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AUTH.NAME AUTHOR AFFILIATION
MECREDY,R.C. Rochester Gas & Electric Corp. See Report
RECIP.NAME RECIPIENT AFFILIATION
Office of Nuclear Reactor Regulation, Director (Post 870411

SUBJECT: Forwards "Simulation Facility Certification Rept," per 10CFR55.45(b)(5).

DISTRIBUTION CODE: A005D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 14/75
TITLE: Simulator Facility Certification

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ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER N.Y. 14649-0001

ROBERT C. MECREDY
Vice President
Ginna Nuclear Production

TELEPHONE
AREA CODE 716 546-2700

February 15, 1991

Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Simulator Facility Certification
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Gentlemen:

In accordance with 10CFR55.45 (b)(5), we hereby submit NRC Form 474, Simulation Facility Certification, and supporting documentation for initial certification of the R.E. Ginna simulation facility.

Very truly yours,

Robert C. Mecredy

Enclosures

xc: Regional Administrator, Region I
Senior Resident Inspector
Central Records

A005
1/1

ENCLOSURE B

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA NUCLEAR POWER PLANT

SIMULATION FACILITY CERTIFICATION REPORT

FEBRUARY, 1991

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT
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ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT
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ROCHESTER GAS AND ELECTRIC CORPORATION
R.E. GINNA

SIMULATOR CERTIFICATION REPORT

A1.1 GENERAL

(1) Owner: ROCHESTER GAS & ELECTRIC CORPORATION.
Simulator Vendor: WESTINGHOUSE ELECTRIC CORPORATION

(2) Facility Data

(a) Reference Plant: R. E. Ginna, Doc. No.: 50-244
(b) Type: Two Loop Pressurizer Water Reactor
(c) Rating: 1520 MWT, 490 MWE

(3) Date Available for Training: 10 March 86

(4) Type of Report: Initial

A1.2 CONTROL ROOM

(1) Control Room Physical Arrangement

The physical layout of the simulator control room is shown in the drawings included with the Physical Configuration Package. The size of the control room, height of the control room ceiling, spacing between components and location of doors matches that of the plant control room.

(2) Panels/Equipment

All panels needed to perform operator training are provided. The physical arrangement of all modeled panels in the simulated control room matches the plant control room in size, location, and orientation within the room. A detailed comparison between the control room and the simulator is conducted annually. The list of differences found is attached to form GSS-2.4-2 located in the Physical Configuration Package. Disposition of those differences not corrected are found in the Exceptions to ANSI/ANS 3.5 - 1985.

(3) Systems

The reference plant systems which are either fully or partially simulated are identified on Form GSS-2.15-6 "Plant vs. Simulator Systems Cross References" located in the Simulator Information attachment. The Plant Process Computer (PPCS) in the simulator is a duplicate of the plant system. The PPCS inputs are stimulated by the simulator computer calculated variables representing the parameters monitored by PPCS.

(4) Simulator Control Room Environment

The simulator control room duplicates the environment in the plant control room including, communications, lighting, furniture, available computers, and sounds. For a listing of differences refer to the report provided in the Physical Configuration attachment.

A1.3 INSTRUCTOR INTERFACE

The instructor's station is designed to allow the instructor to conduct the class and to perform control and monitoring functions with a minimum number of key strokes, allowing the instructor to concentrate more effectively on the students. All control manipulations are silent, to avoid any betrayal of instructor actions and disturbance to students. A communication system is provided to permit the instructor to intercept calls and to play the role of any individual outside the control room. The operator uses the same telephone numbers on the simulator to contact auxiliary operators, load dispatchers, et al, as he uses in the plant control room.

(1) Initial Conditions

The simulator utilizes 90 initial condition sets which may be selected by the instructor. ICs 1 through 25 are "protected" initial conditions specified by the simulator lesson plans in the operator training programs. They represent a variety of plant states from cold shutdown through power operations and various fuel burnups. ICs 26 through 90 may be utilized by the instructor to record a specific evolution or event. IC 91 is the default IC for the "snapshot" function. The list of protected Initial Conditions utilized for operator training on the simulator are provided on form GSS-2.13-1 in the Instructor Interface Support attachment.

(2) Remote Functions

Simulation of the activities of auxiliary operators is provided by the use of Local Operator Actions. LOA's are valves, switches, motors, pumps, breakers and disconnects which are operated outside the control room, but whose effects are discernable to the operator. Tank levels and temperatures which are under the control of the auxiliary operator can also be varied using LOA's.

The control room operator initiates activities outside the control room via the plant page system or the telephone. The same method is used when training on the simulator, with the instructor serving as the auxiliary operator. Dedicated keys on the instructor's console allow selection of LOA's grouped by system. Form GSS-2.13-2, "List of Remote Functions", is a list of the 595 current active Local Operator Actions for the Ginna simulator.

The Ginna simulator has a number of additional remote features both in the instructors system and the modeling that enhance the training capabilities. These are Environmental Effects, Plant Performance Parameters, Instructor Overrides and Computer Assisted Exercise Program (CAEP).

Environmental Effects are lake level, wind direction, wind speed, atmospheric pressure, outside air temperature, lake water temperature, turbine building air temperature, atmospheric humidity, grid voltage, and grid frequency. These parameters can be varied during the simulation and result in realistic effects on the main simulator models. For example, increasing lake water temperature will result in a decrease in condenser vacuum and a decrease in plant load. Varying grid voltage and frequency will effect generator load characteristics and the voltage and frequency of in-house electrical busses to the extent a real occurrence would in the plant.

Plant performance parameters represent tube fouling of the major heat exchanges in the plant, pumping efficiency of the major pumps, seal leakage for Main Feedwater Regulating Valves, spent fuel pool leakage, pressurizer heater degradation, core loading errors, and variations in normal RCS activity. Plant performance parameters can be changed only while the simulator is in freeze.

Instructor override capability allows the instructor to simulate the failure of any input or output of the control room instrumentation independent of the operation of the simulation model. This provides simulation of simple plant failures such as failed meter movement, failed light bulb and failed switch contacts. Items can be failed high or low (meters), on or off (switches and lights), or the instructor can direct failure "as is" so that no changes in status will occur.

Computer Assisted Exercise Program (CAEP) allows off line composition of a simulator scenario. This creates a library of preprogrammed exercises that will automatically step the simulator through a set of predefined operation and controls. This function provides standard, repeatable, and preplanned exercises. This feature is used for initiating transient sequences used for simulator testing.

(3) Malfunctions

A malfunction is a discretely simulated abnormality within a modeled system. Malfunctions are initiated by depressing the system key on the instructor's console and entering the number for the malfunction.

Air and water leak malfunctions have selectable leak rates that are continuously variable from 0 to the maximum value for the malfunction.

All malfunctions can be implemented with a time delay to initiation. Variable malfunctions may be implemented on a selectable ramp rate such that the malfunction magnitude starts out small and increases over time to the maximum value selected by the instructor.

The instructor can select three types of triggers for a malfunction. Direct activation from the instructor's console, remote activation from the hand held remote control device or conditional activation based on the logical status of a Boolean expression which the instructor composes at the instructor's console.

Any number of malfunctions may be inserted at a given time. Composite malfunctions, consisting of discrete malfunctions implemented as a group via Boolean expression, can create sequential failures or failures that are contingent upon a specific event occurring.

A list of the 195 malfunctions that can be initiated on the Ginna simulator is provided on Form GSS-2.13-3, List of Simulator Malfunctions, in the Instructor Interface Support attachment. Note that not all of the malfunctions available are used in the training program. The malfunctions used in the training program are selected on the basis of the INPO accredited training system development model. The Operational Assessment group evaluates Licensee Event Reports, vendor bulletins, Ginna operating experience and NRC bulletins and circulars to identify training concerns. New malfunctions are added as necessary to support the training objectives generated from this process. See form GSS 2.15-1 in the simulator performance test package for a list of the 172 malfunctions certified to meet ANS 3.5 - 1985.

(4) Additional Special Instructor/Training Features Available

Form GSS-2.13-4, "List of Control Functions", identifies those special instructor/training features used in the training program. The form is contained in the Instructor Interface Support attachment.

(5) Outside the Limits of Simulation (OTL)

Exceeding the limits established for key parameters will cause the light that would normally indicate a problem with the NRC telephone to turn on. A message is also displayed at the instructor console to alert the booth instructor. The instructor evaluates the situation and may continue training if appropriate.

A1.4 PLANT/SIMULATOR OPERATING PROCEDURES

Control Room Procedures:

A controlled copy of the plant procedures found in the plant control room is also maintained in the simulated control room. These procedures are not modified in any way and are used by the students as is.

The following groups of procedures are maintained as controlled copies in the simulated control room:

Administrative
Abnormal
Alarm Response
Emergency
Emergency Contingency Action
Equipment Restoration
Emergency Plan Implementing Procedures
Emergency Subsequent Function (CSFST)
Function Restoration
Health Physics
Maintenance
Overall Plant Operations
Precautions, Limitations and Setpoints
Primary Chemistry
Periodic Test
Radioactive Discharge
Refueling
Refueling Shutdown Surveillance
Reactor Plant Systems
Site Contingency
Turbine Plant Operations

Use of Procedures in Training:

A review of the procedures listed above was performed by the Training Staff to establish the role each group of procedures would play in the simulator training function.

The effect of a particular group of procedures on the simulator training function would be classified in one of three ways:

1. Procedure groups which would not be used because activities take place predominantly outside the control room or they govern activities not addressed by simulator training. These are:

   Administrative
   Health Physics
   Maintenance
   Primary Chemistry
   Radioactive Discharge
   Refueling
   Refueling Shutdown Surveillance
   Site Contingency

   The procedures issued by the plant are used by the simulator instructors and students.

2. Procedure groups which can be used entirely as is, either because they provide information or all of their activities are fully simulated. These are:

   Alarm Response
   Emergency
   Emergency Contingency Action (ECA)
   Emergency Plan Implementing Procedures
   Emergency Subsequent (ES)
   Function (CSFST)
   Precautions, Limitations and Setpoints

   The procedures issued by the plant are used by the simulator instructors and students.

3. Procedure groups which require supportive action from the instructor for their execution or have procedures which cannot be performed on the simulator. These are:

Abnormal
Equipment Restoration
Overall Plant Operations
Periodic Test
Reactor Plant Systems
Turbine Plant Operations

The procedures belonging to Group 3 above were further divided into three classifications. These classifications are:

MODIFIED - Procedure can be performed but some instructor action (LOA, MALF, etc) is required.

NO INSTRUCTOR ACTION - Procedure can be performed with no instructor action other than providing information. Procedure may direct operator to another procedure which does require operator action.

NOT SIMULATED - Procedure cannot be performed.

The simulator instructor's station has a copy of all the procedures that comprise Group 3 above. The index of each group of procedures is marked to indicate which of the procedures had MODIFIED action required, which require NO INSTRUCTOR ACTION, and which of the procedures address areas that are NOT SIMULATED.

It is the responsibility of the simulator instructor to review the procedures which will be used in his training scenario and adjust his training to minimize the use of NOT SIMULATED or MODIFIED procedures.

Modified Procedures:

Those procedures which are classified as MODIFIED, are changed in the following manner.

The procedure is placed in a binder that is kept in the instructor's station.

Each page of the procedure which can be performed as written is left without notation. A page which has steps on it that must be changed, has a facing page inserted before it. The facing page lists the step number and what action the instructor must take for that step to be accomplished. That action may be a Local Operator Action, Instructor Override or similar action. A step may have the notation NOT SIMULATED. When used within a modified procedures, the term NOT SIMULATED means the step cannot be performed but does not impact the ability to complete the procedure and that no control room indicators or alarms would indicate the steps completion.

A1.5 CHANGES SINCE LAST REPORT

This is the first certification report submitted by Rochester Gas and Electric Corporation. Therefore, there are no changes to address.

A2. Simulator Design Data

(1) Technical Manuals

A list of technical manuals is provided in the Plant Manuals section of the Simulator Configuration Management attachment.

(2) Drawings

A list of drawings used in the design of the simulator is provided in the Plant Drawings section of the Simulator Configuration Management attachment.

(3) Power Plant Data

Plant procedures provide the principle source of information on plant performance. A listing of the plant procedures used in the design of the simulator is provided in the Plant Procedures section of the Simulator Configuration Management attachment.

(4) Plant Modifications

A listing of plant modifications incorporated into the simulator are maintained by the Configuration Management System and provided in the Configuration Management attachment. Justifications of plant modifications with no impact on training are also maintained.

A3. Simulator Tests

Once per year a simulator operability test program is performed on the Master Training Disk to verify overall simulator model completeness, model integration, steady state accuracy, proper transient response, realistic malfunction response and real time simulation. The annual test program is governed by procedure. Tests are selected on the basis of features used in the Simulator Training Programs and the requirements of ANSI/ANS 3.5 - 1985. The abstracts provided contain the Simulator Modification (SM), or Trouble Report (TR) to which the problem was assigned. All Trouble Reports have been resolved. For target completion dates on SM's, refer to the Simulator Modification reports in the Configuration Management attachment.

A3.1 Computer Real Time Test

The Computer Real Time Test is run per Normal and Steady State Performance test 14.3.2. The abstract for this test provided in the Simulator Performance Test Attachment.

A3.2 Steady State and Normal Operations

(1) Steady State Stability Tests

The steady state operations verified are the those required by ANSI/ANS 3.5-1985, and those steady state operations (other than as required by ANSI/ANS 3.5-1985) required to support the Ginna Simulator Training Lesson Plans.

- For a listing of steady state operation tests, see Form(s) GSS-2.6-1, "Normal and Steady State Operations Test List", provided in the Simulator Performance Test Package.

- For a listing of parameters monitored and the results of normal operations test, see the abstract for the associated test in the Simulator Performance Test Package.

(2) Normal Operations Tests

The normal operations verified are those required by ANSI/ANS 3.5-1985, and those normal operations (other than as required by ANSI/ANS 3.5-1985) required to support the Ginna Simulator Training Lesson Plans.

- A listing of normal operation tests is provided in the Simulator Performance Test Package.

- For a listing of parameters monitored and the results of the normal operations test, see abstract for the associated test, provided in the Simulator Performance Test Package.

Note that two tests (Normal and Steady State tests 14.4.3.1 and 14.4.4.1) combine to meet the requirement of ANSI/ANS 3.5-1985 4.1 of checking accuracy at three points over the power range.

The operator conducted surveillance tests on safety related systems are listed below along with the related simulator test.

Simulator Performance Test		Surveillance Test
14.3.4.1	Nuclear Instrumentation System	PT-6.1 Source Range NIS PT-6.2 Intermediate Range NIS PT-6.3.1 Power Range NIS Ch 41 PT-6.3.2 Power Range NIS Ch 42 PT-6.3.3 Power Range NIS Ch 43 PT-6.3.4 Power Range NIS Ch 44
14.3.4.3	Control Rod Drive and RPI System	PT-1 Rod Control System
14.3.4.23	Process and Area Radiation Monitor System	PT-17.1 Area Radiation Monitors PT-17.2 Process Radiation Monitors PT-17.5 High Range Effluent Monitors
14.3.4.18	Diesel Generator System	T-27.4 Diesel Generator Operation
14.4.4.1	NSSS - BOP Energy Balance	O-6.3 Maximum Unit Power
14.3.4.6	Chemical and Volume Control System	O-6.11 Routine Operations Check Sheet

A3.3 Transient Tests

The transient tests verified were selected to verify the fidelity of the simulators response and establish baseline data.

(1) A listing of Transient tests performed on the R. E. Ginna Training Simulator is provided in the Simulator Performance Test Package.

(2) For a listing of parameters associated with the transient tests and/or the results of the transient tests, see the abstract for the associated test, provided in the Simulator Performance Test Package.

(3) The critical parameters for each test are captured in a data file, and plotted for analysis. The time resolution of the data captured meets the section B2 requirements of 0.5 seconds.

(4) An overview of the transient evaluation process is provided in the Simulator Performance Test attachment.

A3.4 Malfunction Tests

The malfunctions verified are the those required by ANSI/ANS 3.5-1985, and those malfunctions (other than as required by ANSI/ANS 3.5-1985) required to support the Ginna Simulator Training Lesson Plans.

