B) RANGE T OR F
EPS88 MOV-SI-885C BKR
(JLSI885C) RANGE T OR F
EPS89 MOV-SI-885D BKR
(JLSI885D) RANGE T OR F
EPS90

EPS91 MOV-CH-115B BKR
(JLCH115B) RANGE T OR F
EPS92 MOV-CH-115D BKR
(JLCH115D) RANGE T OR F
EPS93

EPS94 MOV-RC-557A BKR
(JLRC557A) RANGE T OR F
EPS95 MOV-RC-557B BKR
(JLRC557B) RANGE T OR F
EPS96 MOV-RC-557C BKR
(JLRC557C) RANGE T OR F
EPS97

EPS98 MOV-RC-590 BKR
(KRCS590) RANGE T OR F T=POWER ON F=POWER OFF

LOCAL OPERATOR ACTION LISTING

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EPS99     MOV-RC-592 BKR
(KRCS592)    RANGE T OR F     T=POWER ON   F=POWER OFF
EPS100    MOV-RC-594 BKR
(KRCS594)    RANGE T OR '     T=POWER ON   F=POWER OFF
EPS101    MOV-RC-591 B.R
(KRCS591)    RANGE T OR F     T=POWER ON   F=POWER OFF
EPS102    MOV-RC-593 BKR
(KRCS593)    RANGE T OR F     T=POWER ON   F=POWER OFF
EPS103    MOV-RC-595 BKR
(KRCS595)    RANGE T OR F     T=POWER ON   F=POWER OFF
EPS104

EPS105    PZR B/U HTR GROUP 2A
(JBRK8N12) RANGE T  OR  F
EPS106    PZR B/U HTR GROUP 2B
(JBRK9P12) RANGE T  OR  F
EPS107    PZR B/U HTR GROUP 2D
(JBRK8N13) RANGE T  OR  F
EPS108    PZR B/U HTR GROUP 2E
(JBRK9P13) RANGE T  OR  F
EPS109    PZR CONTROL HTR GROUP 2C
(JBRK1B7)  RANGE T  OR  F
EPS110

EPS111    4160V BUS 1A TO 480V BUS 1J                    (ACB-A2)
(LBKA2)      RANGE T OR F     T=CLOSED    F=OPEN
EPS112    4160V BUS 1A TO 480V BUS 1A & 1E               (ACB-A3)
(LBKA3)      RANGE T OR F      T=CLOSED   F=OPEN
EPS113    4160V BUS 1B TO 480V BUS 1C & 1G               (ACB-B3)
(LBKB3)      RANGE T OR F      T=CLOSED   F=OPEN
EPS114    4160V BUS 1C TO 480V BUS 1K                    (ACB-C2)
(LBKC2)      RANGE T OR F      T=CLOSED   F=OPEN
EPS115    4160V BUS 1C TO 480V BUS 1B & 1F               (ACB-C3)
(LBKC3)      RANGE T OR F      T=CLOSED   F=OPEN
EPS116    4160V BUS 1D TO 480V BUS 1D & 1H               (ACB-D3)
(LBKD3)      RANGE T OR F      T=CLOSED   F=OPEN
EPS117

EPS118    480V BUS 1A FEEDER                             (ACB-1A1)
(LBK1A1)     RANGE T OR F      T=CLOSED   F=OPEN
EPS119    480V BUS 1B FEEDER                             (ACB-1B1)
(LBK1B1)     RANGE T OR F      T=CLOSED   F=OPEN
EPS120    480V BUS 1A TO 1B  X-TIE                      (ACB-1A10)
(LBK1A10)    RANGE T OR F      T=CLOSED   F=OPEN
EPS121    480V BUS 1C FEEDER                             (ACB-2C1)
(LBK2C1)     RANGE T OR F      T=CLOSED   F=OPEN
EPS122    480V BUS 1D FEEDER                             (ACB-2D1)
(LPK2D1)     RANGE T OR F      T=CLOSED   F=OPEN
EPS123    480V BUS 1C TO 1D X-TIE                       (ACB-2C10)
(LBK2C10)    RANGE T OR F      T=CLOSED   F=OPEN
EPS124    480V BUS 1E FEEDER                             (ACB-3E1)
(LBK3E1)     RANGE T OR F      T=CLOSED   F=OPEN
EPS125    480V BUS 1F FEEDER                             (ACB-3F1)
(LBK3F1)     RANGE T OR F      T=CLOSED   F=OPEN
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EPS126   480V BUS 1E TO 1F X-TIE                              (ACB-3E10)
(LBK3E10)   RANGE T OR F     T=CLOSED   F=OPEN
EPS127   480V BUS 1G FEEDER                                   (ACB-4G1)
(LBK4G1)    RANGE T OR F     T=CLOSED   F=OPEN
EPS128   480V BUS 1H FEEDER                                   (ACB-4H1)
(LBK4H1)    RANGE T OR F     T=CLOSED   F=OPEN
EPS129   480V BUS 1G TO 1H X-TIE                              (ACB-4G10)
(LBK4G10)   RANGE T OR F     T=CLOSED   F=OPEN
EPS130   480V BUS 1J FEEDER                                   (ACB-5J1)
(LBK5J1)    RANGE T OR F     T=CLOSED   F=OPEN
EPS131   480V BUS 1K FEEDER                                   (ACB-5K1)
(LBK5K1)    RANGE T OR F     T=CLOSED   F=OPEN
EPS132   480V BUS 1J TO 1K X-TIE                              (ACB-5J9)
(LBK5J9)    RANGE T OR F     T=CLOSED   F=OPEN
EPS133

EPS134   4160V BUS 1AE TO 480V BUS 1N & 1N1                   (ACB-E12)
(LBKE12)    RANGE T OR F     T=CLOSED   F=OPEN
EPS135   4160V BUS 1DF TO 480V BUS 1P & 1P1                   (ACB-F12)
(LBKF12)    RANGE T OR F     T=CLOSED   F=OPEN
EPS136

EPS137   480V BUS 1N FEEDER                                   (ACB-8N1)
(LBK8N1)    RANGE T OR F     T=CLOSED   F=OPEN
EPS138   480V BUS 1N1 FEEDER                                  (ACB-8N16)
(LBK8N16)   RANGE T OR F     T=CLOSED   F=OPEN
EPS139   480V BUS 1P FEEDER                                   (ACB-9P1)
(LBK9P1)    RANGE T OR F     T=CLOSED   F=OPEN
EPS140   480V BUS 1P1 FEEDER                                  (ACB-9P16)
(LBK9P16)   RANGE T OR F     T=CLOSED   F=OPEN
EPS141

EPS142   480V BUS 1A TO MCC1-1                                (ACB-1A3)
(LMCC1A3)   RANGE T OR F     T=CLOSED   F=OPEN
EPS143   480V BUS 1A TO MCC1-3                                (ACB-1A6)
(LMCC1A6)   RANGE T OR F     T=CLOSED   F=OPEN
EPS144   480V BUS 1A TO MCC1-21                               (ACB-1A8)
(LMCC1A8)  RANGE T OR F      T=CLOSED   F=OPEN
EPS145   480V BUS 1B TO MCC1-2                                (ACB-1B6)
(LMCC1B6)   RANGE T OR F     T=CLOSED   F=OPEN
EPS146   480V BUS 1B TO MCC1-4                                (ACB-1B5)
(LMCC1B5)   RANGE T OR F     T=CLOSED   F=OPEN
EPS147   480V BUS 1B TO MCC1-20                               (ACB-1B3)
(LMCC1B3)  RANGE T OR F      T=CLOSED   F=OPEN
EPS148   480V BUS 1C TO MCC1-5                                (ACB-2C3)
(LMCC2C3)   RANGE T OR F     T=CLOSED   F=OPEN
EPS149   480V BUS 1C TO MCC1-7                                (ACB-2C4)
(LMCC2C4)   RANGE T OR F     T=CLOSED   F=OPEN
EPS150   480V BUS 1C TO MCC1-29                               (ACB-2C2)
(LMCC2C2)  RANGE T OR F      T=CLOSED   F=OPEN
EPS151   480V BUS 1D TO MCC1-6                                (ACB-2D6)
(LMCC2D6)   RANGE T OR F     T=CLOSED   F=OPEN
EPS152   480V BUS 1D TO MCC1-8                                (ACB-2D5)
(LMCC2D5)   RANGE T OR F     T=CLOSED   F=OPEN
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EPS153 480V BUS 1E TO MCC1-9 (ACB-3E3)
(LMCC3E3) RANGE T OR F T=CLOSED F=OPEN
EPS154 480V BUS 1E TO MCC1-11 (ACB-3E4)
(LMCC3E4) RANGE T OR F T=CLOSED F=OPEN
EPS155 480V BUS 1E TO MCC1-19 (ACB-3E7)
(LMCC3E7) RANGE T OR F T=CLOSED F=OPEN
EPS156 480V BUS 1F TO MCC1-10 (ACB-3F6)
(LMCC3F6) RANGE T OR F T=CLOSED F=OPEN
EPS157 480V BUS 1F TO MCC1-12 (ACB-3F5)
(LMCC3F5) RANGE T OR F T=CLOSED F=OPEN
EPS158 480V BUS 1F TO MCC1-18 (ACB-3F3)
(LMCC3F3) RANGE T OR F T=CLOSED F=OPEN
EPS159 480V BUS 1F TO MCC1-28 (ACB-3F9)
(LMCC3F9) RANGE T OR F T=CLOSED F=OPEN
EPS160 480V BUS 1G TO MCC1-13 (ACB-4G3)
(LMCC4G3) RANGE T OR F T=CLOSED F=OPEN
EPS161 480V BUS 1G TO MCC1-15 (ACB-4G4)
(LMCC4G4) RANGE T OR F T=CLOSED F=OPEN
EPS162 480V BUS 1G TO MCC1-17 (ACB-4G8)
(LMCC4G8) RANGE T OR F T=CLOSED F=OPEN
EPS163 480V BUS 1H TO MCC1-14 (ACB-4H7)
(LMCC4H7) RANGE T OR F T=CLOSED F=OPEN
EPS164 480V BUS 1H TO MCC1-16 (ACB-4H6)
(LMCC4H6) RANGE T OR F T=CLOSED F=OPEN
EPS165 480V BUS 1J TO MCC1-23 (ACB-5J5)
(LMCC5J5) RANGE T OR F T=CLOSED F=OPEN
EPS166 480V BUS 1J TO MCC1-25 (ACB-5J4)
(LMCC5J4) RANGE T OR F T=CLOSED F=OPEN
EPS167 480V BUS 1K TO MCC1-22 (ACB-5K5)
(LMCC5K5) RANGE T OR F T=CLOSED F=OPEN
EPS168 480V BUS 1K TO MCC1-24 (ACB-5K4)
(LMCC5K4) RANGE T PR F T=CLOSED F=OPEN
EPS169

EPS170 480V BUS 1N TO MCCE-1 (ACB-8N7)
(LMCC8N7) RANGE T OR F T=CLOSED F=OPEN
EPS171 480V BUS 1N TO MCCE-3 (ACB-8N8)
(LMCC8N8) RANGE T OR F T=CLOSED F=OPEN
EPS172 480V BUS 1N TO MCCE-5 (ACB-8N6)
(LMCC8N6) RANGE T OR F T=CLOSED F=OPEN
EPS173 480V BUS 1N TO MCCE-7 (ACB-8N14)
(LMCC8N14) RANGE T OR F T=CLOSED F=OPEN
EPS174 480V BUS 1N TO MCCE-9 (ACB-8N11)
(LMCC8N11) RANGE T OR F T=CLOSED F=OPEN
EPS175 480V BUS 1N TO MCCE-13 (ACB-8N15)
(LMCC8N15) RANGE T OR F T=CLOSED F=OPEN
EPS176 480V BUS 1N1 TO MCCE-11 (ACB-8N22)
(LMCC8N22) RANGE T OR F T=CLOSED F=OPEN
EPS177 480V BUS 1P TO MCCE-2 (ACB-9P8)
(LMCC9P8) RANGE T OR F T=CLOSED F=OPEN
EPS178 480V BUS 1P TO MCCE-4 (ACB-9P9)
(LMCC9P9) RANGE T OR F T=CLOSED F=OPEN
EPS179 480V BUS 1P TO MCCE-6 (ACB-9P14)
(LMCC9P14) RANGE T OR F T=CLOSED F=OPEN

LOCAL OPERATOR ACTION LISTING

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EPS180    480V BUS 1P TO MCCE-8                                  (ACB-9P7)
(LMCC9P7)   RANGE T OR F      T=CLOSED   F=OPEN
EPS181    480V BUS 1P TO MCCE-10                                 (ACB-9P11)
(LMCC9P11) RANGE T OR F       T=CLOSED   F=OPEN
EPS182    480V BUS 1P TO MCCE-14                                 (ACB-9P15)
(LMCC9P15)  RAGE T OR F       T=CLOSED   F=OPEN
EPS183    480V BUS 1P1 TO MCCE-12                                (ACB-9P21)
(LMCC9P21) RANGE T OR F       T=CLOSED   F=OPEN
EPS184

EPS185    VITAL BUS 1 SUPPLY (INVERTER OR MCCE-13)
(LBKVB:1)      RANGE T OR F   T=INVERT   F=E-13
EPS186    VITAL BUS 2 SUPPLY (INVERTER OR MCCE-14)
(LBKVB:2)      RANGE T OR F   T=INVERT   F=E-14
EPS187    VITAL BUS 3 SUPPLY (INVERTER OR MCCE-13)
(LBKVB:3)      RANGE T OR F   T=INVERT   F=E-13
EPS188    VITAL BUS 4 SUPPLY (INVERTER OR MCCE-14)
(LBKVB:4)      RANGE T OR F   T=INVERT   F=E-14
EPS189