(1) For a listing of Malfunction tests performed on the R. E. Ginna Training Simulator see Form GSS-2.5-1, "Malfunction Performance Test List", provided in the Simulator Performance Test Package.

(2) For a listing of parameters associated with the malfunction tests and/or the results of the malfunction tests, see the abstract for the associated test, provided in the Simulator Performance Test Package.

A4. Simulator Discrepancy Resolution

A set of Ginna Station Simulator (GSS) procedures identify the process followed to modify the simulator due to reference plant changes or identified discrepancies. The pertinent procedures are included in the Simulator Information attachment.

(1) Discrepancy Control

Initiation, evaluation and disposition of simulator discrepancies is controlled by procedure. Any individual who observes a discrepancy on the simulator has the right to submit a Simulator Discrepancy Report (SDR). The SDR is logged, evaluated by training for validity and a priority is assigned. The Simulator Hardware/Software Group determines if hardware, software or both are affected. Valid SDR's that cannot be corrected in the near-term are addressed by initiating a Simulator Modification (SM). Once a Simulator Modification is initiated, the SDR which generated it is closed out and the corrections are tracked using the SM. The originator receives a copy of the completed SDR indicating disposition.

All changes to the simulator are tested by individuals not associated with the implementation of the change. The written test procedure is filed with the associated SM or SDR. Existing test procedures may be utilized, or new tests created, as appropriate.

(2) Plant Modifications - Tracking and Control

Configuration changes made to the Ginna plant are approved by one of two processes. Major changes, which are initiated and controlled using Engineering Work Requests (EWR). Minor changes are initiated and controlled using Technical Staff Requests (TSR).

Gathering of data on plant changes, evaluation of that data and initiation of Simulator Modifications is governed by procedure. Change data is collected in a Plant Configuration Change (PCC) file. A PCC file is evaluated by the training group to determine the impact and validity of the change to simulator training. The Simulator Support Group determines the hardware and software changes that must be made to incorporate the change on the simulator. An annual review is conducted by the Simulator Review Committee to identify those plant configuration changes that will be incorporated into the simulator model.

When it is determined that a plant change must also be installed on the simulator, a Simulator Modification is initiated. Tracking and control are performed using the procedure governing Simulator Modifications.

(3) Control of Simulator Design Data Base

The Simulator Design Data Base is maintained under administrative control. The data base is upgraded based on plant change data, and simulator modification data. The incorporation of data via the plant change/simulator modification process should ensure the Simulator Design Data Base is current. However, as a further safeguard, the Design Data Base list is reviewed against the equivalent plant data lists to verify revision levels and to identify any additions or deletions that should be made to the list.

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT

ATTACHMENT 1

SIMULATOR INFORMATION

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

FORM GSS-2.15-6
PLANT VS. SIMULATOR SYSTEM CROSS-REFERENCE

COVER SHEET
PART 1 - MODELED SYSTEMS

Prepared by: Date: Ron Fellows Date: 19 Oct 1990

Reviewed by: [signature] Date: 2-14-91
Simulator Test Coordinator

PLANT ID NUMBER	SYSTEM NAME	SIMULATOR ID SYMBOL
AFW	Auxiliary Feedwater System	FDW
BA	Boric Acid System	CVC
CHG	Charging System	CVC
CW	Circulating Water System	CRC
CCW	Component Cooling Water System	CLG
CPD	Condensate Demineralizer System	CND
CNDST	Condensate System	CND
CI	Containment Isolation System	MIS
	Containment Penetration Cooling System	MIS
CVI	Containment Ventilation Isolation System	CNM
	Containment Ventilation System	CNM
	Control Room Ventilation System	MIS
D/G	Diesel Generator System	GEN
EHC	Electrohydraulic Control System	TUR
MFW	Feedwater System	FDW
GEN	Generation System	EDS
	Generator Seal Oil System	EDS
FP	Fire Protection System	MIS
IAS	Instrument Air System	MIS

FORM GSS-2.15-6
PLANT VS. SIMULATOR SYSTEM CROSS-REFERENCE

PLANT ID NUMBER	SYSTEM NAME	SIMULATOR ID SYMBOL
LTDN	Letdown System	CVC
WDL	Liquid Radwaste System	MIS
MS	Main Steam System	STM
PPCS	Plant Process Computer System	PPCS
WT	Primary Water Treatment System	CND
RMS	Radiation Monitoring	RMS
RCS	Reactor Coolant System	RCS
RMW	Reactor Makeup Water System	CVC
RPS	Reactor Protection System	RPS
RHR	Residual Heat Removal System	RHR
RSC	Rod Control System	ROD
SAS	Safety Assessment Computer System	SAS
SIS	Safety Injection System	SIS
SA	Service Air System	MIS
SW	Service Water System	CLG
SFP	Spent Fuel Pool Cooling System	CLG
SDS	Steam Dump System	STM
S/G B/D	Steam Generator Blowdown System	SGN
TGSS	Turbine Gland Seal and Exhaust System	TUR
	Turbine Lube Oil System	TUR
SAFW	Standby Auxiliary Feedwater	FDW
PRZR	Pressurizer	PZR
CS	Containment Spray	MIS
NIS	Nuclear Instrument	NIS

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

FORM GSS-2.15-6
PLANT VS. SIMULATOR SYSTEM CROSS-REFERENCE

COVER SHEET
PART 2 - SYSTEMS NOT MODELED, BUT FUNCTIONS SIMULATED

Prepared by: Date: Ron Fellows Date: 19 Oct 1990

Reviewed by: Date: [signature] Date: 2-14-91
Simulator Test Coordinator

PLANT ID NUMBER	SYSTEM NAME	SIMULATOR ID SYMBOL
BA	Boric Acid Heat Tracing System	CVC
	Bus Duct Cooling System	EDS
	Main Condenser Sealing Water System	CND
VP	Vacuum Priming System	CRC

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

FORM GSS-2.15-6
PLANT VS. SIMULATOR SYSTEM CROSS-REFERENCE

COVER SHEET
PART 3 - NOT SIMULATED

Prepared by: Date: Ron Fellows Date: 19 Oct 1990

Reviewed by: Date: [signature] Date: 2-14-91
Simulator Test Coordinator

PLANT ID NUMBER	SYSTEM NAME	SIMULATOR ID SYMBOL
	Chilled Water System	
	Containment Penetration Pressurization System	
	Gas Analyzer System	
	Gaseous Radwaste System	
HSS	House Heating Steam System	
RECOMB	Hydrogen Recombiner System	
NSS	Nuclear Sampling System	
PASS	Post Accident Sampling System	
	Secondary Chemical Addition System	
	Service Building Hot Water System	
WDS	Solid Radwaste System	
	Turbine Plant Sampling System	

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

FORM GSS-2.15-5
SIMULATOR DISCREPANCY & UPGRADE PROGRAM

The simulator discrepancy resolution and upgrade programs are described in the following procedures:

- o GSS-1.1, "Simulator Modification Control"
- o GSS-1.4, "Simulator Discrepancy Reporting"
- o GSS-1.7, "Request for Simulator Enhancement"
- o GSS-3.0, "Simulator Data Base Control"

A copy of those procedures is attached to this form.

ROCHESTER GAS & ELECTRIC CORPORATION

GINNA STATION SIMULATOR

PROCEDURE NO. GSS-1.1 REV. NO. 3

SIMULATOR MODIFICATION CONTROL

Prepared By: William R. Dobbs Date: 8/20/90

Technical Review: S Lance Hubbard Date: 8/28/90

Technical Review: Dan Hult Date: 8/28/90

Approvals:

Systems and Services: Diane S Pierle Date: 9/13/90

Ginna Training: Robert A Carroll Date: 9/7/90

Effective Date: 9/24/90

1.0 PURPOSE

To establish the guidelines for the initiation, design, tracking, testing, implementation and documentation of modifications to the Ginna Simulator.

2.0 DEFINITIONS

Refer to GSS-1.0, Ginna Station Simulator Procedures, for a list of the terms and abbreviations used in this procedure.

3.0 INSTRUCTIONS

3.1 Initiating a Simulator Modification (SM)

3.1.1 Source of SM

It is intended that an SM be initiated from one of three possible sources. These sources as well as a discussion of each follows:

a. Plant Configuration Changes (PCC's)

As modifications to the simulator's reference plant are made via whatever means, appropriate engineering and training evaluation of these modifications may result in the necessity to implement similar modifications to the simulator.

NOTE: This type of SM will require an update of the simulator design data base.

b. Simulator Discrepancy Reports (SDR's)

As a result of feedback from a simulator user, a problem with the current simulation system may be identified. A review of the problem may result in the initiation of a SM to resolve the discrepancy. The SDR process is described in GSS-1.4 "Simulator Discrepancy Reporting".

c. Request for Simulator Enhancement (RSE's)

It may become desirable to enhance the Simulation beyond its current capabilities. RSE's are initiated and processed according to GSS-1.8 Request for Simulator Enhancement Procedure.

NOTE: This type of SM may result in an update of the simulator design data base, may result in the elimination of simulation design simplifications or assumptions or may extend the scope of simulation.

3.1.2 SM Initiation

Once the need for an SM has been identified, the SGSS (or designee) shall assign a control number, insert a record into CMS for the SM, and establish an SM package.

At this point the CMS entry shall contain at a minimum:

- SM control number
- Date initiated
- Title
- Source (PCC-xx-yyy, SDR-xx-yyy or RSE-xx-yyy where xx = year designation, yyy = sequence number)

The title of the SM shall be the same as the title or description of the source document.

The Simulator Modification Status Summary (SMSS) form (see attachment A) shall be used to track the status of each SM as well as provide a cover sheet for each SM Package. At this point the following should be completed on the SMSS:

- SM control number
- Title
- Source Identification (PCC,SDR or RSE & control numbers)

The SGSS (or designee) shall then sign and date the SMSS and forward to the SST.

3.2 <u>Assignment of Priority, Installation Dates and Conceptual Design Requirements.</u>

It shall be the responsibility of the SST to assign a priority to each SM, a required installation date (RID) to meet NRC/INPO training commitments or federal regulations, a target installation date (TID) which may be earlier than the RID, and the necessity for the SSG to provide a written conceptual design for the SM. The purpose of the TID is to allow the training department flexibility in requesting that modifications be installed earlier than regulations or commitments may require. (Note that priority, installation dates and conceptual design requirements may be changed later by use of Attachment C which is explained in 3.5 below.)

The priority of those SM's initiated via SDR's or RSE's shall be the same as the priority of the SDR or RSE as assigned according to GSS-1.4 or GSS-1.8 and will be indicated on the SMSS form.

For SM's that originate via plant configuration changes, (PCC's), the priority assigned should be based on training impact and utilize the same guidelines utilized in assignment of priorities to SDR's.
The SSG shall prioritize their work based on priority of SM's, deadlines imposed by regulatory requirements and availability of resources.

Once the priority has been assigned, the SST shall indicate the RID on the SMSS form.

This date shall be based on the following:

Priority 1 - Urgent - Date is not applicable. Due to the severity of the problem, no training shall be conducted until the problem is resolved. This shall be indicated on the SMSS form by writing "ASAP" in place of the date.

Priority 2 - High - Date shall be the earlier of: 1 month from date of initiation or the date of the next cycle of training/examination scheduled that cannot be conducted without installation of this SM.

Priority 3 - Medium - Date shall be 6 months from date of initiation or in the case of SM's initiated via PCC's, 12 months from the date of initiation.

Priority 4 - Low - Date shall be 1 year from date of initiation.

If at some later time other SDR's or RSE's are added to the SM which are of higher priority, the SM priority will elevate to that of the highest level SDR or RSE being added.

In the case where an SDR or RSE is added to an SM, a new RID shall be determined utilizing the above priority scheme with the "date of initiation" being taken as the date at which the SDR/RSE is being added. The SM's date for installation shall then become the earlier of the original date for installation or the date required by the addition of the SDR/RSE.

A TID shall be determined which in most cases will be midway between the date of initiation and the RID. If it is desired to have the SM installed earlier than this a written request from the SST shall be attached detailing the desired date and reason for requesting an earlier date.

The SST shall indicate on the SMSS form the necessity of providing a written conceptual design to the training department for their review/approval. It is anticipated that those SM's originating from SDR's will not require a conceptual design document since the purpose of the SDR is to note a discrepancy between the simulator and its design. For those SM's originating from RSE's, the RSE itself shall be the basis for the conceptual design document if required.

The SST then completes section II of the SMSS and updates CMS with this information. The SMSS form is signed and dated and returned to the SGSS.

3.3 Workload and Resource Evaluation

Upon receipt of the SMSS form from the SST, the SGSS evaluates the current workload and resources needed to meet the TID.

If in the opinion of the SGSS, the TID cannot be met, the SGSS shall notify the SST in writing providing explanation as to why the TID cannot be met and suggesting an alternate date. If this alternate date is not acceptable, then discussions between the SST, SGSS and their supervision must take place until an agreed upon date is found. The purpose of this notification is to allow the SST to cancel/reschedule affected training if necessary.

Note that due to resource availability, it may be such that the proposed TID could be later than the RID. Comparing the current date to the TID and RID dates will indicate which SM's are behind schedule and which are overdue respectively.

3.4 SM Conceptual Design Preparation and Review/Approval

If a written conceptual design has been requested, it shall be prepared by the SSG, and submitted to the SST and CMC for review/approval. The preparer of the conceptual design should consider the following for inclusion:

- changes to Simulator Documentation, Section 10 "Simulation Model Programs" subsections 1 thru 11.1 of these documents
- physical changes to the simulator MCB or simulator control room
- changes to instructor system features including Local Operator Actions, I/O system overrides, Malfunctions, Environmental Parameters and Plant Performance Parameters.

Attachment B shall be used as a cover sheet for the conceptual design. Once all comments have been resolved, approval of the conceptual design shall be indicated by signature of the CMC and SST on the cover sheet. The approved conceptual design shall then become part of the SM package.

3.5 Changes to SM Scope, Priority and/or Target Installation Date

Changes to the original SM scope, priority or installation dates may occur after initiation of an SM. These changes shall be documented utilizing an SMSS Addendum form (see Attachment C). This form shall be filled out jointly by the SST and SGSS and attached to the SMSS or any previously attached addenda. If an addendum is added, the SMSS or any previously attached addenda shall indicate such.

3.5.1 Change to SM Scope

It is possible for the scope of an SM to change some time after the SM was initiated. The reasons for this may include but is not limited to:

- addition of PCC, SDR, or RSE to scope of original SM
- receipt of new data related to the SM that requires a change of scope
- changes requested by SSG and/or training department

A change in scope may require a change in priority, RID, TID, and/or the need for a new/revised conceptual design. The scope of an SM should not change once formal testing commences.

Acceptance of the proposed changes shall be indicated by modifying the SMSS to indicate that the scope change is attached, signatures of both the SST and SGSS, and attachment of the form to the SMSS. Information on this form shall supersede any data on the SMSS and any preceding SMSS Addenda forms attached.

The SGSS shall utilize the attached SMSS Addendum to update CMS.

3.5.2 Change of SM Priority

Allowance must be made for changing the priority of an SM after being initiated. The reasons for this may include but are not limited to:

- review of "past due" SM's
- need to perform training affected by the SM

The SST shall review SM's that have not been installed by their TID and shall determine the need for elevating their priority.

A change in priority may be requested through the SST. Discussion between the SST and SGSS may result in a change of the priority with the results of the discussion being documented by attaching an SMSS Addendum.

The SGSS shall update the SM's CMS entry if the priority has been changed. Note that a change in priority may result in an update to the RID and/or TID.

3.5.3 Change in TID

The TID may be changed by attaching an SMSS Addendum and providing justification for the change. Acceptance of the change will be documented by signatures of the SST and SGSS on the addendum and attachment of the addendum to the SMSS or previous addenda (if any).

3.6 <u>SM Software/Hardware Design Documents</u>

Software and/or hardware design documents shall be prepared, the necessity of either being determined by the scope of the changes required by the SM. At a minimum, any software design package shall detail the following:

- all source/data files changed as a result of the SM
- all batch tasks processed to incorporate the changes
- all task activations needed to incorporate the changes

The detail provided shall be sufficient that a software engineer familiar with the simulator software system should be able to install the SM by only referencing the software design.