EPS190    DC DIST PNL 1 SUPPLY (NORM OR ALTERNATE)
(IEPSDCP1) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS191    DC DIST PNL 4 SUPPLY (NORM OR ALTERNATE)
(IEPSDCP4) RANGE T OR F       T=BUS 5    F=BUS 2A
EPS192    DC DIST PNL 5 SUPPLY (NORM OR ALTERNATE)
(IEPSDCP5) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS193

EPS194    DC CONTROL POWER 4KV BUS 1A (NORM OR ALT)
(IEPSDCXA) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS195    DC CONTROL POWER 4KV BUS 1B (NORM OR ALT)
(IEPSDCXB) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS196    DC CONTROL POWER 4KV BUS 1C (NORM OR ALT)
(IEPSDCXC) RANGE T OR F       T=BUS 5    F=BUS 2A
EPS197    DC CONTROL POWER 4KV BUS 1D (NORM OR ALT)
(IEPSDCXD) RANGE T OR F       T=BUS 5    F=BUS 2A
EPS198    DC CONT PWR 480V BUS 1A & 1B (NORM OR ALT)
(IEPSDCX1) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS199    DC CONT PWR 480V BUS 1C & 1D (NORM OR ALT)
(IEPSDCX2) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS200    DC CONT PWR 480V BUS 1E & 1F (NORM OR ALT)
(IEPSDCX3) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS201    DC CONT PWR 480V BUS 1G & 1H (NORM OR ALT)
(IEPSDCX4) RANGE T OR F       T=BUS 5    F=BUS 1A
EPS202    DC CONT PWR 480V BUS 1J & 1K (NORM OR ALT)
(IEPSDCX5) RANGE T OR F       T=BUS 5    F=BUS 2A
EPS203

EPS204    ELEC SYS PROT TRIP RESET (GEN, EPS, EDG)
(JGENRST)    RANGE T OR F    T = RESET   F = NORMAL
EPS205

EPS206    480V BKR ACB-1A1 AFTERCLOSE
(LBK1A1AC)   RANGE T OR F     T=CLOSED   F=OPEN
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LOCAL OPERATOR ACTION LISTING

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EPS207   480V BKR ACB-1B1 AFTERCLOSE
(LBK1B1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS208   480V BKR ACB-2C1 AFTERCLOSE
(LBK2C1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS209   480V BKR ACB-2D1 AFTERCLOSE
(LBK2D1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS210   480V BKR ACB-3E1 AFTERCLOSE
(LBK3E1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS211   480V BKR ACB-3F1 AFTERCLOSE
(LBK3F1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS212   480V BKR ACB-4G1 AFTERCLOSE
(LBK4G1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS213   480V BKR ACB-4H1 AFTERCLOSE
(LBK4H1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS214   480V BKR ACB-5J1 AFTERCLOSE
(LBK5J1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS215   480V BKR ACB-5K1 AFTERCLOSE
(LBK5K1AC)  RANGE T OR F     T=CLOSED   F=OPEN
EPS216

EPS217   BLACK DIESEL STATUS
(JEPSBLDG)  RANGE T OR F     T=ONLINE   F=OFFLINE
EPS218

EPS219   BATTERY #1 TO BUS 1
(LBAT1:1)   RANGE T OR F     T=CLOSED   F=OPEN
EPS220   BATTERY #2 TO BUS 2
(LBAT1:2)   RANGE T OR F     T=CLOSED   F=OPEN
EPS221   BATTERY #3 TO BUS 3
(LBAT1:3)   RANGE T OR F     T=CLOSED   F=OPEN
EPS222   BATTERY #4 TO BUS 4
(LBAT1:4)   RANGE T OR F     T=CLOSED   F=OPEN
EPS223   BATTERY #5 TO BUS 5
(LBAT1:5)   RANGE T OR F     T=CLOSED   F=OPEN
EPS224

EPS225   4160 41A BKR FAST BUS XFR RELAY SWITCH
(JEPS41A)   RANGE T OR F     T=CLOSED   F=OPEN
EPS226   4160 141A BKR FAST BUS XFR RELAY SWITCH
(JEPS141A)  RANGE T OR F     T=CLOSED   F=OPEN
EPS227   4160 241B BKR FAST BUS XFR RELAY SWITCH
(JEPS241B)  RANGE T OR F     T=CLOSED   F=OPEN
EPS228   4160 341B BKR FAST BUS XFR RELAY SWITCH
(JEPS341B)  RANGE T OR F     T=CLOSED   F=OPEN
EPS229   4160 41C BKR FAST BUS XFR RELAY SWITCH
(JEPS41C)   RANGE T OR F     T=CLOSED   F=OPEN
EPS230   4160 141C BKR FAST BUS XFR RELAY SWITCH
(JEPS141C)  RANGE T OR F     T=CLOSED   F=OPEN
EPS231   4160 241D BKR FAST BUS XFR RELAY SWITCH
(JEPS241D)  RANGE T OR F     T=CLOSED   F=OPEN
EPS232   4160 341D BKR FAST BUS XFR RELAY SWITCH
(JEPS341D)  RANGE T OR F     T=CLOSED   F=OPEN
EPS233
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EPS234 BATTERY CHARGER #1 AC INPUT BREAKER
(JEPSCHG1) RANGE T OR F T=CLOSED F=OPEN
EPS235 BATTERY CHARGER #2 AC INPUT BREAKER
(JEPSCHG2) RANGE T OR F T=CLOSED F=OPEN
EPS236 BATTERY CHARGER #3 AC INPUT BREAKER
(JEPSCHG3) RANGE T OR F T=CLOSED F=OPEN
EPS237 BATTERY CHARGER #4 AC INPUT BREAKER
(JEPSCHG4) RANGE T OR F T=CLOSED F=OPEN
EPS238 BATTERY CHARGER #5 AC INPUT BREAKER
(JEPSCHG5) RANGE T OR F T=CLOSED F=OPEN
EPS239

EPS240 MOV-SI-865A LINE STARTER
(JLSI865A) RANGE T OR F
EPS241 MOV-SI-865B LINE STARTER
(JLSI865B) RANGE T OR F
EPS242 MOV-SI-865C LINE STARTER
(JLSI865C) RANGE T OR F
EPS243

EPS244 MOV-FW-150A LINE STARTER
(JLFW150A) RANGE T OR F
EPS245 MOV-FW-150B LINE STARTER
(JLFW150B) RANGE T OR F
FWM1 FW HTR 1A EXTRACTION STM ISOL VLV (ES2)
(RESV002) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM2 FW HTR 1B EXTRACTION STM ISOL VLV (ES3)
(RESV003) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM3 FW HTR 2A EXTRACTION STM ISOL VLV (ES21)
(RESV021) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM4 FW HTR 2B EXTRACTION STM ISOL VLV (ES22)
(RESV022) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM5 FW HTR 3A EXTRACTION STM ISOL VLV (ES40)
(RESV040) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM6 FW HTR 3B EXTRACTION STM ISOL VLV (ES41)
(RESV041) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM7 FW HTR 4A EXTRACTION STM ISOL VLV (ES67)
(RESV067) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM8 FW HTR 4B EXTRACTION STM ISOL VLV (ES68)
(RESV068) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM9 FW HTR 5A EXTRACTION STM ISOL VLV (ES97)
(RESV097) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM10 FW HTR 5A EXTRACTION STM ISOL VLV (ES99)
(RESV099) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM11 FW HTR 5B EXTRACTION STM ISOL VLV (ES98)
(RESV098) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM12 FW HTR 5B EXTRACTION STM ISOL VLV (ES100)
(RESV100) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM13

FWM14 LP HTR TRAIN A INLET ISOL VLV (CN18)
(RHDV018) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM15 LP HTR TRAIN B INLET ISOL VLV (CN19)
(RHDV019) RANGE 0 TO 1.0 1=OPEN 0=CLOSED

LOCAL OPERATOR ACTION LISTING

FWM16 LP HTR TRAIN A OUTLET ISOL VLV (CN20)
(RHDV020) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM17 LP HTR TRAIN B OUTLET ISOL VLV (CN21)
(RHDV021) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM18

FWM19 FW HTR 1A INLET ISOL VLV (FW11)
(RFWV011) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM20 FW HTR 1B INLET ISOL VLV (FW12)
(RFWV012) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM21 FW HTR 1A OUTLET ISOL VLV (FW17)
(RFWV017) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM22 FW HTR 1B OUTLET ISOL VLV (FW18)
(RFWV018) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM23 FW HTR 1A BYPASS VLV (FW15)
(RFWV015) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM24 FW HTR 1B BYPASS VLV (FW16)
(RFWV016) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM25

FWM26 MAIN FW P-1A RECIRC ISOL VLV (FW19)
(RFWV019) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM27 MAIN FW P-1B RECIRC ISOL VLV (FW20)
(RFWV020) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM28 MAIN FW P-1A LO PUMP SWITCH
(NXLOP3AM) RANGE T OR F
FWM29 MAIN FW P-1B LO PUMP SWITCH
(NXLOP3BM) RANGE T OR F
FWM30

FWM31 MOV-FW-150A BYPASS VLV (FW214)
(RFWV214) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM32 MOV-FW-150B BYPASS VLV (FW215)
(RFWV215) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM33

FWM34 STM SUPPLY TO FW-P-2 FROM SG A (MS15)
(RAFV015) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM35 STM SUPPLY TO FW-P-2 FROM SG B (MS16)
(RAFV016) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM36 STM SUPPLY TO FW-P-2 FROM SG C (MS17)
(RAFV017) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM37

FWM38 FW-P-3A B HDR DISCH ISOL VLV (FW40)
(RAFV040) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM39 FW-P-3A A HDR DISCH ISOL VLV (FW37)
(RAFV037) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM40 FW-P-3B A HDR DISCH ISOL VLV (FW38)
(RAFV038) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM41 FW-P-3B B HDR DISCH ISOL VLV (FW41)
(RAFV041) RANGE 0 TO 1.0 1=OPEN 0=CLOSED
FWM42 FW-P-2 A HDR DISCH ISOL VLV (FW36)
(RAFV036) RANGE 0 TO 1.0 1=OPEN 0=CLOSED

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FWM43    FW-P-2 B HDR DISCH ISOL VLV                      (FW39)
(RAFV039)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM44

FWM45    AUX FEED TO SG A CNM ISOL VLV                  (FW158A)
(RAFV158A)   RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM46    AUX FEED TO SG B CNM ISOL VLV                  (FW158B)
(RAFV158B)   RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM47    AUX FEED TO SG C CNM ISOL VLV                  (FW158C)
(RAFV158C)   RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM48

FWM49    FW-P-3B SUCTION ISOL FROM WT-TK-10              (WT227)
(RAFV227)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM50    FW-P-3A SUCTION ISOL FROM WT-TK-10              (WT226)
(RAFV226)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM51    FW-P-2 SUCTION ISOL FROM WT-TK-10               (WT225)
(RAFV225)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM52

FWM53    FW-P-3B SUCTION ISOL FROM RIVER WATER           (RW210)
(RAFV210)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM54    FW-P-3A SUCTION ISOL FROM RIVER WATER           (RW209)
(RAFV209)    RANGE 0 TTO 1.0   1=OPEN   0=CLOSED
FWM55    FW-P-2 SUCTION ISOL FROM RIVER WATER            (RW208)
(RAFV208)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM56

FWM57    WT-TK-10 ISOL TO FW-P-3B                        (WT222)
(RAFV2[illegible]    RANGE 0 TO 1.0   1=OPEN   0=COSED
FWM58    WT-TK-10 ISOL TO FW-P-3A                        (WT223)
(RAFV223)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM59    WT-TK-10 ISOL TO FW-P-2                         (WT221)
(RAFV221)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM60

FWM61    FW-P-2 LATCH/RELATCH
(JFWALACH)   RANGE T OR F   T= LATCHED F= UNLATCHED
FWM62    TURBINE TRIP VALVE
(RFWATRIP)   RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM63    HTR DRN TANK SD-TK-2 LCV-SD-106A ISOL VLV       (SD87)
(RSDV087)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM64    WT-TK26 SUPPLY ISOL TO WTP33 AND FWP4         (WT1031)
(RWTS1031)   RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM65    WT-TK26 SUPPLY ISOL TO FWP4                     (FW643)
(RFWH643)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM66    WT-TK11 SUPPLY ISOL TO FWP4                     (FW639)
(RFWH639)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM67    FWP4 DISCH ISOL                                 (FW160)
(RFWH160)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM68    FWP4 RECIRC ISOL TO WT-TK26                     (FW660)
(RFWH660)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
FWM69    FWP4 RECIRC ISOL TO WT-TK11                     (FW663)
(RFWH663)    RANGE 0 TO 1.0   1=OPEN   0=CLOSED
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LOCAL OPERATOR ACTION LISTING

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FWM70      DEDICATED AFW PUMP                                  (FWP4)
(NFWP4)       RANGE 0 OR 1       1=ON     0=OFF
FWM71      WT-P33 DISCH SUPPLY TO TK-10                        (WT2610)
(RWTS2610)  RANGE 0 TO 1.0     1=OPEN   0=CLOSED
FWM72      WT-P33 DISCH SUPPLY TO TK-11                        (WT2611)
(RWTS2611)  RANGE 0 TO 1.0     1=OPEN   0=CLOSED
FWM73      WT-P33 DISCH SUPPLY TO PG WATER                     (WT26PG)
(RWTS26PG)  RANGE 0 TO 1.0     1=OPEN   0=CLOSED
FWM74      WT-P33A AND WT-P33B                                 (WTP33)
(NWTSP33)   RANGE 0,1,2        0=OFF  1=1 PUMP ON   2=BOTH ON
FWM75

FWM76      SD PUMP 1A DISCH RELIEF GAG                         (SD101A)
(RSDV101A)  RANGE 0 TO 1.0     0=GAGGED  1=NOT GAGGED
FWM77      SD PUMP 1B DISCH RELIEF GAG                         (SD101B)
(RSDV101B)  RANGE 0 TO 1.0     0=GAGGED  1=NOT GAGGED
FWM78

FWM79      SD-105A,B,C,D COMBINED POSITION              (SD-105A,B,C,D)
(RSDV105)   RANGE 0 TO 1.0     0=CLOSED  1=OPEN
SWD1       345KV BUS 4 TO AUTO TRANSFORMER                     (PCB342)
(LBK342)    RANGE T OR F       T=CLOSED   F=OPEN
SWD2       345KV BUS 3 TO AUTO TRANSFORMER                     (PCB332)
(LBK332)    RANGE T OR F       T=CLOSED   F=OPEN
SWD3

SWD4       345KV BUS 4 TO COLLIER LINE                         (PCB346)
(LBK346)    RANGE T OR F       T=CLOSED   F=OPEN
SWD5       345KV BUS 3 TO COLLIER LINE                         (PCB336)
(LBK336)    RANGE T OR F       T=CLOSED   F=OPEN
SWD6

SWD7       345KV BUS 4 TO SAMMIS LINE                          (PCB344)
(LBK344)    RANGE T OR F       T=CLOSED   F=OPEN
SWD8       345KV BUS 3 TO SAMMIS LINE                          (PCB334)
(LBK334)    RANGE T OR F       T=CLOSED   F=OPEN
SWD9

SWD10      345KV BUS 6 TO MANSFIELD LINE                       (PCB366)
(LBK366)    RANGE T OR F       T=CLOSED   F=OPEN
SWD11      345KV BUS 5 TO MANSFIELD LINE                       (PCB355)
(LBK355)    RANGE T OR F       T=CLOSED   F=OPEN
SWD12

SWD13      138KV BUS 2 TO AUTO TRANSFORMER                     (OCB82)
(LBK82)     RANGE T OR F       T=CLOSED   F=OPEN
SWD14      138KV BUS 1 TO AUTO TRANSFORMER                     (OCB91)
(LBK91)     RANGE T OR F       T=CLOSED   F=OPEN
SWD15

SWD16      138KV BUS 1 TO CRESCENT LINE                        (OCB97)
(LBK97)     RANGE T OR F       T=CLOSED   F=OPEN
SWD17      138KV BUS 1 TO CRUCIBLE LINE                        (OCB95)
(LBK95)     RANGE T OR F       T=CLOSED   F=OPEN
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LOCAL OPERATOR ACTION LISTING

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SWD18

SWD19      138KV BUS 2 TO SHIPPINGPORT RESERVE XFMR        (OCB80)
(LBK80)       RANGE T OR F      T=CLOSED    F=OPEN
SWD20      138KV BUS 1 TO SHIPPINGPORT RESERVE XFMR        (OCB90)
(LBK90)       RANGE T OR F      T=CLOSED    F=OPEN
SWD21

SWD22      138KV BUS 2 TO VALLEY LINE                       (OCB88)
(LBK88)       RANGE T OR F      T=CLOSED    F=OPEN
SWD23      138KV BUS 2 TO CRESCENT LINE                     (OCB84)
(LBK84)       RANGE T OR F      T=CLOSED    F=OPEN
SWD24      138KV BUS 2 TO MIDLAND LINE                      (OCB85)
(LBK85)       RANGE T OR F      T=CLOSED    F=OPEN
SWD25      138KV BUS 2 TO SHIPPINGPORT XFMR                 (OCB81)
(LBK81)       RANGE T OR F      T=CLOSED    F=OPEN
SWD26

SWD27      138KV TO BUS 7                                   (OCB87)
(LBK87)       RANGE T OR F      T=CLOSED    F=OPEN
SWD28      138KV BUS 7 TO CRUCIBLE                          (OCB89)
(LBK89)       RANGE T OR F      T=CLOSED    F=OPEN
SWD29

SWD30      138KV TO BUS 8                                   (OCB93)
(LBK93)       RANGE T OR F      T=CLOSED    F=OPEN
SWD31      138KV BUS 8 TO CRUCIBLE                          (OCB98)
(LBK98)       RANGE T OR F      T=CLOSED    F=OPEN
SWD32

SWD33      138KV BUS 7 TO BUS 8 X-TIE                      (OCB180)
(LBK180)      RANGE T OR F      T =CLOSED   F=OPEN
SWD34      345KV BUS 3 TO 138KV BUS 8                      (OCB333)
(LBK333)      RANGE T OR F      T=CLOSED    F=OPEN
SWD35

SWD36      SWITCHYARD BREAKER RESET FOR MALF EPS-1
(JSWDRST)     RANGE T OR F      T=TRUE      F=FALSE
SWD37

SWD38      MAIN XFMR TO 345KV BUS 3 DISCONNECT
(LDISGENA)    RANGE T OR F      T=CLOSED    F=OPEN
SWD39      MAIN XFMR TO 345KV BUS 4 DISCONNECT
(LDISGENB)    RANGE T OR F      T=CLOSED    F=OPEN
SWD40      MAIN XFMR TO 345KV BUS 3 DISCONNECT
(LDISGENC)    RANGE T OR F      T=CLOSED    F=OPEN
SWD41      MAIN XFMR TO 345KV BUS 4 DISCONNECT
(LDISGEND)    RANGE T OR F      T=CLOSED    F=OPEN
GEN1       USST 1C DISCONNECT
(JGENUA1)     RANGE T OR F      T=CLOSED    F=OPEN
GEN2       USST 1D DISCONNECT
(JGENUA2)     RANGE T OR F      T=CLOSED    F=OPEN
CHS1       PCV-145 MANUAL BYPASS                            (CH4)
(RCHV4)       RANGE 0 TO 1.0    1=OPEN  0=CLOSED
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LOCAL OPERATOR ACTION LISTING

CHS2	PCV-145 ISOL VLV	(CH5)
(RCHV5)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS3		
CHS4	BORONOMETER OUTLET ISOL VLV	(CH58)
(RCHV58)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS5	BORONOMETER INLET ISOL VLV	(CH57)
(RCHV57)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS6		
CHS7	MIXED BED DEMIN 1A ISOL VLV	(CH7)
(RCHV7)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS8	MIXED BED DEMIN 1B ISOL VLV	(CH8)
(RCHV8)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS9	CATION BED DEMIN ISOL VLV	(CH46)
(RCHV46)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS10	CATION BED DEMIN BYPASS VLV	(CH11)
(RCHV11)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS11	DEBOR DEMIN 3A ISOL VLV	(CH49)
(RCHV49)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS12	DEBOR DEMIN 3B ISOL VLV	(CH50)
(RCHV50)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS13		
CHS14	VCT DRAIN	(CH247)
(RCHV247)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS15		
CHS16	BORIC ACID TO CHARG PP (BLENDER BYPASS)	(CH135)
(RCHV135)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS17	PG WATER TO CHARG PP (BLENDER BYPASS)	(CH138)
(RCHV138)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS18		
CHS19	RWST FILL FROM BLENDER	(CH89)
(RCHV89)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS20		
CHS21	CHARGING PUMP 1A SUCTION FROM VCT/RWST	(CH19)
(RCHV19)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS22	CHARGING PUMP 1B SUCTION FROM VCT/RWST	(CH20)
(RCHV20)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS23	CHARGING PUMP 1C SUCTION FROM VCT/RWST	(CH21)
(RCHV21)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS24	CHARGING PUMP 1A SUCTION FROM SIS	(CH146)
(RCHV146)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS25	CHARGING PUMP 1B SUCTION FROM SIS	(CH147)
(RCHV147)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS26	CHARGING PUMP 1C SUCTION FROM SIS	(CH148)
(RCHV148)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS27	CHARGING PUMP 1A DISCH ISOL	(CH25)
(RCHV25)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	
CHS28	CHARGING PUMP 1B DISCH ISOL	(CH26)
(RCHV26)	RANGE 0 TO 1.0 1=OPEN 0=CLOSED	

LOCAL OPERATOR ACTION LISTING

CHS29	CHARGING PUMP 1C DISCH ISOL			(CH27)
(RCHV27)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS30	CHARGING PUMP 1A DISCH TO FILL HDR			(CH158)
(RCHV158)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS31	CHARGING PUMP 1B DISCH TO FILL HDR			(CH159)
(RCHV159)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS32	CHARGING PUMP 1C DISCH TO FILL HDR			(CH161)
(RCHV161)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS33				
CHS34	FCV-122 MANUAL BYPASS VLV			(CH29)
(RCHV29)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS35	FCV-122 ISOL VLV			(CH30)
(RCHV30)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS36	REGEN HX ISOL VLV			(CH289)
(RCHH289)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS37				
CHS38	HCV-186 ISOL VLV			(CH171)
(RCHV171)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS39	FILL HDR TO SEAL INJECTION			(CH172)
(RCHV172)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS40	SEAL INJ FILTER 1A INLET ISOL VLV			(CH174)
(RCHV174)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS41	SEAL INJ FILTER 1A OUTLET ISOL VLV			(CH176)
(RCHV176)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS42	SEAL INJ FILTER 1B INLET ISOL VLV			(CH175)
(RCHV175)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS43	SEAL INJ FILTER 1B OUTLET ISOL VLV			(CH177)
(RCHV177)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS44	SEAL INJ FILTER BYPASS VLV			(CH173)
(RCHV173)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS45	SEAL INJ TO RCP 1A ISOL VLV			(CH308A)
(RCHH308A)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS46	SEAL INJ TO RCP 1B ISOL VLV			(CH308B)
(RCHH308B)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS47	SEAL INJ TO RCP 1C ISOL VLV			(CH308C)
(RCHH308C)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS48	SEAL INJ TO RCP 1A THROT VLV			(CH179)
(RCHV179(1))	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS49	SEAL INJ TO RCP 1B THROT VLV			(CH178)
(RCHV179(2))	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS50	SEAL INJ TO RCP 1C THROT VLV			(CH180)
(RCHV179(3))	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS51	RCP 1A #1 SEAL PRESS XMTR ISOL VLV			(CH343)
(RCHV343(1))	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS52	RCP 1B #1 SEAL PRESS XMTR ISOL VLV			(CH344)
(RCHV343(2))	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS53	RCP 1C #1 SEAL PRESS XMTR ISOL VLV			(CH345)
(RCHV343(3))	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS54	SEAL WATER HX INLET ISOL VLV			(CH218)
(RCHV218)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	
CHS55	SEAL WATER HX OUTLET ISOL VLV			(CH219)
(RCHV219)	RANGE 0 TO 1.0	1=OPEN	0=CLOSED	

LOCAL OPERATOR ACTION LISTING

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CHS56     SEAL WATER HX BYPASS VLV                              (CH217)
(RCHV217)      RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS57

CHS58     H2 SUPPLY PRESS TO VCT (PCV-CH-118)
(PCVC118)    RANGE 0 TO 114.7
CHS59     N2 SUPPLY PRESS TO VCT (PCV-CH-119)
(PCVC119)    RANGE 0 TO 114.7
CHS60

CHS61     BA TANK 1A OUTLET ISOL VLV                             (CH71)
(RCHV71(1))  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS62     BA TANK 1B OUTLET ISOL VLV                             (CH72)
(RCHV71(2))  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS63     BA TANK 1A RECIRC ISOL VLV                             (CH77)
(RCHV77(1))  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS64     BA TANK 1B RECIRC ISOL VLV                             (CH78)
(RCHV77(2))  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS65     BA TANK 1A RECIRC ORIFICE ISOL VLV                    (CH107)
(RCHV107(1)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS66     BA TANK 1B RECIRC ORIFICE ISOL VLV                    (CH108)
(RCHV107(2)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS67     BA TRANS PUMP 2A DISCH TO BA FILTER                    (CH79)
(RCHV79(1))  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS68     BA TRANS PUMP 2B DISCH TO BA FILTER                    (CH80)
(RCHV79(2))  RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS69     BA TANK 1A BA FILTER RETURN ISOL VLV                  (CH104)
(RCHV104(1)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS70     BA TANK 1B BA FILTER RETURN ISOL VLV                  (CH106)
(RCHV104(2)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS71

CHS72     BA TANK 1A FILL FROM BORIC ACID HOLD TANK             (CH127)
(RCHV127(1)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS73     BA TANK 1B FILL FROM BORIC ACID HOLD TANK             (CH128)
(RCHV127(2)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS74

CHS75     PG WATER TO BA TANK 1A                                (CH129)
(RCHV129(1)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS76     PG WATER TO BA TANK 1B                                (CH130)
(RCHV129(2)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS77

CHS78     BA BATCH TANK FILL FROM PG WATER                      (CH120)
(RCHV120)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS79     BA BATCH TANK OUTLET ISOL VLV                         (CH116)
(RCHV116)     RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS80     BA BATCH TANK TO BA TRANS PUMP 2A                     (CH111)
(RCHV111(1)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS81     BA BATCH TANK TO BA TRANS PUMP 2B                     (CH112)
(RCHV111(2)) RANGE 0 TO 1.0   1=OPEN  0=CLOSED
CHS82
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LOCAL OPERATOR ACTION LISTING