A hardware design package shall at a minimum include the following:

- description of all changes related to the simulator MCB bill of materials
- description of changes related to overall simulator control room appearance/layout
- changes to simulator MCB drawings

All software modifications shall be made in accordance with GSS-1.5, "Simulator Software Modification Control."

Any design packages created shall become part of the SM Package.

3.7 SM Software and Hardware Modifications

3.7.1 Hardware Changes

Installation of hardware may proceed upon receipt of hardware and during development of the hardware change package as long as such installation does not detract from training and is still compatible with the current training software. Hardware that is installed but is non-functional due to pending software changes shall be tagged as being out of service. The tag shall indicate the SM number under which the SM is being installed. The tag shall be removed only when the SM has been tested and accepted by the training department.

3.7.2 Software Changes

The SSG shall make software changes related to the SM in accordance with procedure GSS-1.5 "Simulator Software Modification Control". The SSG shall perform preliminary testing during the software development cycle making software corrections as necessary. Once the SSG is satisfied that the SM is ready for formal training department testing, the software changes shall be incorporated onto a testing disc.

3.8 SM Ready for Training Department Testing

Once the appropriate design packages are complete, any hardware changes completed, and any software modifications have been installed, the training department shall be informed that the SM is ready for testing.

3.9 Simulator Modification Testing

All SM's shall be tested by the training department utilizing a written test procedure prior to being implemented on a disc used for training. Attachment D shall be used as a cover sheet for the SM test and shall identify the following:

- the person preparing the test
- approval for use
- the date the test was performed and by whom
- acceptability of test results
- SST acceptance of results

In preparing the test, consideration should be given to the need for testing any of the following:

- Digital and analog inputs/outputs
- Malfunctions
- Instructor Override capability

- Local Operator Actions
- simulated loss of power
- recorder power off functioning
- logic response
- dynamic response
- steady state response
- transient response
- mass balance

It is desirable to utilize an existing test procedure if possible. If this is not possible, then modifying an existing procedure should be considered. If neither of these are possible, a new procedure must be developed.

Once the test procedure has been prepared for the SM, it shall be submitted to the SST with Attachment C as a cover sheet. The SST shall indicate approval for use in testing the SM by signature on the cover sheet.

3.10 Conduct of the Test

Testing can take place after the test procedure has been approved and the training department has been notified that the software/hardware changes are ready for testing. Note that it is anticipated that the testing/design change process will be iterative in nature. During the conduct of the test, problems may be discovered which may be corrected and then retested. The person(s) responsible for the SM design packages shall update these packages as further changes are made.

3.11 Test Results Review & Approval

At the completion of testing, there are two possible outcomes:

- test results acceptable and no further design changes are needed
- test results are acceptable for training use although problems have been identified and SDR's issued to identify and track problems

The individual performing the test shall discuss the results with the SST with the final analysis being indicated on the cover sheet along with signature of the SST indicating concurrence. The original or a copy of the completed test procedure shall be forwarded to the SGSS which shall serve as notification that the SM is ready to be incorporated for training use. This test procedure shall then become part of the SM package.

3.12 Incorporation of SM for Training Use

The SMSS form shall be updated indicating that the testing has been completed and the following shall take place:

- software changes (if any) shall be incorporated on the MTD utilizing the appropriate software design package
- any SM related hardware changes on the MCB that were tagged as being non-functional, shall have tags removed (Note: It may happen that although the SM has been accepted, problems documented on SDR's may indicate that a MCB item is not functioning properly. In this case the original tag installed on the item should be replaced/updated to indicate that a problem exists which shall be corrected at a later date under a new SM or SDR.)

3.13 Notification of SM Implementation

Whenever an SM is incorporated for training use, the SST and CMC shall be notified within 1 week. This notice should provide a brief description of the change brought about by the SM. Upon receipt of this notification, it shall be the responsibility of the SST followup on tag removals/updates, changes in training restrictions and instructor notifications concerning the SM. The SMSS form and CMS shall be updated to indicate the dates that the SM was implemented for training use and the date that the notification was issued.

3.14 Documentation/Database Updates

A documentation/database update package shall be included as part of each SM Package indicating what documentation or database entries must be modified per the SM. Once the SM is implemented, all appropriate documentation/database entries must be updated. Note that some documents, specifically hardware drawings and wire lists should be updated upon modification of the hardware. This is necessary due to the "irreversible" nature of some hardware work. Attachment E indicates the areas that must be considered for update as well as the responsible administrator for each area. Ginna Station Simulator procedure GSS-3.0 identifies database sections and responsibilities for updating.

Once all sections of the Documentation/Database Package have been completed and signed, the person responsible for the SM indicates such by date on the SMSS form. The SM Package is then forwarded to the SGSS (or designee) for closeout.

3.15 SM Closeout

It is the responsibility of the SGSS to review the completed SM Package for clarity, legibility and completeness prior to closeout. At a minimum each SM package shall include the following:

- SMSS form & any addenda
- Conceptual Design (if required by SST)
- Software Design (if software changes were made)
- Hardware Design (if hardware changes were made)
- Completed Test Procedure (copy is acceptable)
- Completed Documentation/Database Update Package

Once the final package is approved the SGSS shall closeout the SM by signing the appropriate block on the SMSS form. The SM package will than be transferred to a file of closed SM's. The CMS entry shall also be updated indicating the SM closure.

4.0 RECORDS

There shall be three means of recording SM activities. These are the files containing SM packages, CMS and Ginna Plant Central Records.

All active SM packages will be kept in file cabinets located within the simulator building unless being used.

Closed out SM packages shall be archived in Central Records as "Life of Plant" records.

CMS contains information about the status of each SM and provides a link to its originating document.

GSS-1.1 ATTACHMENT A

SIMULATOR MODIFICATION STATUS SUMMARY

I. SM - ____ - _____ Source: _____ - ____ - _____

Title: _____

_____ _____
Initiated by Date

II. Priority: _____ Required Installation Date: _____

Target Installation Date: _____

Conceptual Design Required: [ ] Yes [ ] No

_____ _____
SST Date

III. Conceptual Design Approved: _____
Revision #

_____
Date

IV. SM Test Results Accepted: _____
Date

SM Implemented for Training Use: _____
Date

Notification Issued: _____
Date

Documentation/Database Updated: _____
Date

SM Closed: _____ _____
SGSS Date

SM Addenda Attached: [ ] "Yes" if checked

GSS-1.1 ATTACHMENT B

SIMULATOR MODIFICATION CONCEPTUAL DESIGN

TITLE: _____

SM - ____ - ____

REVISION: _____

_____ _____
Prepared By Date

_____ _____
Approved (CMC) Date

_____ _____
Approved (SST) Date

GSS-1.1 ATTACHMENT C

SMSS ADDENDUM

SM - ____ - ____ Addendum # _____

Reason for Change:

[ ] Scope Change (Complete sections I, II and III)
[ ] Priority Change (Complete Sections II and III)
[ ] TID Change (Complete Section III)

I. Is a new conceptual design required: [ ] Yes [ ] No

If "yes", indicate revision number of Conceptual Design being superseded: _____

If "no", is a Conceptual Design now required? [ ] Yes [ ] No

Explanation:

Conceptual Design Approved: _____ _____
Revision # Date

II. Indicate new priority: _____ New RID: _____

Justification/explanation:

III. Indicate new TID: _____

Justification:

_____ _____
Acceptance (SGSS) Date

_____ _____
Acceptance (SST) Date

Additional Addenda Attached: [ ] (Yes if checked)

GSS-1.1 ATTACHMENT D

SIMULATOR MODIFICATION TEST PROCEDURE

SM - ____ - ____

SM Title _____

_____ _____
Prepared By Date

_____ _____
Approved for Use (SST) Date

_____ _____
Performed By Date

Test Results:

_____ - Test Completed Satifactorily

_____ - Test results acceptable with Simulator Discrepancy Reports identified below written for correction of problems found:

_____

_____

_____ _____
Accepted (SST) Date

GSS-1.1 ATTACHMENT E

DATABASE UPDATE REQUIREMENTS PER SM-___-___

As a result of the implementation of this simulator modification the following require updating:

SIMULATOR FUNCTIONS DATABASE - (SGSS responsibility)

Section	Title	Date Completed

Date _____ SGSS _____

SIMULATOR FUNCTIONS DATABASE - (SST responsibility)

Section	Title	Date Completed

Date _____ SST _____

Page ___ of ___

DATABASE UPDATE REQUIREMENTS PER SM-___-___

SIMULATOR DESIGN DATABASE - (CMC responsibility)

DRAWINGS:

Number	Rev	Title	Date Completed

PROCEDURES:

Number	Rev	Title	Date Completed

MANUALS:

Number	Rev	Title	Date Completed

Date _____ CMC _____

Page ___ of ___

DATABASE UPDATE REQUIREMENTS PER SM-___-___

CERTIFICATION DOCUMENTS (SST responsibility)

Section	Rev	Title	Date Completed

Date _____ SST _____

INSTRUCTOR SUPPORT FEATURES (SST responsibility)

Rev #/Date	Title	Date Completed

Date _____ SST _____

Page ___ of ___

ROCHESTER GAS & ELECTRIC CORPORATION

GINNA STATION SIMULATOR

PROCEDURE GSS-1.4 REV. 3

SIMULATOR DISCREPANCY REPORTING

Prepared by: Dan Hulett Date 3/31/90

Technical Review: William Dobbins Date 4/10/90

Technical Review: S L Hubbard Date 4/16/90

Approvals:

Systems and Services: Duane S Pisa Date 4/23/90

Ginna Training: Robert A Carroll Date 5/3/90

Effective Date: 5/3/90

This procedure contains 7 pages plus 3 attachments

1.0 PURPOSE

This procedure describes the process to be followed when a discrepancy between the Ginna Station and the Ginna Simulator is identified.

2.0 DEFINITIONS

Refer to GSS-1.0, Ginna Station Simulator Procedures, for a list of the terms and abbreviations used in this procedure.

3.0 INSTRUCTIONS

3.1 SDR Initiation

3.1.1 Any person associated with the Ginna Station Simulator, who observes a difference in the function or appearance of the simulator as compared to the current simulator database or the performance of the plant, should document the discrepancy on Section I of Attachment A-Simulator Discrepancy Report.

3.1.2 The SDR number is obtained by consulting the SDR index located in the front of the SDR notebook. The next sequential number is recorded in the index in the format YR-NNN, where YR is the two character year designator and NNN is the sequential number for the SDR for that year. For example, SDR 89-056 would be the 56th SDR submitted in 1989. A short title summarizing the discrepancy is also recorded in the index.

The SDR number is then recorded on the top line of the SDR form along with the date and the name of the originator.

3.1.3 The contents required of each part of Section I are described below:

A. IC number and Simulator Status

This information may be useful to recreate the conditions under which the problem was observed. Information regarding active malfunctions, instructor overrides, or recently issued commands would be appropriate for this part.

B. Title

The title entered in the index is repeated here. The intent of the title is to provide a short synopsis of the nature of the problem.

C. Discrepancy

The detail of the behavior or condition observed is stated in this part as well as the expected behavior or condition.

D. Reference

The basis for the statement of expected behavior or condition is recorded here. If a wiring or piping diagram was consulted in making the determination, then it should be referenced. If the reference is not widely available (i.e. plant PPCS transient plots), then a copy should be appended to the SDR form.

E. Training Impact

Training that cannot be conducted until the discrepancy is corrected is identified here. Include objectives, reactivity manipulations, or examination scenarios that are affected. The information provided here is also used as a basis for assigning a priority level in part F.

F. Recommended Priority

Attachment C describes the four priority levels that are considered in addressing simulator issues. The priority scheme focuses on the simulators ability to provide effective training. The impact on training is considered, and the box checked for the recommended priority. If the originator is not a member of the training organization, this part may be left blank.

G. Forward to Supervisor - Simulator Training

The SDR is forwarded to the SST upon completion of Section I.

3.2 SST Evaluation

3.2.1 Section II is completed by the SST. The appropriate entries from section I are entered into CMS.

3.2.1.1 The SST evaluates the SDR to determine if the discrepancy is valid. The reference data provided by the initiator should provide adequate justification for a change in simulator configuration. If supporting data cannot be obtained, the SST may reject the SDR, or may request a determination of the validity of the discrepancy by the Simulator Review Committee.

3.2.1.2 If the problem is determined to be valid, the box for "Forwarded for correction" is checked and a priority is assigned. The recommended priority and training impact are to be considered, but the final priority determination is the responsibility of the SST.

3.2.1.3 The code for the type of problem is obtained from the list below and entered in the blank provided.

TYPE	DESCRIPTION
A	Simulator Performance
B	Physical Fidelity
C	Simulator Control Features
D	Other

3.2.1.4 Valid SDRs are forwarded to the SSGL.

3.2.2 SDRs that identify desired enhancements to the simulator are processed per GSS-1.7, Request for Simulator Enhancement. The RSE number is noted on the SDR form and the SDR is closed out per Section VI.

3.2.3 If the discrepancy is not valid, then the rejected box is checked along with the box representing the basis for the determination.

The standard options are:

Previously Identified

The discrepancy has been identified on another SDR, or is being addressed by an SM. The number of the document addressing the problem is noted in the remarks section.

Not Reproducible

The problem could not be duplicated during troubleshooting.

Not Valid

The discrepancy is determined to be invalid. An explanation is to be provided in the remarks section.

Valid - No action taken

The observed discrepancy is valid, but no action will taken to resolve it. An example of this classification would be an item determined to have not enough training value to justify the expense of correction. The remarks section will be used to explain such a classification.

Other

SST actions not covered by the above classifications are of this type. Details are provided in the remarks section.

3.2.3.1 Additional information is provided in the remarks section as necessary to make the reason for closing the SDR clear. The SDR is then closed out per Section VI-SDR Closeout.

3.2.3.2 The SST shall determine if an operator aid tag is needed to identify the discrepancy to the simulator users. The SST shall establish a system to install and remove these tags.

3.2.4 The SST shall notify simulator instructors of training restrictions via memorandum. Current memos will be filed in the Simulator Instructor Notebook, located in the Simulator Instructor Booth. The SST will review active memos at the beginning of each requalification cycle on the simulator (approximately every seven weeks) and remove any memos that are no longer valid. The SST will signify his review on a comment sheet at the front of the memo section.

3.2.5 The SST signs the SDR upon completion of the Section II evaluation.

3.3 SSGL Evaluation

3.3.1 The SSGL documents the actions taken to address the discrepancy in Section III, updates CMS, and signs the form. The box for the option selected is checked, and any amplifying remarks are added.

The standard options are:

Control Transfer

Control of the discrepancy resolution can be transferred to a process addressed in another procedure.

EMR

The problem is repair of existing hardware not addressed as part of an open SM or open plant modification and is to be processed per GSS-1.2, Equipment Maintenance Request. The EMR number is recorded in the blank provided, and the SDR is returned to the SST for closeout.

SM initiated

Simulator Modifications are normally reserved for changes that involve a change in the scope of simulation. The SSGL may deem that a work package is appropriate to correct a discrepancy, even though the scope is not affected, due to the complexity of the job. A copy of the SDR is included in the SM package, the SM number is added to the SDR form, and the SDR is returned to the SST for closeout.

Assigned to open SM

A discrepancy may be incorporated into an SM that is in progress. A copy of the SDR is included in the SM package, the SM number is added to the SDR, and the SDR is returned to the SST for closeout.

To CMC for PCC evaluation

An SDR may be the result of a modification in the plant. If the modification is not related to an SM that is being worked by the SSG, then the SDR is forwarded to the CMC for evaluation.

The results of the CMC evaluation is recorded in the space provided and the SDR is forwarded to the SST. The SST then reevaluates the SDR.

Corrective Action

This part informs Training that the discrepancy has been addressed and is ready for testing.

Ready for testing

Discrepancy corrections are normally made to a test disk. When this has been done, the test disk identification number is recorded on the form and the SDR is forwarded to the SST for testing.