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CHS83     NON-AERATED VENT HDR TO DEGAS 2A ISOL VLV      (BR16)
(RBRV16)      RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS84     NON-AERATED VENT HDR TO DEGAS 2B ISOL VLV      (BR17)
(RBRV17)      RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS85     DEGAS 2B INLET ISOL VLV                        (BR560)
(RBRV560)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS86     DEGAS 2A STM PRESS CONT VLV (PCV-BR-103A)
(RBR103AP)    RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS87     DEGAS 2B STM PRESS CONT VLV (PCV-BR-103B)
(RBR103BP)    RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS88

CHS89     COOL RECOV TANK 4A INLET & OUTLET ISOL VLVS(BR22,29)
(RBRV22)      RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS90     COOL RECOV TANK 4B INLET & OUTLET ISOL VLVS(BR23,30)
(RBRV23)      RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS91

CHS92     BR EVAP 1A REFLUX FLOW CONTROL VLV             (BR102A)
(RBRV102A)    RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS93     BR EVAP 1B REFLUX FLOW CONTROL VLV             (BR102B)
(RBRV102B)    RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS94

CHS95     TEST TANK PUMP 5A DISCH VLV                    (BR365)
(RBRV365)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
CHS96     TEST TANK PUMP 5B DISCH VLV                    (BR366)
(RBRV366)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
CHS97     TEST TANK PUMP 5B RECIRC TO TEST TANK 2B       (BR368)
(RBRV368)     RANGE 0 TO 1.0    1=OPEN   0=CLOSED
CHS98     TEST TANK PUMP 5A RECIRC TO TEST TANK 2A       (BR370)
(RBRV370)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS99

CHS100    CLEANUP FILTER RECIRC TO TEST TANK 2A          (BR400)
(RBRV400)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS101    CLEANUP FILTER RECIRC TO TEST TANK 2B          (BR401)
(RBRV401)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS102

CHS103    CLEANUP FILTER BYPASS TO PG WATER TANKS        (BR389)
(RBRV389)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS104    CLEANUP FILTER DISCH TO PG WATER TANKS         (BR397)
(RBRV397)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS105

CHS106    EVAP BOTTOMS HOLD TANK BYPASS                  (BR284)
(RBRV284)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS107    EVAP BOTTOMS PUMP DISCH TO BA HOLD TANK        (BR344)
(RBRV344)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS108    EVAP BOTTOMS PUMP DISCH TO BA TANKS 1A & 1B    (BR764)
(RBRV764)     RANGE 0 TO 1.0    1=OPEN   0=CLOSE
CHS109
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LOCAL OPERATOR ACTION LISTING

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CHS110    PG WATER MAKEUP FROM WATER TREATMENT          (BR439)
(RRMWV439)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS111    PG WATER TANK 6A INLET ISOL VLV              (BR115A)
(RRMWV15A)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS112    PG WATER TANK 6B INLET ISOL VLV              (BR115B)
(RRMWV15B)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS113    PG WATER PUMP 10A SUCTION FROM TANK 6A        (BR406)
(RRMWV406)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS114    PG WATER PUMP 10A SUCTION FROM TANK 6B        (BR408)
(RRMWV408)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS115    PG WATER PUMP 10B SUCTION FROM TANK 6B        (BR409)
(RRMWV409)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS116    PG WATER PUMP 10B SUCTION FROM TANK 6A        (BR407)
(RRMWV407)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS117    PG WATER PUMP 10A DISCH TO PG WATER HDR       (BR415)
(RRMWV415)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS118    PG WATER PUMP 10B DISCH TO PG WATER HDR       (BR416)
(RRMWV416)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS119    PG WATER HDR RECIRC TO TANK 6A ISOL VLV       (BR693)
(RRMWV693)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS120    PG WATER HDR RECIRC TO TANK 6B ISOL VLV       (BR694)
(RRMWV694)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS121    FCV-PG-101 BYPASS TO TANK 6A                  (BR410)
(RRMWV410)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS122    FCV-PG-101 BYPASS TO TANK 6B                  (BR411)
(RRMWV411)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS123    PCV-PG-117 & FCV-PG-101  BYPASS               (BR697)
(RRMWV697)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS124    PG WATER PUMP 10A DISCH TO CLEANUP FILTER     (BR417)
(RRMWV417)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS125    PG WATER PUMP 10B DISCH TO CLEANUP FILTER     (BR418)
(RRMWV418)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
CHS126    CLEANUP FILTER INLET FROM PG WATER PUMPS      (BR421)
(RRMWV421)  RANGE 0 TO 1.0   1=OPEN   0=CLOSED
RCS1      RCS LOW FLOW       LOOP 1  BS-414      PROT CHAN I
($JFB414)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS2      RCS LOW FLOW       LOOP 1  BS-415      PROT CHAN II
($JFB415)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS3      RCS LOW FLOW       LOOP 1  BS-416      PROT CHAN III
($JFB416)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS4      RCS LOW FLOW       LOOP 2  BS-424      PROT CHAN I
($JFB424)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS5      RCS LOW FLOW       LOOP 2  BS-425      PROT CHAN II
($JFB425)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS6      RCS LOW FLOW       LOOP 2  BS-426      PROT CHAN III
($JFB426)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS7      RCS LOW FLOW       LOOP 3  BS-434      PROT CHAN I
($JFB434)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS8      RCS LOW FLOW       LOOP 3  BS-435      PROT CHAN II
($JFB435)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS9      RCS LOW FLOW       LOOP 3  BS-436      PROT CHAN III
($JFB436)     0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS10
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LOCAL OPERATOR ACTION LISTING

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RCS11     OVERPOWER DELTA T  LOOP 1  BS-412B-1   PROT CHAN I
($JTB412B1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS12     OVERTEMP DELTA T   LOOP 1  BS-412C-1   PROT CHAN I
($JTB412C1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS13     LOW TAVG           LOOP 1  BS-412D-1   PROT CHAN I
($JTB412D1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS14     HIGH TAVG          LOOP 1  BS-412D-2   PROT CHAN I
($JTB412D2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS15     LOW-LOW TAVG       LOOP 1  BS-412E     PROT CHAN I
($JTB412E)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS16     OPDT ROD STOP      LOOP 1  BS-412B-2   PROT CHAN I
($JTB412B2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS17     OTDT ROD STOP      LOOP 1  BS-412C-2   PROT CHAN I
($JTB412C2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS18

RCS19     OVERPOWER DELTA T  LOOP 2  BS-422B-1   PROT CHAN II
($JTB422B1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS20     OVERTEMP DELTA T   LOOP 2  BS-422C-1   PROT CHAN II
($JTB422C1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS21     LOW TAVG           LOOP 2  BS-422D-1   PROT CHAN II
($JTB422D1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS22     HIGH TAVG          LOOP 2  BS-422D-2   PROT CHAN II
($JTB422D2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS23     LOW-LOW TAVG       LOOP 2  BS-422E     PROT CHAN II
($JTB422E)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS24     OPDT ROD STOP      LOOP 2  BS-422B-2   PROT CHAN II
($JTB422B2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS25     OTDT ROD STOP      LOOP 2  BS-422C-2   PROT CHAN II
($JTB422C2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS26

RCS27     OVERPOWER DELTA T  LOOP 3  BS-432B-1   PROT CHAN III
($JTB432B1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS28     OVERTEMP DELTA T   LOOP 3  BS-432C-1   PROT CHAN III
($JTB432C1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS29     LOW TAVG           LOOP 3  BS-432D-1   PROT CHAN III
($JTB432D1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS30     HIGH TAVG          LOOP 3  BS-432D-2   PROT CHAN III
($JTB432D2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS31     LOW-LOW TAVG       LOOP 3  BS-432E     PROT CHAN III
($JTB432E)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS32     OPDT ROD STOP      LOOP 3  BS-432B-2   PROT CHAN III
($JTB432B2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS33     OTDT ROD STOP      LOOP 3  BS-432C-2   PROT CHAN III
($JTB432C2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS34

RCS35     PZR HIGH LEVEL             BS-459A-1   PROT CHAN I
($JLB459A1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS36     PZR HIGH LEVEL             BS-460-1    PROT CHAN II
($JLB460A1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS37     PZR HIGH LEVEL             BS-461-1    PROT CHAN III
($JLB461A1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
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LOCAL OPERATOR ACTION LISTING

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RCS38

RCS39     PZR HIGH PRESS                 BS-455A      PROT CHAN I
($JPB455A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS40     PZR LO PRESS RX TRIP           BS-455C      PROT CHAN I
($JPB455C)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS41     PZR LO PRESS SI                BS-455D      PROT CHAN I
($JPB455E)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS42     P-11                           BS-455B      PROT CHAN I
($JPB455B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS43

RCS44     PZR HIGH PRESS                 BS-456A      PROT CHAN II
($JPB456A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS45     PZR LO PRESS RX TRIP           BS-456C      PROT CHAN II
($JPB456C)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS46     PZR LO PRESS SI                BS-456D      PROT CHAN II
($JPB456D)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS47     P-11                           BS-456B      PROT CHAN II
($JPB456B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS48

RCS49     PZR HIGH PRESS                 BS-457A      PROT CHAN III
($JPB457A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS50     PZR LO PRESS RX TRIP           BS-457C      PROT CHAN III
($JPB457C)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS51     PZR LO PRESS SI                BS-457D      PROT CHAN III
($JPB457D)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS52     P-11                           BS-457B      PROT CHAN III
($JPB457B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS53

RCS54     STM/FD MIS STM>FD  LOOP 1  BS-478B      PROT CHAN III
($JFB478B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS55     STM/FD MIS STM>FD  LOOP 1  BS-478A      PROT CHAN IV
($JFB478A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS56     STM/FD MIS STM>FD  LOOP 2  BS-488B      PROT CHAN III
($JFB488B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS57     STM/FD MIS STM>FD  LOOP 2  BS-488A      PROT CHAN IV
($JFB488A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS58     STM/FD MIS STM>FD  LOOP 3  BS-498B      PROT CHAN III
($JFB498B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS59     STM/FD MIS STM>FD  LOOP 3  BS-498A      PROT CHAN IV
($JFB498A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS60

RCS61     SG LOW-LOW LEVEL   LOOP 1  BS-474A-1    PROT CHAN I
($JLB474A)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS62     SG LOW LEVEL       LOOP 1  BS-474B-3    PROT CHAN I
($JLB474B)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS63     SG HI-HI LEVEL     LOOP 1  BS-474-1     PROT CHAN I
($JLB474C)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
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LOCAL OPERATOR ACTION LISTING

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RCS64    SG LOW-LOW LEVEL   LOOP 1  BS-475A-1   PROT CHAN II
($JLB475A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS65    SG LOW LEVEL       LOOP 1  BS-475B-1   PROT CHAN II
($JLB475B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS66    SG HI-HI LEVEL     LOOP 1  BS-475-1    PROT CHAN II
($JLB475C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS67    SG LOW-LOW LEVEL   LOOP 1  BS-476-A    PROT CHAN III
($JLB476A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS68    SG HI-HI-LEVEL     LOOP 1  BS-476      PROT CHAN III
($JLB476C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS69

RCS70    SG LOW-LOW LEVEL   LOOP 2  BS-484A-1   PROT CHAN I
($JLB484A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS71    SG LOW LEVEL       LOOP 2  BS-484B-3   PROT CHAN I
($JLB484B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS72    SG HI-HI LEVEL     LOOP 2  BS-484-1    PROT CHAN I
($JLB484C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS73    SG LOW-LOW LEVEL   LOOP 2  BS-485A-1   PROT CHAN II
($JLB485A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS74    SG LOW LEVEL       LOOP 2  BS-485B-1   PROT CHAN II
($JLB485B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS75    SG HI-HI LEVEL     LOOP 2  BS-485-1    PROT CHAN II
($JLB485C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS76    SG LOW-LOW LEVEL   LOOP 2  BS-486-A    PROT CHAN III
($JLB486A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS77    SG HI-HI LEVEL     LOOP 2  BS-486      PROT CHAN III
($JLB486C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS78

RCS79    SG LOW-LOW LEVEL   LOOP 3  BS-494A-1   PROT CHAN I
($JLB494A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS80    SG LOW LEVEL       LOOP 3  BS-494B-1   PROT CHAN I
($JLB494B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS81    SG HI-HI LEVEL     LOOP 3  BS-494-1    PROT CHAN I
($JLB494C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS82    SG LOW-LOW LEVEL   LOOP 3  BS-495A-1   PROT CHAN II
($JLB495A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS83    SG LOW LEVEL       LOOP 3  BS-495B-1   PROT CHAN II
($JLB495B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS84    SG HI-HI LEVEL     LOOP 3  BS-495-1    PROT CHAN II
($JLB495C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS85    SG LOW-LOW LEVEL   LOOP 3  BS-496-A    PROT CHAN III
($JLB496A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS86    SG HI-HI LEVEL     LOOP 3  BS-496      PROT CHAN III
($JLB496C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS87