Correction for addition to MTD

The SST may authorize a correction be made directly to the Master Training Disk. When the SSGL desires to utilize this option, this block is checked and the form is returned to the SST. The correction must be implemented and tested before the MTD can be used for training. The SST is responsible for scheduling the

corrections that involve the MTD.

Other

SSGL actions not covered by the above classifications are described in this space. If reevaluation by the SST is desired, or a Training Value evaluation is required, it would be stated here. The SDR form is then returned to the SST.

3.4 Section IV documents the testing done to accept changes resulting from SDRs. The SST is responsible for all tests performed to determine the acceptability of the simulator for training.

3.4.1 If the test is unsatisfactory, the test results form is attached to the SDR and the package is forwarded to the SSGL.

3.4.2 Satisfactory completion of the test is indicated by the tester's signature. The completed test is forwarded with the SDR to the SSGL.

3.5 Section V documents the transfer of corrections to the MTD. The date of the transfer is recorded by the SSGL and the SDR is forwarded to the SST for closeout.

3.6 Section VI is used by the SST to signify the closeout of the SDR. The SST ensures that Operator Aid Tags and training restrictions, imposed as a result of the SDR, are removed. The SST shall review the SDR to ensure that the reason for closing the SDR is clear. The SST forwards a copy of the SDR to the originator to serve as notification of action taken and updates CMS.

4.0 RECORDS

4.1 SDR Log Book

An SDR log shall be maintained by the SST. The log shall contain an index with the following information:

A. SDR number
B. Title
C. Date initiated

The format for the index is provided in Attachment B. The SDR log will also contain open SDRs when they are not being processed.

4.2 Closed SDRs

4.2.1 The SST will maintain a file of all closed SDRs.

4.2.2 The SST will submit closed SDRs to Central Records on an annual basis.

4.3 Active SDR Listing

The SST will maintain a listing of active SDRs in the simulator control room for the reference of simulator users.

4.4 CMS table SDRS

Tracking of SDRs is done in CMS table SDRS. It is the responsibility of the SST and SSGL to maintain this database.

GSS-1.4 Attachment A - Simulator Discrepancy Report

I. Originator_____ Date: _____ SDR# ____

A. IC number: ____ Simulator Status: _____

_____

B. Title: _____

C. Discrepancy:

D. Reference:

E. Training Impact:

F. Recommended priority: [] Urgent [] High [] Medium [] Low

G. Forward to Supervisor - Simulator Training

II. SST Evaluation

[] Forwarded for correction Priority: _____ Type: _____

[] Request for Simulator Enhancement submitted: RSE#_____

[] Rejected due to:
- [] Previously Identified
- [] Not reproducible
- [] Not Valid
- [] Valid - No action taken
- [] Other

Remarks:

Operator Aid Tag required? NO YES Tag number: _____

SST _____ Date_____

III. SSGL Evaluation

[] Control transfer: [] EMR EMR# _____
[] SM initiated
[] Assigned to open SM SM# _____

[] To CMC for PCC evaluation

CMC action: [] New PCC opened PCC# _____
[] Added to existing PCC
[] Other

Remarks:

Forwarded to SST: CMC _____ Date _____

[] Corrective Action Taken:

[] Ready for testing Test disk ID# _____

[] Correction for addition to MTD

[] Other

SSGL _____ Date _____

IV. Acceptance Test Passed (attach all test results form)

Tester: _____ Date _____

V. Master Training Disk Updated

SSGL _____ Date _____

VI. SDR Closeout

[] Operator Aid Tag removed _____ Date _____

[] Training Restrictions removed _____ Date _____

[] Copy to initiator

[] CMS updated

SDR Closed: (SST) _____ Date _____

GSS-1.4 ATTACHMENT B - SDR LOG INDEX

SDR Number	Date	Title (Brief Description)

GSS-1.4 ATTACHMENT C - SDR PRIORITY CRITERIA

1. URGENT

A problem exists that prevents use of the simulator for training or examinations. Examples of this class of problem would include part or all of the simulation not functioning (lock-ups) or major plant equipment inoperative (SI Pumps, Main Turbine, or AFW Pumps).

The severity of the problem should be such that a suspension of simulator training and examination activities is warranted until the problem is resolved.

2. HIGH

1. A problem prevents accomplishment of a specific training objective or examination item, and an alternative method of accomplishment can not be identified.

2. An incorrect plant response creates a significant distraction from the intended training or examination scenario.

3. A problem results in negative training. That is, the trainee learns an incorrect response for a given situation due to the presence of the problem.

3. MEDIUM

1. A problem prevents accomplishment of a specific training objective or examination item, but the instructor can compensate for the problem and accomplish the objective or item.

2. A difference between the simulator and the plant exists that can be recognized by the least experienced qualified crew member during emergency operations.

3. A problem that relates directly to a certified simulator feature shall be classified as no less than a Medium priority. The SST will maintain a list of certified simulator features.

4. LOW

Problems not meeting any of the above criteria default to this classification.

ROCHESTER GAS & ELECTRIC CORPORATION

GINNA STATION SIMULATOR

PROCEDURE GSS-1.7 REV. 0

REQUEST FOR SIMULATOR ENHANCEMENT

Prepared by: Dan Hulett Date 4/30/90

Technical Review: William Dobbins Date 5/21/90

Technical Review: S Lance Hubbard Date 5/22/90

Approvals:

Systems and Services: Duane L Pierce Date 5/25/90

Ginna Training: Robert L Ramond Date 5/31/90

Effective Date: 6/5/90

This procedure contains 3 pages plus 2 attachments

1.0 PURPOSE

This procedure describes the process to be followed when an enhancement to the Ginna Station Simulator is desired.

2.0 DEFINITIONS

Refer to GSS-1.0, Ginna Station Simulator Procedures, for a list of the terms and abbreviations used in this procedure.

3.0 INSTRUCTIONS

3.1 RSE Initiation

3.1.1 Any person associated with the Ginna Station Simulator, who desires an enhancement to the Simulator capabilities, should document the request on Section I of Attachment A - Request For Simulator Enhancement.

3.1.2 The name of the originator and date initiated are entered on the top line of the form. The RSE number will be entered later by the SST.

The contents required of each part of Section I are described below:

A. Enhancement Requested

The specifics of the enhancement are entered here. This information will be used to establish a scope of simulation for a simulator modification, so as much detail as is necessary should be provided. A markup of simulator design drawings or logics may be appropriate.

B. Training Value of Enhancement

The training value of an enhancement will be weighed against the cost of making the modification. The originator should provide the basis for the request in this space.

C. Forward to Supervisor - Simulator Training

The RSE is forwarded to the SST upon completion of Section I.

3.2 SST Evaluation

3.2.1 Section II is completed by the SST. The next sequential number is assigned and the enhancement is entered in the RSE index. The appropriate entries from section I

are entered into CMS. If the enhancement is determined to be warranted, the box for "Forwarded for implementation" is checked and a priority and type is assigned. The priority level and type are to be consistent with those assigned for SDRs. Refer to GSS-1.4, Simulator Discrepancy Reporting, for an explanation of priority levels and type codes.

3.2.2 The SST may determine that a training value assessment is needed. The TVA block is checked and the RSE is filed until the TVA has been conducted. The RSE is then reevaluated using the results of the TVA.

3.2.3 If the enhancement is determined to be not desired or not justifiable, the SST checks the Closed box and provides an explanation in the Remarks section. The RSE is closed out per Section IV.

3.2.4 RSEs to be forwarded for implementation are reviewed by the SST for scope of simulation. If the information in Section I is insufficient, then additional information is provided. The SST signs and dates Section II upon completion of the evaluation.

3.3 SSGL Evaluation

3.3.1 The SSGL evaluates the RSE for implementation. If an SM is opened, then the SM number is recorded on the RSE and the RSE is returned to the SST for closeout.

3.3.2 The SSGL may return the RSE to the SST for reconsideration. This could be done to request a TVA, request a revision in the scope of simulation, or to address other issues of concern.

3.3.3 The SSGL signs and dates the RSE upon completion of the evaluation and updates CMS.

3.4 Section IV is used by the SST to signify closeout of the RSE. The SST shall review the RSE and ensure that the reason for the closeout is clear. A copy of the closed RSE is forwarded to the originator for information.

4.0 <u>RECORDS</u>

4.1 RSE Log Book

An RSE log shall be maintained by the SST. The log shall contain an index with the following information:

A. RSE number

B. Title
C. Date initiated

The RSE log will also contain open SDRs when they are not being processed. The RSE log will be maintained by the SST.

4.2 Closed RSEs

The SST will maintain a file of all closed RSEs.

4.3 CMS table RSES

Tracking of RSEs is done in CMS table RSES. It is the responsibility of the SST and SSGL to maintain this database.

GSS-1.7 Attachment A - Request for Simulator Enhancement

I. Originator _____ Date: _____ RSE: _____

A. Enhancement Requested: _____

_____

_____

_____

B. Training Value of Enhancement _____

_____

_____

_____

C. Forward to Supervisor - Simulator Training

II. SST Evaluation

[] Forwarded for implementation Priority: _____ Type: _____

[] Training Value Assessment needed [] Closed

Remarks: _____

_____

_____

SST _____ Date _____

III. SSGL Evaluation

[] SM initiated: _____ [] Training Value Assessment Requested

[] Returned to SST for reconsideration

Remarks _____

_____

_____

SSGL _____ Date _____

IV. RSE Closeout (SST) _____ Date _____

GSS-1.7 ATTACHMENT B - RSE LOG INDEX

RSE Number	Date	Title (Brief Description)

ROCHESTER GAS & ELECTRIC CORPORATION

GINNA STATION SIMULATOR

PROCEDURE NO. GSS-3.0 REV. NO. 00

SIMULATOR DATA BASE CONTROL

Prepared by: S J Hubbard Date 8/17/90

Technical Review: Dan Hult Date 8/17/90

Technical Review: William R. Doffler Date 8/17/90

Approvals:

Systems and Services: Duane L Pierce Date 8/22/90

Ginna Training: Robert G Carroll Date 8/17/90

Effective Date: 8/27/90

4 Pages
+ 3 Attachments

1.0 PURPOSE

To define the Simulator Data Bases, list the persons responsible for control of these data bases and describe the methods for control.

2.0 REFERENCES

2.1 TR 5.5.1, Tracking Plant Changes

2.2 GSS-2.0, Simulator Testing

2.3 GSS-5.0, Simulator Review Committee

2.4 R. E. Ginna Nuclear Training Simulator Master Index

3.0 DEFINITIONS

3.1 Configuration: The arrangement of parts, procedures and processes that together represent the plant, as plant configuration or the simulator, as simulator configuration.

3.2 RA - Responsible Administrator: The person responsible for maintenance and control of a specific section of a Simulator Data Base or his designated alternate(s). Designation of an alternate shall be by a memo to the Simulator Secretary.

3.3 Simulator Design Data Base: The design documents, performance data, records, assumptions, simplifications, derivations and other definable data on which the design of the simulator hardware and software is based.

3.4 Simulator Functions Data Base: A collection of documents that describes the appearance, performance standards and scope of simulation of the reference plant simulator.

3.5 Controlled Distribution Copy: A hard copy of a simulator data base. This hard copy is updated and maintained current by the Simulator Secretary.

3.6 Controlled Distribution Copy List: A list maintained by the Simulator Secretary of persons to receive copies of changes or notification of changes to a simulator data base.

4.0 SIMULATOR DESIGN DATA BASE

4.1 The Simulator Design Data Base consists of the documentation listed in Section 13.6 of the Simulator Master Index. These drawings, procedures and manuals are controlled within the reference plant by drawing, procedure and manual control programs.

4.2 The Configuration Management Coordinator shall be reponsible for updating, maintenance and control of the Simulator Design Data Base for changes in the corresponding reference plant data base and disseminating the updated information to the Supervisor Simulator Training and Supervisor Ginna Simulator Systems for action in accordance with procedure TR 5.5.1.

5.0 SIMULATOR FUNCTIONS DATA BASE

5.1 The Simulator Functions Data Base consists of the documents listed in the Simulator Master Index excluding Section 13.6.

5.2 The Supervisor Ginna Simulator Systems shall be responsible for updating, maintenance and control of the Simulator Functions Data Base with the exception of Section 6.3, 14.3 and 14.4.

5.3 The Supervisor Simulator Training shall be responsible for updating, maintenance and control of Sections 6.3, 14.3 and 14.4 of the Simulator Functions Data Base.

5.4 The Simulator Secretary shall maintain one controlled distribution copy of the Simulator Functions Data Base in the Computer Room of the Simulator Building, and a second controlled distribution copy consisting only of Sections 6.3, 10 and 14 in the Xerox and File Room of the Simulator Building.

6.0 DOCUMENTATION CHANGES

6.1 Revisions to the Simulator Functions Data Base documentation should be submitted using a Request for Document Revision (RDR) (Attachment A) and should follow the process described below. Any individual may submit an RDR.

6.2 CHANGE INITIATION

The person submitting the RDR, the initiator, shall indicate on the RDR form the date, the document section number, the current revision level and the reason for the change. The initiator shall incorporate the changes on a copy of a CONTROLLED DISTRIBUTION COPY.

This marked up copy and the RDR shall be forwarded to the Simulator Secretary who will assign an RDR number for tracking purposes and forward the document and RDR (RDR package) to the Responsible Administrator (RA) for that section of documentation.

6.3 RESPONSIBLE ADMINISTRATOR'S REVIEW

6.3.1 The RA or designated alternate(s) shall review the change for format, technical adequacy, legibility, clarity and adequacy of the reason on the RDR. If any of these criteria are not met, the RDR package is unacceptable and the RA shall return the RDR to the initiator with the reasons why it is unacceptable. When the RDR package is acceptable, the RA shall sign the RDR.

6.3.2 If the requested change is minor, i.e., correcting typographical errors or improving grammar or clarity, the RA shall forward the RDR package to the Simulator Secretary to incorporate the change.

6.3.3 For more complicated changes, such as those requiring a review of a math model, evaluation of a plant modification status, or detailed knowledge of a plant system or component, the RA may initiate an independent review. The RA should designate a minimum of two reviewers and forward the RDR package with a Document Review Form (DRF) (Attachment B) to the reviewer(s) for evaluation and comments. The RA shall resolve all comments prior to approving the change. In the unlikely event that comments cannot be adequately resolved between the RA and the reviewer, the RA may choose to submit the change to the Simulator Review Committee for their evaluation and recommendation. The approved RDR package shall be forwarded to the Simulator Secretary to make the change.

6.4 DOCUMENT TYPING, PROOFREADING, REVIEW AND DISTRIBUTION

6.4.1 The Simulator Secretary shall send a print out of the change to the initiator who proofreads for spelling, verifies that the printed version corresponds with the submitted or revised draft and returns it to the Simulator Secretary.

6.4.2 The Simulator Secretary will correct any typing errors and incorporate the changes into the appropriate Simulator Data Base.

If the corrections appear to be other than typing errors, the RDR package shall be forwarded to the RA for a determination on how to proceed with the change.

6.4.3 When all corrections and changes have been made, the Simulator Secretary shall print the necessary Controlled Distribution Copies and distribute the copies and notification of changes according to the Controlled Distribution List.

7.0 RECORDS

7.1 A copy of Sections 1.1, 6.1, 6.3, 7.4, 8, 10, 13.1 and 14 of Simulator Functions Data Base shall be retained in Central Records. Upon issuing a current revision to any of these sections, the Simulator Secretary shall send the revision to the Supervisor, Instructional and Office Services for inclusion in the training records system.

7.2 Upon making any changes to a simulator data base, the Simulator Secretary shall distribute a copy of the change(s) or a notification of change to the persons listed on the Controlled Distribution Copy List (Attachment C).