RCS88    LO STM LINE PRESS  LOOP 1  PS-474A     PROT CHAN II
($JPB474A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS89    LO STM LINE PRESS  LOOP 1  PS-475A     PROT CHAN III
($JPB475A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS90    LO STM LINE PRESS  LOOP 1  PS-476A     PROT CHAN IV
($JPB476A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
```

LOCAL OPERATOR ACTION LISTING

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RCS91    LO STM LINE PRESS  LOOP 2  PS-484A     PROT CHAN II
($JPB484A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS92    LO STM LINE PRESS  LOOP 2  PS-485A     PROT CHAN III
($JPB485A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS93    LO STM LINE PRESS  LOOP 2  PS-486A     PROT CHAN IV
($JPB486A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS94    LO STM LINE PRESS  LOOP 3  PS-494A     PROT CHAN II
($JPB494A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS95    LO STM LINE PRESS  LOOP 3  PS-495A     PROT CHAN III
($JPB495A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS96    LO STM LINE PRESS  LOOP 3  PS-496A     PROT CHAN IV
($JPB496A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS97

RCS98    HI STM PRESS RATE  LOOP 1  PS-474B     PROT CHAN II
($JPB474B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS99    HI STM PRESS RATE  LOOP 1  PS-475B     PROT CHAN III
($JPB475B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS100   HI STM PRESS RATE  LOOP 1  PS-476B     PROT CHAN IV
($JPB476B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS101   HI STM PRESS RATE  LOOP 2  PS-484B     PROT CHAN II
($JPB484B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS102   HI STM PRESS RATE  LOOP 2  PS-485B     PROT CHAN III
($JPB485B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS103   HI STM PRESS RATE  LOOP 2  PS-486B     PROT CHAN IV
($JPB486B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS104   HI STM PRESS RATE  LOOP 3  PS-494B     PROT CHAN II
($JPB494B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS105   HI STM PRESS RATE  LOOP 3  PS-495B     PROT CHAN III
($JPB495B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS106   HI STM PRESS RATE  LOOP 3  PS-496B     PROT CHAN IV
($JPB496B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS107

RCS108   CNM PRESS HI                BS-LM100B-1 PROT CHAN II
($JPB934B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS109   CNM PRESS HI                BS-LM100C-1 PROT CHAN III
($JPB935B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS110   CNM PRESS HI                BS-LM100D-1 PROT CHAN IV
($JPB936B)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS111   CNM PRESS INT HI            BS-LM100B-3 PROT CHAN II
($JPB934C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS112   CNM PRESS INT HI            BS-LM100C-3 PROT CHAN III
($JPB935C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS113   CNM PRESS INT HI            BS-LM100D-3 PROT CHAN IV
($JPB936C)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS114   CNM PRESS HI-HI             BS-LM100A-2 PROT CHAN I
($JPB934A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS115   CNM PRESS HI-HI             BS-LM100B-2 PROT CHAN II
($JPB935A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS116   CNM PRESS HI-HI             BS-LM100C-2 PROT CHAN III
($JPB936A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS117   CNM PRESS HI-HI             BS-LM100D-2 PROT CHAN IV
($JPB937A)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
```

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RCS118

RCS119   CNM PRESS HI-HI CHAN I BYPASS
(XPPLTB(1))  RANGE T OR F   F = NORMAL
RCS120   CNM PRESS HI-HI CHAN II BYPASS
(XPPLTB(2))  RANGE T OR F   F = NORMAL
RCS121   CNM PRESS HI-HI CHAN III BYPASS
(XPPLTB(3))  RANGE T OR F   F = NORMAL
RCS122   CNM PRESS HI-HI CHAN IV BYPASS
(XPPLTB(4))  RANGE T OR F   F = NORMAL
RCS123

RCS124   P-7                            BS-446A-1   PROT CHAN III
($JPB446A1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS125   P-7                            BS-447E-1   PROT CHAN IV
($JPB447E1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS126

RCS127   TAVG DEV (LOW)       LOOP 1  BS-408A-1
($JTB408A1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS128   TAVG DEV (HIGH)      LOOP 1  BS-408A-2
($JTB408A2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS129   TAVG DEV (LOW)       LOOP 2  BS-408B-1
($JTB408B1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS130   TAVG DEV (HIGH)      LOOP 2  BS-408B-2
($JTB408B2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS131   TAVG DEV (LOW)       LOOP 3  BS-408C-1
($JTB408C1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS132   TAVG DEV (HIGH)      LOOP 3  BS-408C-2
($JTB408C2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS133   DELTA T DEV (LOW)  LOOP 1  BS-409A-1
($JTB409A1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS134   DELTA T DEV (HIGH) LOOP 1  BS-409A-2
($JTB409A2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS135   DELTA T DEV (LOW)  LOOP 2  BS-409B-1
($JTB409B1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS136   DELTA T DEV (HIGH) LOOP 2  BS-409B-2
($JTB409B2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS137   DELTA T DEV (LOW)  LOOP 3  BS-409C-1
($JTB409C1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS138   DELTA T DEV (HIGH) LOOP 3  BS-409C-2
($JTB409C2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS139

RCS140   PZR LOW LEVEL (HTRS & LCV-459)
($JLB459C)    0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS141   PZR LOW LEVEL (HTRS & LCV-460)
($JLB460C2)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS142   PZR HIGH LEVEL DEV (B/U HTRS ON)
($JLB459D)   0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS143   PZR LOW LEVEL DEV
($JLB459E)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS144   PZR HIGH LEVEL
($JLB460C1)  0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
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LOCAL OPERATOR ACTION LISTING

RCS145

RCS146 PZR LOW PRESS DEV (B/U HTRS ON)
($JPB444F) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS147 PZR LOW PRESS
($JPB445B) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS148 PZR HIGH PRESS
($JPB445C) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS149 PZR HIGH PRESS (PCV-455D, PCV-456)
($JPB445A) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS150 PZR HIGH PRESS (PCV-455C)
($JPB444B) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS151 PZR HIGH PRESS DEV
($JPB444E) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS152 PCV-455C OVER PRESS PROT
($JPB403H) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS153 PCV-455D OVER PRESS PROT
($JPB402H) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS154

RCS155 STM/FD MIS FD>STM LOOP 1 BS-478C
($JFB478C) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS156 STM/FD MIS STM>FD LOOP 1 BS-478D
($JFB478D) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS157 STM/FD MIS FD>STM LOOP 2 BS-488C
($JFB488C) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS158 STM/FD MIS STM>FD LOOP 2 BS-488D
($JFB488D) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS159 STM/FD MIS FD>STM LOOP 3 BS-498C
($JFB498C) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS160 STM/FD MIS STM>FD LOOP 3 BS-498D
($JFB498D) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS161

RCS162 SG LOW LEVEL DEV LOOP 1
($JLB478D1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS163 SG HIGH LEVEL DEV LOOP 1
($JLB478D2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS164 SG LOW LEVEL DEV LOOP 2
($JLB488D1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS165 SG HIGH LEVEL DEV LOOP 2
($JLB488D2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS166 SG LOW LEVEL DEV LOOP 3
($JLB498D1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS167 SG HIGH LEVEL DEV LOOP 3
($JLB498D2) 0=NORMAL, 1=TRIP, 3=RESET, 4=AS IS
RCS168

RCS169 15% LOAD REJECTION BS-447A
($JPB447A) 0=NORMAL, 1=TRIP, 3=RESET, 4=AS IS
RCS170 50% LOAD REJECTION BS-447B
($JPB447B) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS171 LOAD REJ CONT TRIP OPEN BANK 1
($JTB408F1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS

RCS172 LOAD REJ CONT TRIP OPEN BANK 2
($JTB408F2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS173 RX TRIP CONT TRIP OPEN BANK 1
($JTB408J1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS174 RX TRIP CONT TRIP OPEN BANK 2
($JTB408J2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS175

RCS176 IR HIGH FLUX ROD STOP NI 35
($JBSNC35E(1)) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS177 IR HIGH FLUX ROD STOP NI 36
($JBSNC35E(2)) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS178 CONT BANK D WITHDRAWAL LIMIT ROD STOP
($JZB409K) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS179 BLOCK AUTO ROD WITHDRAWAL (C-5)
($JPB446B) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS180 ROD IN MOTION (AUTO ONLY)
($JSB408C1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS181 ROD OUT MOTION (AUTO ONLY)
($JSB408C2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS182

RCS183 CONT BANK A LOW LIMIT
($JZB409A1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS184 CONT BANK A LOW-LOW LIMIT
($JZB409A2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS185 CONT BANK B LOW LIMIT
($JZB409B1) 0=NORMAL 1=TRIP, 2=RESET, 3=AS IS
RCS186 CONT BANK B LOW-LOW LIMIT
($JZB409B2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS187 CONT BANK C LOW LIMIT
($JZB409C1) 0=NORMAL, 1=TRIP, 2=RESET ,3=AS IS
RCS188 CONT BANK C LOW-LOW LIMIT
($JZB409C2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS189 CONT BANK D LOW LIMIT
($JZB409D1) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS190 CONT BANK D LOW-LOW LIMIT
($JZB409D2) 0=NORMAL, 1=TRIP, 2=RESET, 3=AS IS
RCS191

RCS192 RX BYPASS BKR A RACKED IN
(X52BYAX) T=RACKED IN, F=RACKED OUT
RCS193 RX BYPASS BKR B RACKED IN
(X52BYBX) T=RACKED IN, F=RACKED OUT
RCS194 RX BYPASS BKRS CLOSE
(XPPLBYPC) 1=BYA, 2=BYB, 3=NEITHER
RCS195

RCS196 POWER MISMATCH DEFEAT SWITCH
(KPCSPMDF) RANGE T=DEFEAT F=NORMAL
RCS197

RCS198 REACTOR VESSEL FLANGE OUTER CHAMBER STOP (RCS55)
(RRCV55) RANGE 0=CLOSED 1=OPEN

LOCAL OPERATOR ACTION LISTING

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RCS199   REACTOR VESSEL FLANGE INNER CHAMBER STOP     (RCS56)
(RRCV56)    RANGE 0=CLCSED 1=OPEN
RCS200

RCS201   AMSAC BYPASS SWITCH
(JRCSAMSC)  RANGE T OR F   T=CLOSED  F=OPEN
RCS202

RCS203   RWST LO-LO LVL CHAN I BYPASS  (LT-QS-100C)
(JCSRWSTB(1))  RANGE T OR F    F = NORMAL
RCS204   RWST LO-LO LVL CHAN II BYPASS (LT-QS-100D)
(JCSRWSTB(2))  RANGE T OR F    F = NORMAL
RCS205   RWST LO-LO LVL CHAN III BYPASS (LT-QS-100A)
(JCSRWSTB(3))  RANGE T OR F    F = NORMAL
RCS206   RWST LO-LO LVL CHAN IV BYPASS (LT-QS-100B)
(JCSRWSTB(4))  RANGE T OR F    F = NORMA
RCS207

RCS208   1/3 CONTROL RM CHLORINE DETECTION SIGNAL (A11-54)
(JCB001)       RANGE T OR F    F = NO SIGNAL
RCS209   2/3 CNTL RM CHLORINE DET,CNTL RM VENT ISO INIT.(A11-53)
(JCB003)       RANGE T OR F    F = NO SIGNAL
RCS210