ATTACHMENT A

RG&E SIMULATOR
REQUEST FOR DOCUMENT REVISION

DOCUMENT SECTION # _____ CURRENT REV. NO. _____

TITLE: _____

|____| NEW DOCUMENT |____| DOCUMENT REVISION

REQUESTED CHANGE: _____

_____

_____

_____

_____

_____

REASON: _____

_____

_____

INITIATOR: _____ DATE: _____

==========

SIMULATOR SECRETARY: RDR NO. _____

FORWARD TO _____
NAME

==========

RESPONSIBLE ADMNISTRATOR: APPROVED WITHOUT REVIEW ___/___/___
DATE

_____ APPROVED AFTER REVIEW ___/___/___
Signature DATE

GSS-3.0:5

ATTACHMENT B

RG&E SIMULATOR
DOCUMENT REVIEW FORM

DOCUMENT SECTION NO. ____ CURRENT REV. NO. ____ RDR NO. ____

TITLE _____

REQUIRED RETURN DATE ___/___/___

REVIEWERS:

REVISION CONCURRENCE

	SIGNATURE	DATE

COMMENTS: _____

ALL COMMENTS RESOLVED, RA: _____ DATE: _____

ATTACHMENT C

RG&E SIMULATOR
CONTROLLED DISTRIBUTION COPY LIST

COPY OF CHANGE:

PERSON	LOCATION
Simulator Secretary	Simulator

NOTIFICATION OF CHANGE:

PERSON	LOCATION
Config. Manag. Coordinator	Simulator
Sup. Ginna Simulator Systems	Simulator
Sup. Simulator Training	Simulator

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT

ATTACHMENT 2

EXCEPTIONS

EXCEPTIONS TO ANSI/ANS 3.5 - 1985

1 Differences in Rotary Drum Switches
2 Labels Missing on Simulator
3 Devices Omitted from Simulator
4 Devices in Simulator not Present in the Plant
5 Minor Device Differences between Simulator and MCB
6 Device Location Differences between Simulator and MCB
7 Radiation Monitor Panel Appearance
8 Operator Actions During Transient Tests
9 FSAR Data used for Transient Evaluation
10 RVLIS not used for Transient Plots
11 Meter Zone Banding
12 Meters/Switches with Incorrect Markings
13 Labels Missing from Simulator
14 Malfunctions not Modeled
15 Initial Conditions used during Transient Tests
16 Containment Pressure Response during LOCA Test
17 Steam Generator Response during LOCA Event
18 Feed Flow Response during Reactor Trip Transient
19 Large Break LOCA Fidelity Problems
20 Devices Missing from MCB
21 Missing "Bumpers" HCV-466 and HCV-467
22 Differences in Meter Scales Units
23 Gross Voiding not included in Simulator Operator Limits
24 Recorder Differences (pen color, chart paper, etc.)
25 Wrong Color Pushbuttons
26 Differences in Recorder Scales Units

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 1

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of rotary drum control switches with very minor differences in markings. The rotary drum switches on the MCB have a beveled point on the switch. The rotary drum switches on the Simulator have a small red dot in the place of the beveled point.

JUSTIFICATION:

The switches with the beveled points were not available during simulator construction. The switches with the red dots are suitable substitutes. Training experience has shown that these minor differences between the switches does not detract from training.

PROPOSED SOLUTION:

Hardware replacement is necessary to match switch exactly. Since the differences have no training impact, no corrective action is required.

AOV-3336A
AOV-3338A

MOV-4609
MOV-4614
MOV-4613
MOV-4663
MOV-4616
MOV-4734
MOV-4027
MOV-4013
MOV-4028
MOV-4007

MOV-860D
AOV-111
MOV-896B
MOV-857C
MOV-876B
MOV-860C
AOV-110C
MOV-876A
MOV-896A
MOV-857B
MOV-860A
MOV-860B
AOV-110A
AOV-110B
MOV-875B
MOV-875A
MOV-850B
MOV-856
MOV-871A
MOV-871B
MOV-878C
MOV-878D
MOV-828C
MOV-828D
MOV-850A
MOV-851A
MOV-865
AOV-427
PCV-430
MOV-576
PCV-431C
MOV-515
AOV-506

AOV-3336B
AOV-3338B

MOV-4780
MOV-4664
MOV-4670
MOV-4733
MOV-4735
MOV-4615
MOV-3996
MOV-4008
MOV-3977
MOV-3976

MOV-841
MOV-878A
MOV-878B
MOV-826A
MOV-826B
MOV-1813A
MOV-1813B
MOV-825A
MOV-825B
RCV-017
MOV-852A
MOV-814
MOV-852B
MOV-749A
MOV-749B
MOV-759A
MOV-759B
MOV-313
MOV-371
ISOL VLVS 1786-1787
AOV-745
MOV-823
MOV-813
MOV-814
ISOL VLVS 539-1789
AOV-754A
AOV-754B
AOV-526
AOV-527

AOV-5738/5737/5735/5736
AOV-1597
AOV-1598
SAMPLE ISOL VLVS 966A, 966B, 966C, 951, 953, 955, 969
MOV-704A
MOV-704B
MOV-1815A
MOV-1815B
MOV-7443, MOV-7444
AOV-5879, AOV-5869
AOV-270A
AOV-386
AOV-550A
AOV-270A
MOV-700
MOV-701
AOV-548
AOV-386
MOV-738A
MOV-738B
AOV-550B
AOV-270B
AOV-310
AOV-392A
AOV-200A

AOV-312
AOV-392B
AOV-200B
MOV-350
AOV-294
AOV-202
AOV-296
AOV-258
AOV-244
TCV-145
AOV-5392
LCV-112A
LCV-112B
LCV-112C
PI-420 DEF. SWITCH
CONT. EVAC. ALARM
PLANT EVAC. ALARM
1A1 MOV-3154
1B2 MOV-3153
1A2 MOV-3152
1B1 MOV-3155

AOV-1090
AOV-1091
AOV-1092
AOV-1093
ISOL SOV-1A, 2A, 3A, 4A
ISOL SOV-1B, 2B, 3B, 4B
AOV-5869
AOV-5879
AOV-835A, B
AOV-844A, B
AOV-839A, B
AOV-840A, B
AOV-846

1A1 MOV-3158
1B2 MOV-3157
1A2 MOV-3156
1B1 MOV-3159

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 2

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. The following labels are missing from the simulator:

Label for Fire Extinguisher Station No. 101, C02 is not on simulator.

Label "Control Room Foreman" is missing on shelf above CRF desk.

The vendor name "Beckman" is missing from indicators PI-2002, PI-2003 and PI-2001.

JUSTIFICATION:

These labels are not necessary for the plant operations performed on the simulator. Their absence from the simulator does not detract from training.

PROPOSED SOLUTION:

No corrective action is required for these missing labels.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 3

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of devices that exist in the control room but are not found in the simulator. These items are considered outside the scope of simulation.

JUSTIFICATION:

Simulator training experience has shown that the lack of these devices does not detract from simulator training.

The items referencing portable radios and chargers identifies that the quantity of radios available on the Simulator is less than the Control Room. The type of radio used to communicate with Auxiliary Operators is provided in the Simulator.

PROPOSED SOLUTION:

No corrective action is required. The conditions are consistent with the original scope of simulation.

Simulator DC Distribution Panels 1A/1B missing fused disconnect switches

Simulator AC Distribution Panel missing ac breakers

- o Visually simulated breakers in all 4 AC Instrument Panels which are not normally used are not labelled except for the normal feed/maintenance feed breaker labels which duplicate the control room labels.

- o Pressurizer Level and Pressure Level Rack is missing the following: Level and pressure controllers:

LC-428B/C	PM-449C
PC-431B	LC-428F
PC-431D/E	PC-431K
PC-429B	PC-431C
PC-431F	PC-431H

- o Indicating lights for pressurizer control valves, level controls and heaters:

PCV-430	PC-431B
PCV-431C	INT HTRS HEATERS OFF
PCV-430INT	PC-431F
PC-430B	LC-428D
PC-431B	
PC-429B	

- o

PM-431G	LC-428D	YM-113
PM-431B	LC-427B/D	YI-113
PM-431A	PC-430B	LM-433
CT-431A	PC-430C	LQ-433
CT-431B	PM-430A	
PM-429C	TM-401X	
PM-431C		
LM-426B		
LM-428B		
FM-113		

- o Missing Phase Adjustment Screws on PCV-435, PCV-434, position indicators

Missing Red Control Room Tool Box

Missing Portable Radios

Security Terminal box above door to stairs not modeled

Card reader for door to stairs not modeled

Fire extinguisher station 100, CO_2 not replicated

Napkin holder, cup holder

TC-5144 Control Room Temperature Controller

Label "CR2" for emergency light fixture

Operator mail boxes north of mimic panel

Shift Supervisor's Office, toilet and kitchen

Helmet holders under bulletin board north of Shift Supervisor's Office

Control Room smoke detector, sensitivity test panels 13 and 14, and layout drawing showing location of detectors

Plant Fire System Satellite Station B, Cabinet G

4 Pyrotronics Fire System Indicating Units for duct smoke detectors

Fire System A and B alarm/light

125 VDC Fuse drawing attached to mimic board

Security card reader at north door and emergency exit pushbutton

Portable radio charger

Portable fan and vacuum cleaner

Inside containment television monitor and controls

Conduits above fire panels FCP1 and FCP2 and "A" and "B" fire alarms

Fire extinguisher below Instrument Bus D power panel.

Emergency lights label "CR 3"

Portable air monitor on cart north of Y1 rack

"Gai-tronics" communication jack 1-3 between steam dump and B2 rack

Portable resistor bank on floor between B2 and W2 racks

Bulletin board above Shift Foreman's desk

Computer for plant equipment hold requests and desk

Portable radio on Shift Foreman's desk

Blue computer box on Shift Foreman's desk adjacent to NRC phones

"Gai-tronics" communication jack between NI panel and incore detection panel

Toilet exhaust fan toggle switch between incore panel and radiation monitor panel

Flow, Pressure and Level Instrumentation not in Simulator Reactor Protection Rack B-2 Channel 3:

FQ-413
FC-413
FM-413
PQ-478
FQ-415
FC-415
FM-415
PC-450
FQ-474
FM-474A
FM-474B
FM-474C
FC-474A
FM-474D
FQ-476
FM-476A
FC-476B/C
FM-476B
FM-476C
LQ-462
LC-462A/B
LC-462C
LM-462B
PQ-450
PQ-482
PM-482A
PM-482B
PC-482A
PM-478C
PM-478A/B
PC-947
PC-947A/B
PM-947
PQ-948
PC-948A/B
PM-948

Temperature and Pressure Instrumentation not on Simulator Rod Speed Control Panel:

TM-401Y
TM-401M
TM-401H
TM-401I
TM-401N
HC-401D
TM-401P
HC-401C
HC-401B
TM-401BB
TM-401CC
TC-401N
TC-401M
TM-401Z
PC-485C
PM-485B
TM-401K
TC-401L
TM-401AB
QM-401
TC-401K
TM-401L
Patch Panel
T/401K

Temperature and Pressure, Instrumentation not on Simulator Steam Dump Panel:

TM-401D
TM-401W
TM-402W
TM-403W
TM-404W
PC-484
TC-401C
TC-401I
TC-401G
TM-401G
TM-401E
TC-401B
TC-402B
TC-403B
TC-404B
TC-401D
TM-401R
TC-401F
TM-401J
PM-486B
TM-401Z
TC-401J/O
TC-401H/E
PC-486B
FQ-424
PQ-484
TM-401F
Relay T/484
Instrumentation Test Jacks

Temperature, Pressure and Level Instrumentation not in Simulator Reactor Protection Rack B-1 Channel 3:

TT-403
TM-407R
TM-407A
TM-403A
TM-403BB
TM-403C
TM-403T
TM-403U
TC-407L
TC-403A
TC-407A/B
TM-4030
TC-403V
TM-403B
TC-407C/D
PQ-431
PC-431A
PC-431I/G
PM-431B
PC-431J
PM-431A
LQ-428
LC-428A/E
LM-428A
PQ-486
PM-486A
PC-486A/C
"STATES LINKS" NEAR JACKS
TM-407C
TM-407P
TM-407D
TM-4035

Temperature, Pressure and Level Instrumentation not in Simulator Reactor Protection Rack W1 Channel 2:

TT-402
TM-406R
TM-406A
TM-402A
TM-402BB
TM-402C
TM-402T
TM-402U
TM-406L
TC-402A
TC-406A/B
TM-4020
TM-402V
TM-402B
TC-406C/D
PQ-430
PC-430A
PC-430E/F
PM-430C
PC-430H
PM-430A
LQ-427
LC-427A/C
LM-427
PQ-485
PC-485A/B
PM-485A
STATES DECKS
TM-406C
TM-406P
TM-406D
TM-402S

Flow, Pressure and Level Instrumentation not in Simulator Reactor Protection Rack W2 Channel 2:

FQ-412
FC-412
FM-412
PQ-469
PM-469B
PC-451
PQ-451
FQ-414
FC-414
FM-414
FQ-465
FM-465A
FM-465B
FM-465C
FC-465A
FM-465D
FQ-467
FM-467A
FC-467A/B
FM-467B
FM-467D
PC-455
LQ-473
LC-473C/D
LC-473E
LM-473B
PQ-455
PQ-485
PQ-946
PM-946
PC-946A/B
PM-469A
PC-469A
PM-483B
PM-483A
PC-483A
PQ-949
PM-949
PC-949A/B

Temperature and Pressure Instrumentation not on Simulator Reactor Protection Rack Y-1 Channel 4:

TI-404
TM-408R
TM-408A
TM-404C
TM-404BB
TM-404L
TM-404T
TM-404U
TC-408L
TC-404A/D
TC-408A/B
TM-404O
TM-404V
TM-404B
TC-408C/D
PQ-449
PM-449B
PC-449A
PM-449A
TM-408C
TM-408P
TM-408D
TM-404S
STATES DECK

Flow, Level and Pressure Instrumentation not in Simulator Reactor Protection Rack Y-2 Channel 4:

FQ-416
FC-416
FM-416
PQ-479
PM-479B
FM-475A
FM-475B
FM-475C
FC-475A
FM-477B
FQ-477
FM-477A
FC-477A/B
FM-477C
FQ-475
FM-475D
LQ-463
LC-463C/D
LC-463E
LM-463B
LQ-471
LM-471
LC-471A/B
PM-479A
PC-479A
PQ-950
PC-950A/B
PM-950

Flow, Pressure and Level Instrumentation not in Simulator Reactor Protection Rack R-2 Channel 1:

FQ-411
FC-411
FM-411
PQ-468
PM-468B
FQ-464
PC-452
PQ-452
LQ-461
LM-461
LC-461A/B
FM-464D
FM-464A
FM-464B
FM-464C
FC-464A
FM-466C
FQ-466
FM-466A
FC-466B/C
FM-466B
PC-456
LQ-472
LM-472B
LC-472A/B
LC-472C
PQ-456
PM-468A
PC-468A
PQ-945
PM-945
PC-945A/B

Temperature, Pressure and Level Instrumentation not in Simulator Reactor Protection Rack R-1, Channel 1:

TT-401
TM-405R
TM-405A
TM-401A
TM-401BB
TM-401C
TM-401T
TM-401U
TC-405L
TC-401A
TC-405A/B
TM-401O
TM-401V
TM-401B
TC-405C/D
PQ-429
PC-429A
PC-429D/C
PM-429B
PC-429E
PM-429A
LQ-426
LC-426A/B
LM-426A
TM-405C
TM-405P
TM-405O
TM-401S
STATES DECK

Temperature Instrumentation not on Simulator Rod Insertion Limit Panel:

TC-405F
TC-406F
TC-407F
TC-408F
TM-405D
HC-405B
TM-405G
TC-405G/N
TM-405K
TM-405E
TM-405V
TM-405W
TM-405H
TC-405H/M
TM-405L
TM-405X
TM-405I
TM-405I/L
TM-405M
TM-405S
TM-405J
TC-405J/O
TM-405N
TC-405K
INSTRUMENTATION TEST JACKS

Signal Isolation Computer and Recorder not on Radiation Monitor Panel.

Main Control Board Fan Shroud not on Simulator.

Metal Impact Monitor Panel not in Simulator.

The Control Room Radiation Detector (R-1) is located on the Incore Nuclear Instrument Racks. A similar device does not exist in the Simulator.

The Main Control Room floor mounted panels have reinforcement metal brackets at their base. Similar devices do not exist in the Simulator.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 4

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of devices that exist in the simulator complex but are not present in the plant.

JUSTIFICATION:

The Fire Protection Equipment is necessary for simulator and personnel fire protection. The Portable Simulator Test Unit is stored behind the Main Control Board in a location normally occupied by a Local Radiation Monitor in the plant. The test unit, therefore duplicates an obstruction that exists in the plant. The Simulator Control Room Coat Rack stands in the same location normally occupied by the operator mail boxes in the plant. The rack duplicates an obstruction that exists in the plant. Neither piece of equipment is used by the operators. The microphones are small, unobtrusive devices. The ceiling mounted video camera allows instructors to record control room training activities. These differences do not detract from training.

PROPOSED SOLUTION:

No corrective action is necessary for these items.

The below listed items are required for simulator fire protection.

Fire Bell and Horn above mimic panel

Two annunciator windows "Fire In Simulated Control Room" and "Halon Gas Discharged In Simulated Control Room"

Manual release for Halon 1301 Fire Suppression System Halon Release Switch.

Halon Abort Switch

Two Temperature Sensors

Two Halon Discharge Nozzles

Red Fire Warning Light

Portable Simulator Test Unit

In addition to the above, the Portable Simulator Test Unit sits in the same location as the Portable Air Monitor in the Control Room.

The video camera mounted from the northeast ceiling of the Simulator Control Room and small micro-panels mounted to the vertical sections or simulator panels 5, 6 and 7 are part of the simulator audio visual system controlled from the instructor's booth.

Simulator Control Room Coat Rack

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 5

EXCEPTION:

The standard requires that the controls on the Simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of simulator devices that do not match the corresponding devices in the control room.

JUSTIFICATION:

Dimensional variations due to computer connections and ventilation requirements. Simulator training experience has shown that these differences do not detract from simulator training.

PROPOSED SOLUTION:

No corrective action is required for these differences.

Incore Nuclear Instrument Drives A, B, C, D recorder signal switches are different colors, and the simulator switches are slightly larger.

RK-76 Control Switches and Switch Labels have minor differences.

Simulator Outside Air Temperature Meters have "DC Microamperes" engraved on the front of the meter vs "DC Milivolts" on the MCB. This indicates the type of signal used to drive the meter, and not the units being measured. In both instances, the meters read out on degrees F.

The MCB panels are a slightly different shade of green than the Simulator panels. Panel 25 is tan in the Simulator and green in the Main Control Room. Panel 25 back panel is gray in Simulator and green in Main Control Room.

The Main Control Room walls are gray vs. the Simulator walls which are tan.

The Main Control Room floor is completely carpeted. Control Room areas where direct access is controlled by Shift Operators is identified with a different color rug. The Simulator has carpeting in areas where access is controlled by the Shift Operators; all other areas have removable floor panels. Although the carpet color in the Simulator does not exactly match the Main Control Room, the important function of demarcation is performed.

Meter Pointers - incorrect color

PANEL 6 - TI - 410B1
TI - 403
TI - 410A1
PI - 484
TI - 409B1
TI - 409A1
FI - 467
FI - 465
FI - 476
LI - 2001
TI - 405A
TI - 425

PANEL 7 - PI - 944
FI - 113
PI - 128

PANEL 9 - PI - 2036

Turbine driven AFW pump flow meter FI-2030/2022A meter face lettering spans slightly more of meter face than in plant. Information conveyed is identical.

RCS Temperature Recorder:

The recorder scale on the simulator has the last increment labeled 615, the plant recorder numbering ends at 610. The range of both scales is the same, the only difference is the value choosen to be labeled at the right end of the scale.

Main Generator Hydrogen Pressure Indicator:

The word "SAFE" is engraved in black letters on the MCB, but printed in green on the meter face in the simulator.

PI-2001 and PI-2003 Labels:

Label wording engraved on meter scale in plant control room, words are printed on meter face in simulator. Identical wording is used.

LI-2005 Heater Drain Tank Level:

The words "Drain Tank Level" are engraved on the meter scale in the plant control room. The same words are printed on the meter face in the simulator.

Transparent Scales on MCB Recorders:

The below listed recorders have transparent plastic scales. In the plant the markings have worn off after twenty years of use. The markings on the simulator recorders are legible. The scales are not relied on for information by the operators, and thus the simulator scales will not be "aged" to try and emulate the plant scales, and the differences in the marking ranges are not significant and deemed to not detract from operator training.

RK-32 Windspeed and Direction Recorder:

The 2 pens on the plant Control Room Recorders are blue, but the pens on the Simulator are green and red. Information provided is functionally the same.

Panels 11, 12, 13 Dimensions:

Panels 11 and 12 in the simulator are slightly wider than those in the Main Control Room. Distance between Panel 11 and Panel 12 is greater than is Simulator. Panel 13 is slightly closer to south wall in the Main Control Room than in the Simulator Control Room. Devices in the first row of Panel 13 in the Simulator are mounted slightly higher than in the Main Control Room.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 6

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant.

Movable Incore Detector System:
Both of the recorders in the simulator for the Movable Incore Detector System are located higher in the cabinet than they are in the Control Room.

HVAC
The ceiling HVAC ducts are in different locations in the simulator than they are in the Control Room.

JUSTIFICATION:

The location of the HVAC ducts does not affect any of the operations of the plant. Therefore, no action is necessary.

The small difference in location of the Incore Detector Recorders does not affect their use. They are infrequently used and cannot be confused with another recorder.

Neither of these discrepancies affect simulator training.

PROPOSED SOLUTION:

No corrective action is necessary.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 7

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant.

Radiation monitor panels listed below provide the function but not the appearance of the panels in the Control Room.

R-15, Air Ejector
R-16, Containment Fan Cooler
R-17, Component Cooling Water
R-18, Waste Liquid
R-19, Steam Generator Blowdown
R-20A, Spent Fuel HX Service Water

JUSTIFICATION:

The difference is a result of the simulator modification being installed prior to the completion of the plant modification, and the subsequent postponement of the part of the plant modification. The simulator configuration will be consistent with that of the plant when the plant modification is completed. The plant modification is scheduled for installation during the March 1991 refueling outage.

The training impact of this difference is judged to be minimal, and the cost involved in reconfiguring the system while awaiting the plant modification is not justified.

PROPOSED SOLUTION:

This situation will be reviewed by the Simulator Review Committee if that modification EWR-4068C in the plant is delayed beyond the 1991 Refueling outage.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION B.2.2 Transient Performance

EXCEPTION NUMBER: 8

EXCEPTION:

The standard requires that the transients of this section be run with no operator actions. Auxiliary feedwater flows were reduced per plant procedures during the following transient tests:

Manual Reactor Trip
Simultaneous Trip of All Feedwater Pumps
Simultaneous Closure of Both MSIVs
Trip of Both Reactor Coolant Pumps
Single RCP Trip
Turbine Trip Below P-9
Large Loss of Coolant Accident
Steam Line Break
Inadequate Core Cooling

JUSTIFICATION:

The reference data used to analyze the above data is predominantly basic nuclear principles or actual plant data. Throttling of auxiliary feedwater is essential to preventing over cooling of the Reactor Coolant System during an actual plant trip, and is so directed by plant procedures. This action was duplicated in the simulated transients to allow a more meaningful comparison to the data available than would be obtained if this operator action were omitted.

PROPOSED SOLUTION:

No operator action is preferred when comparing the simulator data versus engineering code best estimate data. When engineering code analysis capability is obtained, the operator actions performed will be minimized as necessary to obtain meaningful data for comparison purposes.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION A3.3

EXCEPTION NUMBER: 9

EXCEPTION:

The Standard states that comparison of simulator response to FSAR transients may be inappropriate. UFSAR data was used in the analysis of transient tests 14.4.8 BE4, BE8, and BE9.

JUSTIFICATION:

The use of UFSAR data was limited to trends and general behavior in circumstances where no other data is available.

PROPOSED SOLUTION:

UFSAR data for simulator evaluation will be replaced by best estimate data as it becomes available.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 5.4.2

EXCEPTION NUMBER: 10

EXCEPTION:

Reactor Vessel Level Indication (RVLIS) data was not captured for analysis for the LOCA and ICC tests (14.4.8 BE8 and BE10 respectfully) as required by Section B2.2.4 of the Standard.

JUSTIFICATION:

RVLIS is installed on the reference plant and simulator. The datapoint for RVLIS was not available for capture by the parameter plotting program for the test run analyzed. The tests were duplicated and RVLIS was plotted on a recorder along with related RCS parameters. The RVLIS data provided showed that the RVLIS response was consistent with the core fluid mass and downcomer mass data.

PROPOSED SOLUTION:

These points will be added to the file generated for use by the plotting program, and used in subsequent analysis of the transients specified in the Standard.
Scheduled Completion Date: 03/29/91

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 11

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Markings and zone banding have been added to the Main Control Board meters to indicate normal indicating ranges, trip setpoints, alarms etc. Attached is a list of simulator meters that do not yet have these markings.

JUSTIFICATION:

These meter markings and zone bandings do not affect the functionality of the simulator. The information provided by these markings/zone banding is not specifically addressed in simulator training. Simulator training experience has shown that these differences do not detract from training.

PROPOSED SOLUTION:

The markings/zone banding will be added to the simulator to increase the degree of physical fidelity. This work is documented on Simulator Discrepancy Report (SDR) 90-100.

Scheduled Completion Date: 02/28/92

PANEL 5

METER	ARROW LOCATION
GENERATOR VARMETER	1500 MEGAVARS (RED)
BUS 12A AMMETER	2575 AMPERES (RED)
BUS 11A AMMETER	2575 AMPERES (RED)
BUS 12A VOLTMETER	4400 VOLTS (RED)
BUS 11A VOLTMETER	4400 VOLTS (RED)
BUS 11B VOLTMETER	4400 VOLTS (RED)
BUS 12B VOLTMETER	4400 VOLTS (RED)
BUS 14 VOLTMETER	420 VOLTS (YELLOW)
BUS 16 VOLTMETER	420 VOLTS (YELLOW)
BUS 17 VOLTMETER	420 VOLTS (YELLOW)
BUS 18 VOLTMETER	420 VOLTS (YELLOW)

PANEL 6

METER	ARROW LOCATION (RED)
PI-2043	380 PSIG
PI-468	460 PSIG
PI-468	700-1000 (GREEN BAND)
PI-469	460 PSIG (RED)
PI-469	700-1000 (GREEN BAND)
PI-482	460 PSIG (RED)
PI-482	700-1000 (GREEN BAND)
PI-478,479,483	460 PSIG
PI-478,479,483	700-1000 (GREEN BAND)
LI-461,462,463	39-52% (GREEN BAND)
LI-471,472,473	17% (RED ARROW) 30%,60% (2 YELLOW ARROWS)
NI-31D	1.4 DPM (RED ARROW)

PANEL 7

COMPONENT	
TI-122	GREEN ARROW AT 200 DEGREES F
PI-121	RED ARROW AT 100 PSIG
TI-127	RED BAR AT 390 DEGREES F
FI-134	RED BAR AT 70 GPM
LI-618	RED BAR AT 40%
TI-132	RED BAR AT 149 DEGREES F
PI-128	RED BAR AT 2575
TI-130	RED BAR AT 145 DEGREES F
PI-135	RED BAR AT 400 PSIG
TI-140	RED BAR AT 145 DEGREES F
PI-139	RED BAR AT 66 PSIG
LI-112	RED BAR AT 86% AND 12%
LI-102	RED BAR AT 90%
LI-172	RED BAR AT 90%
LI-108	RED BAR AT 90%
LI-171	RED BAR AT 90%
PI-420	RED BAR AT 225 PSIG
LI-934	RED ARROW AT 58% AND 76%
PI-940	RED BAR AT 740 & 780 PSIG
PI-936	RED BAR AT 740 & 780 PSIG
LI-931	RED BAR AT 90%
PI-944	YELLOW ARROW AT .5 PSIG

PANEL 8

LI-939	57% AND 76% RED ARROW
LI-1091	79% RED ARROW
LI-1092	79% RED ARROW
LI-1090	80% RED ARROW
LI-1093.	68% RED ARROW

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 12

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of meters, switches, etc. with incorrect markings.

Recorder RK-29 missing red mark on scale
SDR 90-244 Scheduled Completion Date: 02/28/92

Recorder RK 28A missing red mark
SDR 90-244 Scheduled Completion Date: 02/28/92

JUSTIFICATION:

The marking differences are minor in nature. Simulator training experience has shown that these differences do not detract from training.

PROPOSED SOLUTION:

Simulator Discrepancy Report has been submitted. Although continued use of the simulator with these differences is acceptable, a high level of physical fidelity is desired. The above list includes incorrectly marked meters/switches, the SDR number and Scheduled Completion Date.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 13

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of labels that are missing from the simulator.

JUSTIFICATION:

The information provided by the missing labels does not affect safety related equipment. Simulator operations with these deficiencies present has not detracted from training, and it is anticipated that it will not detract from training prior to discrepancy correction.

PROPOSED SOLUTION:

To achieve a high level of physical fidelity, Simulator Discrepancy Reports (SDR) have been submitted for each of the missing labels. The attached list includes the SDR numbers and Scheduled Completion Dates.

PANEL 27

Fire System Switch missing label "DO NOT LOOSEN EXCEPT FOR TESTING"
SDR 90-270 Scheduled Completion Date: 01/31/92

DC LIGHTING PANEL

The DC Lighting Panel is missing the following labels:
"DC LIGHTING PANEL"
"EMERGENCY LIGHTS DC FEED A TRAIN B TRAIN"
SDR 90-274 Scheduled Completion Date: 07/31/91

FIRE CONTROL PANELS FCP-1, FCP-2

Labels on Simulator panel do not reflect plant status
SDR 90-275 Scheduled Completion Date: 03/31/92

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.1.2(12) Plant Malfunctions

EXCEPTION NUMBER: 14

EXCEPTION:

The standard requires malfunctions for control rod failures including uncoupled rods, drifting rods, and misaligned rods. None of these malfunctions are available on the Ginna Simulator.

JUSTIFICATION:

The drifting malfunction is not a plausible failure mode for the Ginna rod control system and will not be modeled.

The uncoupled rod and misaligned rod malfunctions can be functionally duplicated using other malfunctions and overrides, but are not discretely provided.

PROPOSED SOLUTION:

A request for simulator enhancement is being processed to add uncoupled rod and misaligned rod malfunction features.

Scheduled Completion Date: 03/31/92

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 5.4.2

EXCEPTION NUMBER: 15

EXCEPTION:

Appendix B of the standard requires initial conditions for transient tests of approximately 100% power, steady state Xenon, and decay heat with no operator follow up action. The following transient tests deviated from this requirement:

BE1 Manual Reactor Trip
BE5 Trip of RCP below P-8
BE6 Turbine Trip below P-9

JUSTIFICATION:

BE1 was run starting at 87% power. This was done to allow comparison to plant data of a trip from the same power level. The RCP trip (BE5) was started at 39.6% power allow analysis of plant response to a single RCP trip without receiving a Reactor Trip to obtain an evaluation of plant control systems in other than a trip response. The power levels used in all three tests are not normally experienced at Ginna, and thus no truly steady state conditions were available on the simulator to initialize to. The power levels were stable at the beginning of each test, and the Xenon changes were small enough to not have a noticeable effect on plant response.

PROPOSED SOLUTION:

As Engineering code approximations become available for best estimate data generation, this data will be used for comparison and permit closer compliance to the standard.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 5.4.2

EXCEPTION NUMBER: 16

EXCEPTION:

Containment pressure in the LOCA test (14.4.8 BE8) depressurized too rapidly. The following concerns are associated with this response:

1. The operator does not use adverse containment environment setpoints in the Emergency Operating Procedures for as long a period as would occur for this event in the reference plant.

2. Spray recirculation criteria are not met due to the rapid depressurization, preventing the operators from exercising that segment of the procedures.

JUSTIFICATION:

1. The LOCA series of EOPs were reviewed to determine if the use of normal containment environment setpoints could alter the decisions made during a LOCA event. No occasions where this could occur were identified. This response does not, therefore, detract from operator training.

2. Although spray recirculation criteria are not met, instructor intervention during training sessions results in exercise of the associated steps. This task can be trained on, but cannot be examined on in a dynamic scenario, until the containment response is corrected.