RCS211   NARROW RANGE TH RTD BIAS    (LOOP 1)
(JPCSBIAS(1)) RANGE T OR F    T = BIAS INSERTED
RCS212   NARROW RANGE TH RTD BIAS    (LOOP 2)
(JPCSBIAS(2)) RANGE T OR F    T = BIAS INSERTED
RCS213   NARROW RANGE TH RTD BIAS    (LOOP 3)
(JPCSBIAS(3)) RANGE T OR F    T = BAIS INSERTED
```

APPENDIX 3

BVPS UNIT I SIMULATOR CERTIFICATION TEST SCHEDULE

The test schedule presented in this attachment meets or exceeds the requirements of ANSI/ANS-3.5-1985. This schedule provides the testing to be accomplished during the four year cycle following the initial submittal of this report.

BVPS UI SIMULATOR TEST SCHEDULE

SQT TEST NUMBER	TEST DESCRIPTION	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-1.0	SIMULATION REAL TIME TEST	XXXX	XXXX	XXXX	XXXX
SQT-2.0 SERIES	STEADY STATE, DRIFT & NORMAL OPS.				
SQT-2.1	STEADY STATE DRIFT TEST AT 100% PWR.	XXXX	XXXX	XXXX	XXXX
SQT-2.2	STEADY STATE TEST AT 75% PWR.	XXXX	XXXX	XXXX	XXXX
SQT-2.3	STEADY STATE TEST AT 30% PWR.	XXXX	XXXX	XXXX	XXXX
SQT-2.4	NORMAL OPERATIONS				
SQT-2.4.1	PLANT SHUTDOWN 100% TO MODE 5	XXXX	XXXX	XXXX	XXXX
SQT-2.4.2	NIS POWER RANGE OST-1.2.1	XXXX	XXXX	XXXX	XXXX
SQT-2.4.3	NIS INTERMEDIATE RANGE OST-1.2.2	XXXX	XXXX	XXXX	XXXX
SQT-2.4.4	NIS SOURCE RANGE OST-1.2.3	XXXX	XXXX	XXXX	XXXX
SQT-2.4.5	PLANT STARTUP MODE 5 TO 100%	XXXX	XXXX	XXXX	XXXX
SQT-2.4.6	ICCM OP CHECK OST-1.6.7	XXXX	XXXX	XXXX	XXXX
SQT-2.4.7	RCS INVENTORY BALANCE OST-1.6.2	XXXX	XXXX	XXXX	XXXX
SQT-2.4.8	BA PUMP TEST OST-1.7.1/2	XXXX	XXXX	XXXX	XXXX
SQT-2.4.9	EDG #1 OST-1.36.1	XXXX	XXXX	XXXX	XXXX
SQT-2.4.10	EDG #2 OST-1.36.2	XXXX	XXXX	XXXX	XXXX
SQT-2.4.11	CONTAINMENT ISOLATION VALVE OST	XXXX	XXXX	XXXX	XXXX
SQT-2.4.12	COLD VALVE EXERCISE OST-1.1.10	XXXX	XXXX	XXXX	XXXX
SQT-2.4.13	MSIV CLOSURE TEST OST	XXXX	XXXX	XXXX	XXXX
SQT-2.4.14	AFW DISCHARGE VALVE STROKE TEST	XXXX	XXXX	XXXX	XXXX
SQT-2.4.15	MOTOR AFW PUMP OST-1.24.2/3	XXXX	XXXX	XXXX	XXXX
SQT-2.4.16	TURBINE AFW PUMP OST-1.24.4	XXXX	XXXX	XXXX	XXXX
SQT-2.4.17	RX STARTUP AFTER A TRIP	XXXX	XXXX	XXXX	XXXX

SQT-3.0 SERIES	TRANSIENT TESTS	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-3.1	MANUAL REACTOR TRIP	XXXX	XXXX	XXXX	XXXX
SQT-3.2	COMPLETE LOSS OF ALL FEEDWATER	XXXX	XXXX	XXXX	XXXX
SQT-3.3	SIMUTANIOUS CLOSURE OF ALL MSIV'S	XXXX	XXXX	XXXX	XXXX
SQT-3.4	SIMUTANIOUS TRIP OF ALL RCP'S	XXXX	XXXX	XXXX	XXXX
SQT-3.5	TRIP OF ONE RX COOLANT PUMP	XXXX	XXXX	XXXX	XXXX
SQT-3.6	MAIN TURBINE TRIP (RODS IN MANUAL)	XXXX	XXXX	XXXX	XXXX
SQT-3.7	MAXIUM POWER RAMP (100%-75%-100%)	XXXX	XXXX	XXXX	XXXX
SQT-3.8	DBA LOCA WITH LOSS OF OFF SITE POWER	XXXX	XXXX	XXXX	XXXX
SQT-3.9	MAXIUM STEAM BREAK IN CONTAINMENT	XXXX	XXXX	XXXX	XXXX
SQT-3.10	PZR SAFETY VALVE LEAK WITH NO HHSI	XXXX	XXXX	XXXX	XXXX
SQT-3.11	MAIN TURBINE TRIP (RODS IN AUTO)	XXXX	XXXX	XXXX	XXXX

BVPS UI SIMULATOR TEST SCHEDULE

SQT TEST NUMBER	TEST DESCRIPTION	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-4.0 SERIES	MALFUNCTION TESTS	YEAR 1991	TO 1992	BE 1993	TESTED 1994
	AUX-1 THRU AUX-14				
SQT-4.1	CONTAINMENT INST AIR COMPRESSOR TRIP	XXXX			
SQT-4.2	STATION AIR COMPRESSOR TRIP		XXXX		
SQT-4.3	INSTRUMENT AIR LEAK			XXXX	
SQT-4.4	CONTAINMENT INSTRUMENT AIR LEAK	XXXX			
SQT-4.5	STATION AIR HEADER ISO VALVE FAILURE			XXXX	
SQT-4.6	AUXILIARY STEAM HEADER LEAK	XXXX			
SQT-4.7	GASEOUS WASTE TANK EFFLUENT LEAK				XXXX
SQT-4.8	GASEOUS WASTE DECAY TANK HEADER LEAK		XXXX		
SQT-4.9	RIVER WATER PUMP TRIP			XXXX	
SQT-4.10	RAW WATER PUMP TRIP	XXXX			
SQT-4.11	AUXILIARY RIVER WATER PUMP TRIP				XXXX
SQT-4.12	CONTAINMENT VENTILATION FAN FAILURE				XXXX
SQT-4.13	RADIATION MONITOR FAILURE	XXXX			
	CCW-1 THRU CCW-9				
SQT-4.14	NON-REGENERATIVE HX TUBE LEAK	XXXX			
SQT-4.15	RCP THERMAL BARRIER HX TUBE LEAK				XXXX
SQT-4.16	CCW PUMP TRIP			XXXX	
SQT-4.17	CCW TEMP CONTROL VALVE FAILURE	XXXX			
SQT-4.18	NON-REGENERATIVE HX TCV FAILURE				XXXX
SQT-4.19	CCW PUMP SUCTION HEADER LEAK				XXXX
SQT-4.20	CCW SUPPLY LINE TO RCP LEAK			XXXX	
SQT-4.21	RCP SEAL WATER HX TUBE LEAK		XXXX		
	CND-1 THRU CND-18				
SQT-4.22	CONDENSATE PUMP TRIP	XXXX			
SQT-4.23	FEEDWATER HEATER BYPASS VALVE FAILURE				XXXX
SQT-4.24	CONDENSATE PUMP DISCHARGE HEADER LEAK				XXXX
SQT-4.25	FEEDWATER HEATER TUBE LEAK (2ND PT)				XXXX
SQT-4.26	FOURTH POINT HEATER LCV FAILURE	XXXX			
SQT-4.27	FIFTH POINT HEATER LCV OSCILLATION				XXXX
SQT-4.28	AIR EJECTOR FAILURE				XXXX
SQT-4.29	VACUUM BREAKER LEAK			XXXX	
SQT-4.30	CONDENSER TUBE LEAK	XXXX			
SQT-4.31	COOLING TOWER PUMP TRIP		XXXX		
SQT-4.32	COOLING TOWER PUMP DISCH VALVE FAILS				XXXX
SQT-4.33	CONDENSATE RECIRC CONTROL VALVE FAILS				XXXX
SQT-4.34	HOTWELL LCV FAILURE	XXXX			
SQT-4.35	DELETED				
SQT-4.36	PRIMING PUMP VAC BREAKER VALVE FAILS			XXXX	
SQT-4.37	VACUUM PRIMING PUMP TRIP			XXXX	
	CRF-1 THRU CRF-14				
SQT-4.38	LOSS OF ROD DRIVE MG SET	XXXX			
SQT-4.39	FAILURE OF RODS TO MOVE				XXXX
SQT-4.40	IMPROPER BANK OVERLAP				XXXX
SQT-4.41	DROPPED ROD		XXXX		

BVPS UI SIMULATOR TEST SCHEDULE

SQT TEST NUMBER	TEST DESCRIPTION	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-4.42	UNCONTROLLED ROD MOTION	XXXX			
SQT-4.43	AUTOMATIC ROD CONTROL SPEED FAILURE				XXXX
SQT-4.44	T REF FAILURE			XXXX	
SQT-4.45	IRPI LOSS OF VOLTAGE			XXXX	
SQT-4.46	ROD POSITION STEP COUNTER FAILURE	XXXX			
SQT-4.47	STUCK ROD		XXXX		
SQT-4.48	REACTOR TRIP FAILURE				XXXX
SQT-4.49	ROD STOP FAILURE			XXXX	
SQT-4.50	REACTOR TRIP			XXXX	
	CHS-1 THRU CHS-24				
SQT-4.51	LETDOWN BACK PRESS REGULATOR FAILURE	XXXX			
SQT-4.52	LETDOWN RELIEF VALVE FAILURE				XXXX
SQT-4.53	LETDOWN LINE LEAK IN CONTAINMENT				XXXX
SQT-4.54	PLUGGED SEAL WATER INJ FILTER			XXXX	
SQT-4.55	VCT LEVEL CONTROL VALVE FAILURE	XXXX			
SQT-4.56	VCT DEGASS LCV FAILURE			XXXX	
SQR-4.57	RCS DILUTION ACCIDENT			XXXX	
SQT-4.58	RCS BORATION ACCIDENT			XXXX	
SQT-4.59	BA TO BLENDER FLOW TRANSMITTER FAILS	XXXX			
SQT-4.60	BLENDER OUTLET FLOW TRANSMITTER FAILS				XXXX
SQT-4.61	CHARGING HEADER LEAKAGE				XXXX
SQT-4.62	RCS FILL HEADER LEAKAGE				XXXX
SQT-4.63	RCP SEAL HEADER FCV FAILURE	XXXX			
SQT-4.64	EXCESS LETDOWN DIVERT VALVE FAILURE				XXXX
SQT-4.65	DELETED				
SQT-4.66	VOLUMN CONTROL TANK LEAK		XXXX		
SQT-4.67	BLENDER FLOW VCT BYPASS VALVE FAILURE	XXXX			
SQT-4.68	BORIC ACID TRANSFER PUMP TRIP				XXXX
SQT-4.69	VCT LEVEL TRANSMITTER FAILURE				XXXX
SQT-4.70	LETDOWN INLET ISOLATION VALVE FAILURE	XXXX			
SQT-4.71	CHARGING FCV FAILURE			XXXX	
SQT-4.72	LETDOWN HIGH TEMP DIVERT VALVE FAILS			XXXX	
	EPS-1 THRU EPS-18				
SQT-4.73	STATION BLACKOUT	XXXX			
SQT-4.74	UNIT STATION SERVICE TRANS FAILURE				XXXX
SQT-4.75	SYSTEM STATION SERVICE TRANS FAILURE				XXXX
SQT-4.76	LOSS OF 4160 VOLT BUS				XXXX
SQT-4.77	LOSS OF 480 VOLT BUS	XXXX			
SQT-4.78	LOSS OF 120 VOLT BUS				XXXX
SQT-4.79	LOSS OF INVERTER				XXXX
SQT-4.80	LOSS OF DC BUS		XXXX		
SQT-4.81	GRID VOLTAGE VARIATION	XXXX			
SQT-4.82	DIESEL GENERATOR TRIP		XXXX		
SQT-4.83	DIESEL GEN ERRATIC SPEED CONTROL			XXXX	
SQT-4.84	DIESEL GEN ERRATIC VOLTAGE REGULATION			XXXX	
SQT-4.85	DIESEL GEN OUTPUT BREAKER TRIP	XXXX			
SQT-4.86	LOAD REJECTION		XXXX		
SQT-4.87	MAIN GEN OUTPUT BREAKER FAILURE				XXXX

BVPS UI SIMULATOR TEST SCHEDULE

SQT TEST NUMBER	TEST DESCRIPTION	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-4.88	VOLTAGE ADJUSTER SETPOINT FAILURE		XXXX		
SQT-4.89	MAIN TRANSFORMER FAILURE	XXXX			
	FWM-1 THRU FWM-16				
SQT-4.90	MAIN FEEDWATER PUMP TRIP	XXXX			
SQT-4.91	HEATER DRAIN PUMP TRIP			XXXX	
SQT-4.92	FEEDWATER LEAK IN CONTAINMENT		XXXX		
SQT-4.93	FEEDWATER LEAK OUT OF CONTAINMENT			XXXX	
SQT-4.94	FEEDWATER RECIRC CONTROL VALVE FAILS	XXXX			
SQT-4.95	HP FEEDWATER TUBE LEAK			XXXX	
SQT-4.96	FEED REG VALVE FAILURE				XXXX
SQT-4.97	FEED REG BYPASS VALVE FAILURE				XXXX
SQT-4.98	ERRATIC FEEDWATER FLOW CONTROL	XXXX			
SQT-4.99	AUX FEEDWATER PUMP TRIP			XXXX	
SQT-4.100	AUX FEEDWATER FCV FAILURE	XXXX			
SQT-4.101	AUX FEEDWATER PUMP SUCTION LEAK				XXXX
SQT-4.102	FEEDWATER FLOW TRANSMITTER FAILURE	XXXX			
SQT-4.103	STM GEN PROGRAMMED LEVEL SIG FAILURE		XXXX		
SQT-4.104	STM GEN LEVEL TRANSMITTER FAILURE		XXXX		
	MSS-1 THRU MSS-17				
SQT-4.105	STEAM LEAK UPSTREAM MSIV		XXXX		
SQT-4.106	STEAM LEAK DOWNSTREAM MSIV		XXXX		
SQT-4.107	MSIV DRIFTS SHUT		XXXX		
SQT-4.108	NRV TO 1ST POINT HEATER STICKS	XXXX			
SQT-4.109	NRV TO 3RD POINT HEATER STICKS				XXXX
SQT-4.110	SG SAFETY FAILS TO RESEAT		XXXX		
SQT-4.111	STM DUMP VALVE FAILS TO OPERATE		XXXX		
SQT-4.112	STEAM DUMP VALVE STICKS		XXXX		
SQT-4.113	ERRATIC T-AVG CONTROL				XXXX
SQT-4.114	REF TEMP TO STM DUMP FAILS			XXXX	
SQT-4.115	STM PRESS SIGNAL TO STM DUMP FAILS				XXXX
SQT-4.116	ATMOSPHERIC STM DUMP VALVE FAILS		XXXX		
SQT-4.117	ERRATIC CONTROL OF ATM STM DUMP VALVE			XXXX	
SQT-4.118	STEAM FLOW TRANSMITTER FAILURE		XXXX		
SQT-4.119	STM PRESS TRANS FAILS (CONTROL)		XXXX		
SQT-4.120	STM PRESS TRANS FAILS (PROTECTION)		XXXX		
SQT-4.121	STEAM LEAK TO AFW PUMP SUPPLY LINE		XXXX		
	NIS-1 THRU NIS-8				
SQT-4.122	SOURCE RANGE CHANNEL FAILURE	XXXX			
SQT-4.123	INTERMEDITE RANGE CHANNEL FAILURE			XXXX	
SQT-4.124	POWER RANGE CHANNEL FAILURE			XXXX	
SQT-4.125	INTERMEDIATE RANGE COMP VOLTS FAILURE				XXXX
SQT-4.126	SOURCE RANGE HI VOLT CUTOFF FAILURE			XXXX	
SQT-4.127	SOURCE RANGE FUSE BLOWN			XXXX	