PROPOSED SOLUTION:

SDR 91-007 has been submitted to correct this deficiency.
Scheduled Completion Date: 11/29/91

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 5.4.2

EXCEPTION NUMBER: 17

EXCEPTION:

Both the LOCA and Inadequate Core Cooling tests (14.4.8 BE8 and BE10 respectively) resulted in depressurization of both steam generators contrary to reference data. This response detracts from operator training. The following concerns are associated with this response:

1. The operator might assume the steam generators are faulted and make an unnecessary transition from the intended recovery procedure to isolate the apparent faulted steam generators.

2. The secondary depressurization accompanies a cooling of the RCS. The symptoms for Inadequate Core Cooling are not obtained.

JUSTIFICATION:

1. Some depressurization of the steam generators is expected on a LOCA event. The small magnitude of the depressurization in the early stages of the event does not cause incorrect transitions during simulator training. The training staff is aware of this potential problem and provide the barrier to negative training should the operators transition incorrectly.

2. Training and examinations on the inadequate core cooling event are suspended until software corrections are made or suitable compensatory measures are implemented.

PROPOSED SOLUTION:

SDR 91-006 has been submitted to correct this condition.
Scheduled Completion Date: 11/29/91

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 5.4.2

EXCEPTION NUMBER: 18

EXCEPTION:

The analysis of Transient test 14.4.8 BE1 "Manual Reactor Trip" revealed that the feed flow increase to opening stroke time ratio is greater on the simulator than the plant.

JUSTIFICATION:

The excessive feedwater flow on the simulator has the potential of overcooling the RCS and causing the operators to respond to this condition. Evaluation of plant on reactor trip shows that overcooling is expected due to post-trip steam loads exceeding decay heat levels. The operators respond to the overcooling by closing the steam line isolation valves. The feedwater flow discrepancy may cause a difference in the magnitude of the plant response, but does not change the operator action taken. Simulator training experience has shown that this problem does not detract from training.

PROPOSED SOLUTION:

SDR 91-008 has been submitted to correct this deficiency.
Scheduled Completion Date: 11/29/91

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 5.4.2

EXCEPTION NUMBER: 19

EXCEPTION:

Training experience revealed that RCS response to a Large Break LOCA resulted in indications that would not be expected and detracted from operator training. The indications in question were loop temperature indications, core exit thermocouples, and RVLIS.

JUSTIFICATION:

The oscillations result in alarms that distract the operator, but do not affect decision steps in the procedures. Compensatory measures have been implemented to mask these indications to allow training and testing on this event.

PROPOSED SOLUTION:

The RCS model will be upgraded by vendor to improve the RCS and Core response to this family of accidents. The scheduled completion date for this modification is December 29, 1991.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 20

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Shown below is a list of devices missing from the simulator.

DEVICES MISSING FROM THE SIMULATOR

Magnetic covers for AC Control Power Fuses on N41A, N42A N43A, N44A.
SDR 90-262 Scheduled Completion Date: 08/30/91

2 "Leg" magnetic switch cover plate for FIRST OUT RESET pushbutton.
SDR 90-228 Scheduled Completion Date: 08/30/91

JUSTIFICATION:

Simulator training experience has shown that these missing devices do not detract from training.

PROPOSED SOLUTION:

To achieve a high level of physical fidelity, Simulator Discrepancy Reports have been submitted to correct these discrepancies on the simulator. The attached lists include Scheduled Completion Dates.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 21

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. The simulator control switches for HCV-466 and HCV-467 are missing "bumpers".

JUSTIFICATION:

These bumpers are a minor part of the controller assembly and do not affect controller operation. Simulator training experience has shown that these missing bumpers do not detract from training.

PROPOSED SOLUTION:

The switches for HCV-466 and HCV-467 will be replaced during the next outage (3/91) as a result of the Digital Feedwater System modification. No interim action is required for this deficiency.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 22

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. The below list of meters have missing scale units, or minor differences in the scale units.

Recorder 77 scale is 10^{-1} to 10^{7} millirem/hr versus 10^{-2} to 10^{4} scale with no units in simulator.
SDR 90-268 Scheduled Completion Date: 02/26/93

JUSTIFICATION:

The radiation monitor recorder provides accurate data, but the range of indication is incorrect. Simulator training experience has shown that the discrepancies associated with meter scale do not detract from training.

PROPOSED SOLUTION:

To achieve a high level of physical fidelity, a Simulator Discrepancy Report (SDR) has been submitted to correct these deficiencies. The SDR number and Scheduled Completion Date is listed above.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 4.3 (4)

EXCEPTION NUMBER: 23

EXCEPTION:

The Standard specifies requirements for alerting the instructor to events on the simulator that progress beyond plant design limits. The conditions required in the Standard are provided with the exception of Reactor Coolant System pressure versus temperature relationship indicative of gross voiding.

JUSTIFICATION:

The Ginna Simulator has demonstrated the ability to represent the onset and symptoms of gross RCS voiding. This concern does not, therefore, represent a limitation to continued simulator operation.

PROPOSED SOLUTION:

None required

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 24

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. The attached list of simulator recorders have minor differences from the MCB (e.g., pen color, chart paper, etc.).

Boric Acid Flow/Reactor Makeup Water Flow chart has wrong color pen. MCB had red and blue, simulator had red and green.
SDR 90-216 Scheduled Completion Date: 07/31/92

Simulator Seal Leakoff Recorder has green pen vs blue pen on the MCB.
SDR 90-273 Scheduled Completion Date: 07/31/92

JUSTIFICATION:

Simulator training experience has shown that the differences associated with these recorders does not affect training.

PROPOSED SOLUTION:

To achieve a high level of physical fidelity, Simulator Discrepancy Reports (SDR) have been submitted to correct these problems. The SDR numbers and Scheduled Completion Dates are listed above.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 25

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. The following list of pushbuttons are the wrong color.

Simulator D/G A and D/G B Voltage Shutdown pushbuttons are red vs black on the MCB.
SDR 90-230 Scheduled Completion Date: 08/30/91

JUSTIFICATION:

The pushbuttons are appropriately labeled and located in the correct position. Simulator training experience has shown that the color variation does not to detract from simulator training.

PROPOSED SOLUTION:

To achieve a high level of physical fidelity, a Simulator Discrepancy Report (SDR) have been submitted to correct these problems. The SDR numbers and Scheduled Completion Date is listed above.

EXCEPTIONS TO ANSI/ANS-3.5 1985

SECTION 3.2.2 Controls on Panels

EXCEPTION NUMBER: 26

EXCEPTION:

The standard requires that the controls on the simulator duplicate the size, shape, color and configuration of the functionally simulated hardware of the reference plant. Attached is a list of recorders with minor differences in either paper or permanent scales.

JUSTIFICATION:

While the permanent scales are incorrect, the scales on the chart paper are correct. Furthermore, there are meters that duplicate the information displayed on the recorders. The operators use the analog meters on the MCB for normal and emergency operations procedure information. These discrepancies do not detract from training.

PROPOSED SOLUTION:

To achieve a high level of physical fidelity, Simulator Discrepancy Reports have been submitted for all of the listed recorders. The SDR number and Scheduled Completion Dates are included on the attached list.

Simulator RCP/CW/MFW Pump and Misc Temperature Recorder RK-29 has one scale 0-130 degrees C vs. 2 scales, 0-130 degrees C and 0-100 degrees C on the MCB.
SDR 90-244 Scheduled Completion Date: 02/28/92

Simulator Moveable Incore Detector System recorders (2) have 0-10 millivolt scales vs. 0-10 millivolt and -75 degrees C - 150 degrees C on the MCB.
SDR 90-269 Scheduled Completion Date: 02/26/93

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT

ATTACHMENT 3

INSTRUCTOR INTERFACE

GINNA SIMULATOR
INITIAL CONDITIONS

FORM GSS-2.13-1

IC #	DESCRIPTION
1	CYCLE 18 BOL CSD DEPRESS ON RHR 1262 PPM
2	CYCLE 18 BOL 348F 1246 PPM ON RHR
3	CYCLE 18 BOL 359F 770 PSIG 1305 PPM S/G CLG
4	CYCLE 18 BOL 446F 1454 PSI 1244 PPM XE FREE H/U
5	CYCLE 18 BOL HSD 1 HR POST TRIP XE INCREASING 1160 PPM
6	CYCLE 18 BOL 1E-8 AMPS XE INCREASING 1494 PPM
7	CYCLE 18 BOL 15% 1800 RPM 1493 PPM XE FREE
8	CYCLE 18 BOL 27% PWR XE INCREASING 1491 PPM 10/28/90
9	CYCLE 18 BOL HSD 8 HR-POST TRIP XE AT PEAK, 1155 PPM
10	CYCLE 18 BOL 70% PWR XE INCREASING 1392 PPM
11	CYCLE 18 BOL 97% XE INCREASING 1302 PPM DILUTING
12	CYCLE 18 BOL 100% 1158 PPM XE AT EQUILIBRIUM
13	CYCLE 18 BOL 48% FROM IC-12 XE INCREASING 1164 PPM
14	CYCLE 18 MOL HSD 1 HR-POST TRIP 554 PPM
15	CYCLE 18 BOL 3 HR POST TR
16	CYCLE 18 MOL 100% 563 PPM XE AT EQUILIBRIUM
17	CYCLE 18 EOL HSD 1 HR-POST TRIP 8 PPM XE INCREASING
18	CYCLE 18 BOL CSD RHR 130F 1264 PPM
19	CYCLE 18 EOL 100% 13 PPM XE AT EQUILIBRIUM
20	CLEAR
21	CYCLE 18 BOL 50% FM-IC12 XE INCREASING 1168 PPM
22	CLEAR
23	CYCLE 18 BOL SD-BK COCKED 1494 PPM D100 ECP
24	CLEAR
25	CLEAR

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

LIST OF REMOTE FUNCTIONS

LOCAL OPERATOR ACTIONS

This listing provides the identifier code, noun name, and status options that can be selected for each.

CRC1 COND COOLER INLET VLV (3160)
(RCW3160) 0=CLOSED 1=OPEN
CRC2 COND COOLER OUTLET VLV (3161)
(RCW3161) 0=CLOSED 1=OPEN
CRC3 TRAVELING SCREEN 1A
(NPMP37SP(1)) 0=LOW SPEED 1=HIGH SPEED
CRC4 TRAVELING SCREEN 1B
(NPMP37SP(3)) 0=LOW SPEED 1=HIGH SPEED
CRC5 TRAVELING SCREEN 1C
(NPMP37SP(2)) 0=LOW SPEED 1=HIGH SPEED
CRC6 TRAVELING SCREEN 1D
(NPMP37SP(4)) 0=LOW SPEED 1=HIGH SPEED
CRC7 TRAVELING SCREEN 1A STATUS
(NPMP37SW(1)) 0=OFF 1=MANUAL 2=AUTO
CRC8 TRAVELING SCREEN 1B STATUS
(NPMP37SW(3)) 0=OFF 1=MANUAL 2=AUTO
CRC9 TRAVELING SCREEN 1C STATUS
(NPMP37SW(2)) 0=OFF 1=MANUAL 2=AUTO
CRC10 TRAVELING SCREEN 1D STATUS
(NPMP37SW(4)) 0=OFF 1=MANUAL 2=AUTO
CLG1 CC TO CCW HX 1A VLV (V733A)
(RCCV733A) 0=CLOSED 1=OPEN
CLG2 CC TO CCW HX 1B VLV (V733B)
(RCCV733B) 0=CLOSED 1=OPEN
CLG3 CC FM CCW HX 1A VLV (V734A)
(RCCV734A) 0=CLOSED 1=OPEN
CLG4 CC FM CCW HX 1B VLV (V734B)
(RCCV734B) 0=CLOSED 1=OPEN
CLG5 CC TO SEAL WTR HX ISOL VLV (V763)
(RCCV763) 0=CLOSED 1=OPEN
CLG6 SEAL WTR HX CC OUTLET STOP VLV (V767)
(RCCV767) 0=CLOSED 1=OPEN
CLG7 COMBINED STOP VLV, CC FM RHR PMPS (V769)
(RCCV769) PUMP STATUS 0=OFF 1=ON
CLG8 CC FM RHR HX 1A ISOL VLV (V780A)
(RCCV780A) 0=CLOSED 1=OPEN
CLG9 CC FM RHR HX 1B ISOL VLV (V780B)
(RCCV780B) 0=CLOSED 1=OPEN
CLG10 SW SUPPLY TO TD AFW PMP ISOL VLV (V4098)
(RAFV4098) 0=CLOSED 1=OPEN
CLG11 SERVICE WTR SUPPLY TO 1B AFW PMP ISOL VLV (V4344)
(RAFV4344) 0=CLOSED 1=OPEN

CLG12 SERVICE WTR SUPPLY TO 1A AFW PMP ISOL VLV (V4345)
(RAFV4345) 0=CLOSED 1=OPEN
CLG13 1A SERVICE WTR PMP DISCHARGE VLV (V4605)
(RSW4605) 0=CLOSED 1=OPEN
CLG14 1B SERVICE WTR PMP DISCHARGE VLV (V4606)
(RSW4606) 0=CLOSED 1=OPEN
CLG15 1C SERVICE WTR PMP DISCHARGE VLV (V4607)
(RSW4607) 0=CLOSED 1=OPEN
CLG16 1D SERVICE WTR PMP DISCHARGE VLV (V4608)
(RSW4608) 0=CLOSED 1=OPEN
CLG17 AUX BLDG "A" & "B" SW CROSSTIE ISOL VLV (V4610)
(RSW4610) 0=CLOSED 1=OPEN
CLG18 SERVICE WTR "A" & "B" LOOP CROSSTIE ISOL VLV (V4623)
(RSW4623) 0=CLOSED 1=OPEN
CLG19 CV FAN COOLERS SW SUPPLY CROSSTIE ISOL VLV (V4625)
(RSW4625) 0=CLOSED 1=OPEN
CLG20 CV FAN COOLERS SW SUPPLY CROSSTIE ISOL VLV (V4626)
(RSW4626) 0=CLOSED 1=OPEN
CLG21 CV FAN COOLERS SW SUPPLY CROSSTIE ISOL VLV (V4756)
(RSW4756) 0=CLOSED 1=OPEN
CLG22 1A TURBINE OIL COOLER DISCHARGE (V4691)
(RSW4691) 0=CLOSED 1=OPEN
CLG23 1B TURBINE OIL COOLER DISCHARGE (V4692)
(RSW4692) 0=CLOSED 1=OPEN
CLG24 REMOVABLE SPOOL USED FOR BACK FLUSH BLIND FLANGES
(RSWSPOL) 0=CLOSED 1=OPEN
CLG25 SERVICE WATER PUMP 1A/1C SELECTOR SW
(XSW1A:1C) T=1A F=1C
CLG26 SERVICE WATER PUMP 1B/1D SELECTOR SW
(XSW1B:1D) T=1B F=1D
CLG27 SWS SUPPLY LOOP X CONNECT (V4680/4686/4693)
(RSW4685) 0=CLOSED 1=OPEN
CLG28 SWS TURB OIL CLR 1A BYPASS OF CV4538 (VLV 4795E)
(RSW4795E) 0=CLOSED 1=OPEN
CLG29 SWS TURB OIL CLR 1B BYPASS OF CV4538 (VLV 4795B)
(RSW4795B) 0=CLOSED 1=OPEN
CLG30 CV FAN CLR HEADER ISO (VLV 4640)
(RSWH4640) 0=CLOSED 1=OPEN
CLG31 CV FAN CLR DISCH (VLV 4561)
(RSWH4561) 0=CLOSED 1=OPEN
CLG32 CV FAN CLR DISCH (VLV 4562)
(RSWH4562) 0=CLOSED 1=OPEN