SQT-4.128	INTERMEDIATE RANGE FUSE BLOWN			XXXX	
SQT-4.129	POWER RANGE FUSE BLOWN			XXXX	
	CCT-1 THRU CCT-4				

BVPS UI SIMULATOR TEST SCHEDULE

SQT TEST NUMBER	TEST DESCRIPTION	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-4.130	CCW PUMP TRIP	XXXX			
SQT-4.131	CCW TCV FAILURE			XXXX	
SQT-4.132	SUPPLY LINE LEAK			XXXX	
SQT-4.133	SUCTION HEADER LEAK			XXXX	
	PRS-1 THRU PRS-13				
SQT-4.134	PZR SAFETY VALVE LEAKAGE		XXXX		
SQT-4.135	PZR SAFETY VALVE FAILURE		XXXX		
SQT-4.136	PZR PORV LEAKAGE		XXXX		
SQT-4.137	PZR PORV RESEAT FAILURE		XXXX		
SQT-4.138	PZR STEAM SPACE LEAK		XXXX		
SQT-4.139	PZR LEVEL TRANSMITTER FAILURE		XXXX		
SQT-4.140	PZR REF LEVEL SIGNAL FAILURE			XXXX	
SQT-4.141	PZR PRESS TRANSMITTER FAILURE		XXXX		
SQT-4.142	PZR SPRAY VALVE FAILURE		XXXX		
SQT-4.143	PZR HEATER CONTROL FAILURE			XXXX	
SQT-4.144	PZR SPRAY VALVE CONTROLLER FAILS				XXXX
SQT-4.145	PZR MASTER PRESS CONTROLLER FAILURE				XXXX
SQT-4.146	PZR LEVEL CONTROL FAILURE	XXXX			
	RCS-1 THRU RCS-21				
SQT-4.147	SURGE LINE LEAK		XXXX		
SQT-4.148	COLD LEG LEAK		XXXX		
SQT-4.149	STEAM GENERATOR TUBE LEAK		XXXX		
SQT-4.150	RX VESSEL HEAD FLANGE LEAK		XXXX		
SQT-4.151	RCP SEAL #1 FAILURE	XXXX			
SQT-4.152	RCP SEAL #2 FAILURE			XXXX	
SQT-4.153	RCP SEAL #3 FAILURE		XXXX		
SQT-4.154	REACTOR COOLANT PUMP TRIP		XXXX		
SQT-4.155	REACTOR COOLANT PUMP LOCKED ROTOR		XXXX		
SQT-4.156	REACTOR COOLANT PUMP HIGH VIBRATION		XXXX		
SQT-4.157	REACTOR COOLANT HIGH ACTIVITY				XXXX
SQT-4.158	FUEL HANDLING ACCIDENT				XXXX
SQT-4.159	DELETED				
SQT-4.160	HOT LEG TEMP SENSOR FAILURE		XXXX		
SQT-4.161	DELETED				
SQT-4.162	COLD LEG TEMP SENSOR FAILURE		XXXX		
SQT-4.163	HOT LEG PRESS TRANSMITTER FAILS		XXXX		
SQT-4.164	LOOP FLOW TRANSMITTER FAILS		XXXX		
SQT-4.165	INCORE T/C FAILURE				XXXX
SQT-4.166	RCS BORON CONCENTRATION			XXXX	
	RHR-1 THRU RHR-5				
SQT-4.167	RHR PUMP TRIP	XXXX			
SQT-4.168	RHR RELIEF VALVE LEAK	XXXX			
SQT-4.169	RHR FLOW TRANSMITTER FAILS	XXXX			
SQT-4.170	RHR FLOW CONTROL VALVE FAILURE	XXXX			
SQT-4.171	RHR PUMP SHAFT SEIZURE	XXXX			
	SIS-1 THRU SIS-15				

BVPS UI SIMULATOR TEST SCHEDULE

SQT TEST NUMBER	TEST DESCRIPTION	YEAR 1991	TO 1992	BE 1993	TESTED 1994
SQT-4.172	REFUELING WATER STORAGE TANK LEAK			XXXX	
SQT-4.173	QUENCH SPRAY PUMP FAILURE			XXXX	
SQT-4.174	RECIRC SPRAY PUMP FAILURE			XXXX	
SQT-4.175	RECIRC SPRAY HX TUBE LEAK			XXXX	
SQT-4.176	HHSI PUMP FAILURE				XXXX
SQT-4.177	LHSI PUMP FAILURE				XXXX
SQT-4.178	CONTAINMENT IN-LEAKAGE		XXXX		
SQT-4.179	SPURIOUS SI SIGNAL		XXXX		
SQT-4.180	SPURIOUS CI"A" SIGNAL			XXXX	
SQT-4.181	AUTO SI ACTUATION FAILURE			XXXX	
SQT-4.182	ACCUMULATOR LEAK			XXXX	
SQT-4.183	SI SIGNAL FAILS TO SELECTED VALVES	XXXX			
SQT-4.184	SAFETY INJECTION LINE LEAK				XXXX
SQT-4.185	RWST LEVEL TRANSMITTER FAILURE	XXXX			
SQY-4.186	LHSI PUMP SUCTION VALVE FAILURE	XXXX			
	TUR-1 THRU TUR-18				
SQT-4.187	TURBINE TRIP	XXXX			
SQT-4.188	TURBINE BEARING HIGH VIBRATION	XXXX			
SQT-4.189	GOVENOR VALVE FAILURE			XXXX	
SQT-4.190	ERRATIC GOVENOR VALVE CONTROL				XXXX
SQT-4.191	THROTTLE (TRIP) VALVE FAILURE	XXXX			
SQT-4.192	ERRATIC THROTTLE VALVE CONTROL				XXXX
SQT-4.193	EHC PUMP FAILURE				XXXX
SQT-4.194	TURBINE BEARING LIFT OIL PUMP FAILURE		XXXX		
SQT-4.195	EHC SPEED CONTROL CHANNEL FAILURE		XXXX		
SQT-4.196	TURBINE RUNBACK FAILURE			XXXX	
SQT-4.197	VALVE POSITION LIMITER FAILURE			XXXX	
SQT-4.198	FIRST STAGE PRESS SIGNAL LOSS TO EHC	XXXX			
SQT-4.199	MSR STEAM SUPPLY VALVE FAILURE	XXXX			
SQT-4.200	FIRST STAGE STM PRESS TRANS. FAILURE	XXXX			

APPENDIX C

SIMULATOR DISCREPANCY REPORTING AND RESOLUTION

A. PURPOSE

This instruction outlines the methods to be used to report discrepancies between simulator and actual plant response or control room configuration, and identifies the mechanism by which these discrepancies will be resolved. This instruction should only be used for discrepancies which fall within the defined scope fo simulation and for which resolution will not affect the simulator design data base. Those changes affecting the design data base will be tracked and implemented using Appendix B of this Section.

B. PROCEDURE

A Trouble Report (TR) Log will be maintained by the simulator staff in the Simulator Office. Although any staff member observing a discrepancy may initiate a Trouble Report, TR forms (Figure 12.1.12) will be filled out by the Simulator Engineer or the on-shift simulator instructor.

The name of the staff member filling out the form must be included in the 'originator' block. The TR form should be submitted to another member of the Simulator staff for evaluation. If the TR is valid, then it should be logged, numbered, and placed in the Trouble Report System. The TR Index is included as Figure 12.1.14.

Active TRs will be reviewed by the Simulator Coordinator and the Supervisor, Simulator Training, on a regular basis for completeness and accuracy. It will be the responsibility of the Supervisor, Simulator Training, to resolve active TRs.

Once the problem has been resolved, testing will be performed by a Simulator Staff member. Testing responsibility will normally belong to the simulator staff member who wrote the TR, but may be reassigned to an alternate by the Simulator Coordinator or the Supervisor, Simulator Training. If the TR fails its test, it will be noted on the TR and given to the Simulator Engineer for corrective action. Once the TR is retested satisfactorily, it will be signed off by the responsible staff member and either the Simulator Supervisor or the Coordinator, Simulator Training. The Index will be updated by the responsible individual completing the cleared initial/date section of the Index log sheet.

SIMULATOR TROUBLE REPORT (TR)

TR No. ________

TITLE: ____

DATE: __________ ORIGINATOR: ______________________ PRIORITY: ____

SYSTEM: ____

IC No. ______________________ PACK: ______________________

DESCRIPTION OF PROBLEM: ____________________________

PROPER PERFORMANCE & SUPPORTING DOCUMENTATION: ____________________

Reviewed by: ____________________ Assigned to: ____________________
(See back for checklist)

Post-fix Testing: ☐ Sat

☐ Unsat

____________________ __________
Instructor Date

CLEARED: ____________________ ____________________ __________
Simulator Coordinator Supervisor, Simulator Training Date

Initial Review:

1.	Redundancy	Y or N
2.	Valid (Person reviewing TR should test the TR. If it is found a change is needed to the Data Base, a CR should be written, noted on TR and TR closed out.)	Y or N
3.	Clarity - Problem defined completely Supporting documentation listed	Y or N
4.	Update simulator documentation	Y or N
5.	Update training material	Y or N
6.	Rejected	Y or N

FINAL ACTION

Logbook Date ______ Engineer ______ Date Completed ______

APPENDIX B
SIMULATOR DATA BASE TRACKING CHANGES AND MODIFICATIONS

A. PURPOSE

This instruction outlines the methodology to be used in tracking the design data base of the Beaver Valley Simulator. The intent of the instruction is to ensure consistent logging, routine review, and modification decisions based on changes to the reference plant or training requirements. The instruction is based on the requirements of ANS 3.5 (1985) and USNRC Regulatory Guide 1.149.

B. PROCEDURE

This instruction is divided into two (2) major areas based on the method by which a change to the simulator and its data base is initiated. These two methods are:

1. A change to the reference plant configuration which requires a corresponding change or modification to the existing simulator data base.

2. A change to the simulator and its data base requested by a member of the Simulator Trianing Center staff, Nuclear Training Department, etc., which has no corresponding reference plant change. Examples of this type of change would be the addition of malfunctions or LOAs, changes to the instructor console or instructor's system, etc.

For each of the above listed methods, the data base tracking procedure is divided into three (3) action areas: 1) the receipt and logging of the reference plant changes or a change request from the simulator users (CHANGE INITIATION); 2) an evaluation of the information received (CHANGE EVALUATION); and 3) the implementation and documentation of the change after its completion (CHANGE COMPLETION). Each of these action areas will be tracked and documented using the Simulator Data Base Tracking Form (Figure 12.1.7), which will be maintained as part of the data base.

C. PLANT CHANGES

The accomplishment of simulator modifications necessitated by changes to the reference plant will be performed in accordance with Flow Chart No. 1 (Figure 12.1.8).

Notification of changes to the plant will normally be accomplished through Design Concept Notices (DCNs). The Simulator Training Center is on the distribution list for all DCNs for Beaver Valley.

1. Receipt and Logging (CHANGE INITIATION)

   As soon as practicable following the receipt of a DCN or other initiating document, the Simulator Coordinator, or his designated Simulator Training Center staff member, will log the following information on the Simulator Data Base Tracking Form:

   a. Document Type

   b. Document Number (If applicable.)

2. Evaluation (CHANGE EVALUATION)

   Each logged document will be reviewed by the Supervisor, Simulator Training, and the Simulator Coordinator or his/her designee, for potential action based upon license training requirements, ANS 3.5 (1985), and Regulatory Guide 1.149. This review will include a decision as to whether or not a change to the simulator and/or simulator training materials is required. The review will be documented using the Review and Evaluation Form (Figure 12.1.9). If no modificaiton to the simulator is required, the Supervisor, Simulator Training, will inform the Engineering Section, the DCN and its associated Review and Evaluation Form will be filed, and the appropriate entries will be made on the Simulator Data Base Tracking Form.

   If it appears that changes to the simulator will be required, the Supervisor, Simulator Training, and the Simulator Coordinator or his/her designee, will fill out the Review and Evaluation Form, initiate and log a Simulator Change REquest (Figure 12.1.10), and make the appropriate entries on the Data Base Tracking Form. The DCN, Review and Evaluation Form and Simulator Change Request will then be forwarded to the Simulator Engineer. If a change to the simulator training materials is required, the appropriate entry will be made on the Data Base Tracking Form, and a copy of the Review and Evaluation Form will be forwarded to the Lead Instructor. It will be the responsibility of the Lead Instructor to ensure that the training materials are modified to reflect the change.

Upon receipt of the DCN, Review and Evaluation Form, and Simulator Change Request, the Simulator Engineer will review the material to determine if: 1) additional information will be required to implement the change; 2) if assistance is required to develop the software associated with the change; and 3) if procurement of the associated hardware is to be performed by Engineering. He will then inform the Supervisor, Simulator Training, of the results of the review. The Supervisor, Simulator Training will consult with the Engineering Section to obtain the necessary hardware and/or support.

When all additional information has been received, the Simulator Coordinator, and the Supervisor, Simulator Training will make a final evaluation (if required), and establish the scope of the change on the Simulator Change Request.

3. <u>Implementation and Documentation</u> (CHANGE COMPLETION)

Following the completion of the actions outlined above, further actions will be guided using Figure 12.1.8. Following implementation, satisfactory testing of the change, and required data base updating to the Simulator copy of the documentation, the appropriate Data Base Tracking Form entries shall be made, the Simulator Change Request cleared, and the change submitted to the Simulator Coordinator for review and approval. The approved change package, including the DCN, supplemental information, Simulator Change Request, and Review and Evaluation Sheet will be filed. Copies of the documentation change(s) will be sent to NERU in accordance with the guidelines in the configuration management program.

D. SIMULATOR CHANGES

Periodic changes may be required to the simulator which have no corresponding plant change. Changes of this type normally will be initiated by members of the Simulator Training Center staff or members of the Nuclear Training Department. Changes of this type will be accomplished in accordance with Flow Chart No. 2 (Figure 12.1.11).

1. Receipt and Logging (CHANGE INITIATION)

   The person requesting a change to the simulator will fill out a Simulator Change Request and forward it to the Simulator Coordinator. The Simulator Coordinator or his/her designated Simulator Training Center staff member will ensure that the Simulator Change Request is logged on the Data Base Tracking Form as an initiating document by entering:

   a. Document Type (Change Request)

   b. Document Number (Change Request Number)

   c. Date Received

2. Evaluation (CHANGE EVALUATION)

   The Simulator Coordinator will review each change request, then forward it to the Simulator Engineer. The Simulator Engineer will review the Simulator Change Request to determine if: 1) additional information is requred to implement the change; 2) if software assistance will be required; and 3) if assistance will be required in procuring hardware. The Simulator Change Request will then be returned to the Simulator Coordinator for resolution of 1), 2), or 3) above. After resolution, the Simulator Coordinator, the Supervisor, Simulator Training, and the Simulator Engineer will set the final scope of the change. The Simulator Engineer will begin implementation of the change.

3. Implementation and Documentation

Following completion of the actions outlined above, further actions will be guided using Figure 12.1.11. Following implementation, satisfactory testing of the change and required data base updating to the Simulator copy of the documentation, the appropriate Data Base Tracking Form entries will be made, the simulator Change Request cleared, and the change package submitted to the Simulator Coordinator for review and approval. The change package, including the change request and any supplemental information, will be filed. Copies of the documentation change(s) will be sent to NERU in accordance with the guidelines in the configuration management program.

REVIEW AND EVALUATION FORM

TITLE: ____

REFERENCE DOCUMENT: ____

THE ABOVE REFERENCED CHANGE TO BEAVER VALLEY UNIT #1 ____ WILL ____ WILL NOT BE INCORPORATED INTO THE BEAVER VALLEY SIMULATOR.

THE ABOVE REFERENCED CHANGE ____ WILL ____ WILL NOT REQUIRE CHANGES TO THE SIMULATOR TRAINING MATERIALS.

EVALUATION:

FINAL EVALUATION (IF REQUIRED):

______________________________	______________________________	____________
COORDINATOR - SIMULATOR TRAINING	IMULATOR SUPERVISOR	DATE

SIMULATOR CHANGE REQUEST

CHANGE REQUEST NO. __________

TITLE: ____

DATE: ____________ ORIGINATOR: __________________ PRIORITY: ______

SYSTEM: ___________

REVIEWED BY: __________________ DATE: ______________
(See checklist on back)

DESCRIPTION OF CHANGE:

COMPLETED: ______________________ ______________________ __________
SIMULATOR ENGINEER SIMULATOR INSTRUCTOR DATE

INITIAL REVIEW:

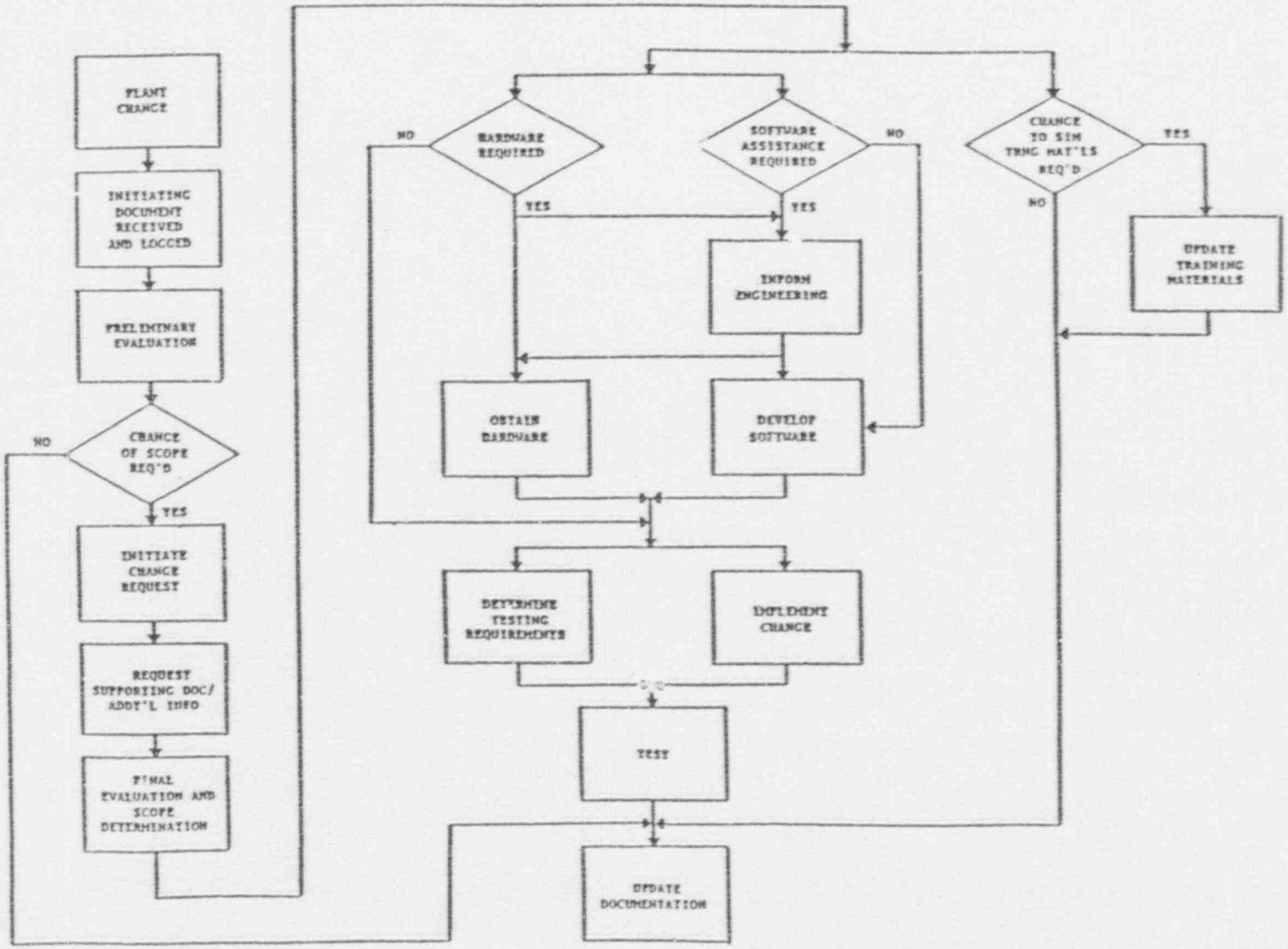
1.	Redundancy	Y or N
2.	Valid	Y or N
3.	Clarity - Problem defined completely Supporting documentation listed	Y or N
4.	Update simulator documentation	Y or N
5.	Update training material	Y or N
6.	Rejected	Y or N

FINAL ACTION

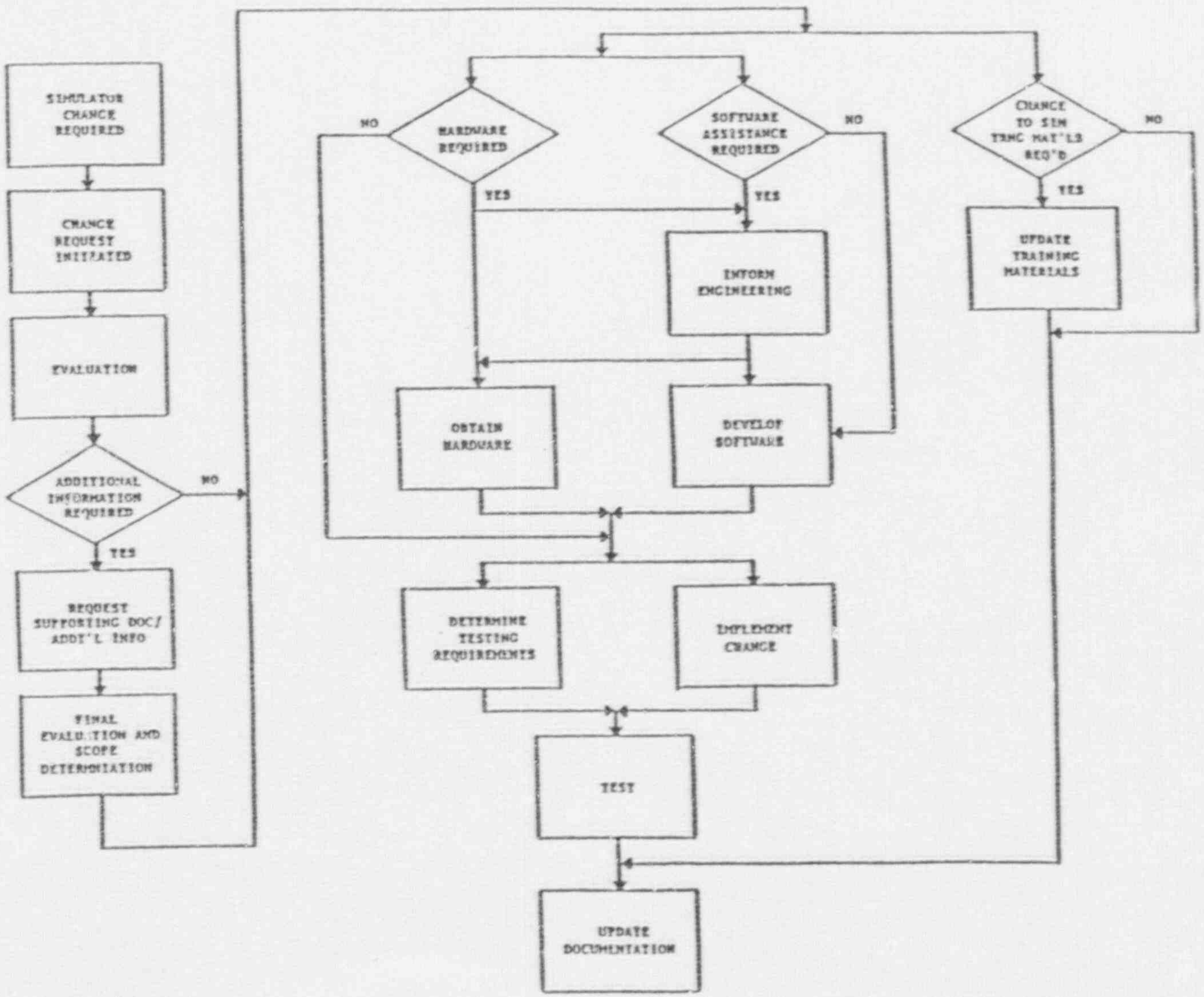
______________________ Logbook Date

______________________ Engineer

FLOW CHART NO. 1



FLOW CHART NO. 2



BVPS TRANSIENT REVIEW COMMITTEE
EXPERIENCED SUMMARIES

John Kido

Current Position:	Simulator Instructor for 7 years.
Education/License/Certification:	Business College 3 years for Computer Science. SRO certification Beaver Valley.
Technical Experience:	U.S. Nuclear Navy 6 years, NSSS Instructor for Westinghouse 9 years, Beaver Valley Simulator Instructor 7 years.

Thomas Kuhar

Current Position:	License Operator Training Supervisor 1 year.
Education/License/Certification:	College 2 years for Engineering, SRO License Beaver Valley.
Technical Experience:	Operations Instructor 8 years, License Operations Training 2 years, License Operations Training Supervisor 1 year.
Beaver Valley Operations Experience:	Reactor Operator 5 years.

Allen J. Lindgren

Current Position:	Simulator Coordinator 4 years,
Education/License/Certification:	College 6 years for Electrical Engineering and Management, SRO License Zion Power Station, SRO Certification Beaver Valley, RO License Saxton Nuclear Facility.
Technical Experience:	U.S. Nuclear Navy 6 years, Reactor Operator Training Saxton Nuclear Facility 9 months, Simulator Instructor for Westinghouse Nuclear Training Center 9 years, Supervisor NUS Simulator Projects 5 years, Simulator Coordinator and Instructor Beaver Valley 6 years.

BVPS TRANSIENT REVIEW COMMITTEE
EXPERIENCE SUMMARIES

Lawrence Schad

Current Position:	Simulator Supervisor 4 years.
Education/License/Certification:	SRO Certification Shippingport Atomic Power Station, SRO License Beaver Valley.
Technical Experience:	U.S. Nuclear Navy 6 years, Simulator Coordinator 4 years.
Beaver Valley Operations Experience:	Nuclear Shift Foreman 5 years, Nuclear Shift Supervisor 4 years, Nuclear Station Operations Supervisor 7 years.

James V. Vassello

Current Position:	Director Licensing 5 years.
Education/License/Certification:	SRO License Beaver Valley Unit I, SRO License Beaver Valley Unit II, Engineer Training Penn State.
Technical Experience:	U.S. Nuclear Navy 7 years, Instructor Shippingport Atomic Power Station 2 years, Director Nuclear Training Beaver Valley 11 years.
Beaver Valley Operations Experience:	Unit I Shift Foreman 2 years, Shift Start-up Coordinator Unit I 1 year, (Assignment) Nuclear Shift Supervisor Unit II 2 years.