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CLG33     CCW HX 1A TO DEER CREEK (VLV 4619C)
(RSWH4619)  0=CLOSED  1=OPEN
CLG34     CCW HX 1B TO DEER CREEK (VLV 4620B)
(RSWH4620)  0=CLOSED  1=OPEN
CLG35     SPENT FUEL PIT HX OUTLET VLV (VLV 4622)
(RSW4622)   0=CLOSED  1=OPEN
CLG36     CC TO RHR HX VLV MOTOR DISENGAGE (V738A)
(J738ALOA)  F=ENGAGED T=DISENGAGED
CLG37     CC  TO RHR HX VLV MANUAL POSITION (V738A)
(R738ALOA)  RANGE:  0.0/1.0  (CLOSED/OPEN)
CLG38     CC TO RHR HX VLV MOTOR DISENGAGE (V738B)
(J738BLOA)  F=ENGAGED T=DISENGAGED
CLG39     CC  TO RHR HX VLV MANUAL POSITION (V738B)
(R738BLOA)  RANGE:  0.0/1.0  (CLOSED/OPEN)
CLG40     MOV-759A CCW RETURN FROM RCP MOTOR DISENG
(J759AMAN)  F=ENGAGED T=DISENGAGED
CLG41     MOV-759A CCW RETURN FROM RCP MANUAL POSITION
(R759AMAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
CLG42     MOV-759B CCW RETURN FROM RCP MOTOR DISENG
(J759BMAN)  F=ENGAGED T=DISENGAGED
CLG43     MOV-759B CCW RETURN FROM RCP MANUAL POSITION
(R759BMAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
CLG44     SW TURBINE LOOP X-TIE (V-4611)
(RSW4611)   RANGE:  0.0/1.0  (CLOSED/OPEN)
CLG45     SW OUTLET 1A CCW HEAT EXCHANGER (V-4619)
(RSW4619)   RANGE:  0.0/1.0  (CLOSED/OPEN)
CLG46     SW OUTLET 1B CCW HEAT EXCHANGER (V-4620)
(RSW4620)   RANGE:  0.0/1.0  (CLOSED/OPEN)
CND1      COND DEMIN 1A
(RCFWDMNA)  0=OFF  1=ON
CND2      COND DEMIN 1B
(RCFWDMNB)  0=OFF  1=ON
CND3      COND DEMIN 1C
(RCFWDMNC)  0=OFF  1=ON
CND4      COND DEMIN 1D
(RCFWDMND)  0=OFF  1=ON
CND5      VACUUM PRIMING PMP 1A
(NXCFVPPA)  0=OFF  1=MANUAL  2=AUTO
CND6      VACUUM PRIMING PMP 1B
(NXCFVPPB)  0=OFF  1=MANUAL  2=AUTO
CND7      COND TRANSFER PMP
(NCNDXFP)   0=OFF  1=ON
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CND8     1A PRIMING AIR EJECTOR VAC SHUTOFF VLV (V3248)
(RCFV3248)  0=CLOSED  1=OPEN
CND9     1B PRIMING AIR EJECTOR VAC SHUTOFF VLV (V3249)
(RCFV3249)  0=CLOSED  1=OPEN
CND10    1A COND PMP SUCTION BUTTERFLY VLV (V3900)
(RCFV3900)  0=CLOSED  1=OPEN
CND11    1B COND PMP SUCTION BUTTERFLY VLV (V3901)
(RCFV3901)  0=CLOSED  1=OPEN
CND12    1C COND PMP SUCTION BUTTERFLY VLV (V3902)
(RCFV3902)  0=CLOSED  1=OPEN
CND13    1A COND PMP DISCHARGE VLV (V3920)
(RCFV3920)  0=CLOSED  1=OPEN
CND14    1B COND PMP DISCHARGE VLV (V3921)
(RCFV3921)  0=CLOSED  1=OPEN
CND15    1C COND PMP DISCHARGE VLV (V3922)
(RCFV3922)  0=CLOSED  1=OPEN
CND16    COND COOLER INLET ISOL VLV (V3926)
(RCFV3926)  0=CLOSED  1=OPEN
CND17    COND COOLER BYPASS ISOL VLV (V3928)
(RCFV3928)  0=CLOSED  1=OPEN
CND18    AIR EJECTOR COND INLET VLV (V3951)
(RCFV3951)  0=CLOSED  1=OPEN
CND19    GLAND STM CONDENSER COND ISOL VLV (V3952)
(RCFV3952)  0=CLOSED  1=OPEN
CND20    GLAND STM CONDENSER COND BYPASS VLV (V3954)
(RCFV3954)  0=CLOSED  1=OPEN
CND21    1B LOW PRESS HTR ISOL VLV (V3960)
(RCFV3960)  0=CLOSED  1=OPEN
CND22    1A LOW PRESS HTR ISOL VLV (V3961)
(RCFV3961)  0=CLOSED  1=OPEN
CND23    3B LOW PRESS HTR ISOL VLV (V3962)
(RCFV3962)  0=CLOSED  1=OPEN
CND24    3A LOW PRESS HTR ISOL VLV (V3963)
(RCFV3963)  0=CLOSED  1=OPEN
CND25    4B HTR COND INLET VLV (V3964)
(RCFV3964)  0=CLOSED  1=OPEN
CND26    4A HTR COND INLET VLV (V3965)
(RCFV3965)  0=CLOSED  1=OPEN
CND27    4B HTR COND OUTLET VLV (V3966)
(RCFV3966)  0=CLOSED  1=OPEN
CND28    4A HTR COND OUTLET VLV (V3967)
(RCFV3967)  0=CLOSED  1=OPEN
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CND29     COND MANUAL FILL VLV (V4051)
(RCDV4051)  0=CLOSED  1=OPEN
CND30     NO 2 LP TURBINE BOOT SPRAY MANUAL BYPASS VLV (V4064)
(RCFV4064)  0=CLOSED  1=OPEN
CND31     NO 1 LP TURBINE BOOT SPRAY MANUAL BYPASS VLV (V4067)
(RCFV4067)  0=CLOSED  1=OPEN
CND32     COND STOR TK 1B ISOL VLV (V4070A)
(RCD4070A)  0=CLOSED  1=OPEN
CND33     COND STOR TK 1A ISOL VLV (V4071A)
(RCD4071A)  0=CLOSED  1=OPEN
CND34     CONDENSER ISOL VLV FOR HIGH PRESS HTR RECIR (V4361)
(RCFV4361)  0=CLOSED  1=OPEN
CND35     A COND BSTR PMP DISCHARGE VLV (V9503A)
(RCF9503A)  0=CLOSED  1=OPEN
CND36     B COND BSTR PMP DISCHARGE VLV (V9504A)
(RCF9504A)  0=CLOSED  1=OPEN
CND37     C COND BSTR PMP DISCHARGE VLV (V9505A)
(RCF9505A)  0=CLOSED  1=OPEN
CND38     A COND BSTR PMP SUCTION VLV (V9506A)
(RCF9506A)  0=CLOSED  1=OPEN
CND39     B COND BSTR PMP SUCTION VLV (V9506C)
(RCF9506C)  0=CLOSED  1=OPEN
CND40     C COND BSTR PMP SUCTION VLV (V9506E)
(RCF9506E)  0=CLOSED  1=OPEN
CND41     COND BSTR PMP BYPASS ISOL VLV (V9506F)
(RCF9506F)  0=CLOSED  1=OPEN
CND42     CLEANUP RECIRC LINE MANUAL ISOL VLV (V9507D)
(RCF9507D)  0=CLOSED  1=OPEN
CND43     COND TO MAKEUP LINE MANUAL ISOL VLV (V9671)
(RCDV9671)  0=CLOSED  1=OPEN
CND44     COND TO COND SUPPLY TK MANUAL ISOL VLV (V9666)
(RSA9666)   0=CLOSED  1=OPEN
CND45     (DELETED)
(CCONOO)    0=EMPTY  1=FULL
CND46     (DELETED)
(CCONOO)    0=EMPTY  1=FULL
CND47     COND SUPPLY TO SAFW CONTROL VALVE (PCV 9662)
(PSAFSET)   RANGE: 115-215 PSIA (NOMINAL: 165 PSIA)
CND48     COND DEMINERIALIZERS BYPASS
(RCFWDBYP)  0=OFF  1=ON
CND49     PRI MAKE-UP WTR SYS ENABLE/DISABLE
(JCFWPMW)   T=ENABLE F=DISABLE
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CND50     CONDENSER VACUUM BREAKER V3291A (V3291)
(RCDV3291)  0=CLOSED 1=OPEN
CND51     COND TO S/G B/D HX ISOLATION VALVE (V9512B)
(RCFW9512)  0=CLOSED 1=OPEN
CND52     COND TO S/G B/D HX NORMAL/BYPASS SWITCH
(JCFWBLDB)  F=NORMAL T=BYPASS
CND53     COND BYPASS ISOLATION (V3501)
(RCFV3501)  0=CLOSED 1=OPEN
CND54     ISO OF MAKEUP TO CNDSR FROM CST (V4058)
(RCDV4058)  0=CLOSED  1=OPEN
CVC1      GAS STRIPPER FEED PMP 1A
(NBRSGSFP)  F=OFF T=ON
CVC2      NRHX INLET VALVE (V204A)
(RCVV204A)  0=CLOSED 1=OPEN
CVC3      PCV-135 UPSTREAM ISOL VLV (V204C)
(RCVV204C)  0=CLOSED 1=OPEN
CVC4      PCV-135 BYPASS VLV (V204D)
(RCVV204D)  0=CLOSED 1=OPEN
CVC5      CATION BED DEMIN BYPASS VALVE (V211)
(RCVV211)   0=CLOSED 1=OPEN
CVC6      1B MB LETDOWN INLET VLV (V212)
(RCVV212)   0=CLOSED 1=OPEN
CVC7      1A MB LETDOWN INLET VLV (V223)
(RCVV223)   0=CLOSED 1=OPEN
CVC8      1A DEBOR DI LETDOWN INLET VLV (V226A)
(RCVV226A)  0=CLOSED 1=OPEN
CVC9      1B DEBOR DI LETDOWN INLET VLV (V227A)
(RCVV227A)  0=CLOSED 1=OPEN
CVC10     MB BYPASS VLV (V245)
(RCVV245)   0=CLOSED 1=OPEN
CVC11     CATION BED LETDOWN INLET VLV (V246)
(RCVV246)   0=CLOSED 1=OPEN
CVC12     DEBOR DI'S OUTLET TO RC FILTER VLV (V247)
(RCVV247)   0=CLOSED 1=OPEN
CVC13     RC FILTER OUTLET TO RHRX VLV (V252)
(RCVV252)   0=CLOSED 1=OPEN
CVC14     RC FILTER OHTLET TO ISOL VLV (V253)
(RCVV253)   0=CLOSED 1=OPEN
CVC15     SEAL WTR HX INLET VLV (V265)
(RCVV265)   0=CLOSED 1=OPEN
CVC16     1A CHARGING PMP SUCTION VLV (V267)
(RCVV267)   0=CLOSED 1=OPEN
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CVC17    CHARGING PMP SUCTION ISOL VLV (V268)
(RCVV268)    0=CLOSED 1=OPEN
CVC18    1B CHARGING PMP SUCTION ISOL VLV (V269)
(RCVV269)    0=CLOSED 1=OPEN
CVC19    1A RCP SEAL INJ NEEDLE VLV (V300A)
(RCVV300A(1)) 0=CLOSED 1=OPEN
CVC20    1B RCP SEAL INJ NEEDLE VLV (V300B)
(RCVV300A(2)) 0=CLOSED 1=OPEN
CVC21    SEAL WTR HX OUTLET VLV (V321)
(RCVV321)    0=CLOSED 1=OPEN
CVC22    1A BA TK OUTLET TO TRANS PMPS VLV (V331)
(RCVV331(1))0=CLOSED 1=OPEN
CVC23    1A BORIC ACID TRANS PMP SUCTION VLV (V334)
(RCVV334(1))0=CLOSED 1=OPEN
CVC24    BA TRANS PMP SUCTION ISOL VLV (V335)
(RCVV335)    0=CLOSED 1=OPEN
CVC25    1B BORIC ACID TRANS PMP SUCTION VLV (V338)
(RCVV334(2))0=CLOSED 1=OPEN
CVC26    1B BA TK OUTLET TO TRANS PMPS VLV (V345)
(RCVV331(2))0=CLOSED 1=OPEN
CVC27    BA FILTER OUTLET VLV (V348A)
(RCVV348A)    0=CLOSED 1=OPEN
CVC28    IMMEDIATE BORATION OF RMW SHUT OFF VLV (V348B)
(RCVV348B)    0=CLOSED 1=OPEN
CVC29    RMW IMMEDIATE BORATION SUPPY FLUSHING VLV (V353)
(RCVV353)     0=CLOSED 1=OPEN
CVC30    BA SUPPY TO FCV 110A VLV (V354)
(RCVV354)     0=CLOSED 1=OPEN
CVC31    IMMEDIATE BORATION HAND VLV (V356)
(RCVV356)     0=CLOSED 1=OPEN
CVC32    RWST CHARGING PMP SUCTION SUPPY BYPASS VLV (V358)
(RCVV358)     0=CLOSED 1=OPEN
CVC33    RMW SUPPLY TO FT-111 VLV (V360)
(RCVV360)     0=CLOSED 1=OPEN
CVC34    CHARGING LINE HCV-142 OUTLET VLV (V384B)
(RCVV384B)    0=CLOSED 1=OPEN
CVC35    CHARGING LINE HCV-142 BYPASS VLV (V384C)
(RCVV384C)    0=CLOSED 1=OPEN
CVC36    SWHX BYPASS VLV (V394)
(RCVV394)     0=CLOSED 1=OPEN
CVC37    BA FILTER BYPASS OR RETURN FOR 1A PMP & TK (V398B)
(RCVV398(1)) 0=CLOSED 1=OPEN
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CVC38     BA FILTER BYPASS OR RETURN FOR 1B PMP & TK (V398A)
(RCVV398(2)) 0=CLOSED 1=OPEN
CVC39     1C CHARGING PMP SUCTION VLV (V399)
(RCVV399)     0=CLOSED 1=OPEN
CVC40     REFUELING WTR CIRC PMP SUCTION FROM LTDN LINE (V820)
(RCVV820)     0=CLOSED 1=OPEN
CVC41     REFUELING WTR CIRC PMP DISCHARGE TO LTDN LINE (V821)
(RCVV821)     0=CLOSED 1=OPEN
CVC42     ROOT VLV ON BA TK 1A TO SI PMP SUCTION (V827A)
(RCVV827(1)) 0=CLOSED 1=OPEN
CVC43     ROOT VLV ON BA TK 1B TO SI PMP SUCTION (V827B)
(RCVV827(2)) 0=CLOSED 1=OPEN
CVC44     CVCS HOLDUP TK #3 INLET VLV (V1104)
(RCVV1120(3))0=CLOSED 1=OPEN
CVC45     CVCS HOLDUP TK #3 OUTLET TO GAS STRIP (V1114)
(RCVV1129(3))0=CLOSED 1=OPEN
CVC46     CVCS HOLDUP TK #2 INLET VLV (V1119)
(RCVV1120(2))0=CLOSED 1=OPEN
CVC47     CVCS HOLDUP TK #1 INLET VLV (V1120)
(RCVV1120(1))0=CLOSED 1=OPEN
CVC48     CVCS HOLDUP TK #2 OUTLET TO GAS STRIP (V1125)
(RCVV1129(2))0=CLOSED 1=OPEN
CVC49     CVCS HOLDUP TK #1 OUTLET TO GAS STRIP (V1129)
(RCVV1129(1))0=CLOSED 1=OPEN
CVC50     VCT GAS ANALYZER SOLENOID VLV (V1275D)
(RCV1275D)    0=CLOSED 1=OPEN
CVC51     VCT VENT PRESS CONT VLV (PCV141)
(PCVC141)     114.7=CLOSED 14.7=OPEN
CVC52     VCT TO GAS ANALYZER ISOL VLV (PCV193A)
(PCVC193A)  114.7=CLOSED 14.7=OPEN
CVC53     BAT 1A LEVEL
(ACVCBAT(1))0=EMPTY 30042=FULL
CVC54     BAT 1B LEVEL
(ACVCBAT(2))0=EMPTY 30042=FULL
CVC55     RMW TK LEVEL
(ARMWTANK)  0=EMPTY 625875=FULL
CVC56     HOLDUP TK #1 LEVEL
(ABRSRHT(1))0=EMPTY 259760=FULL
CVC57     HOLDUP TK #2 LEVEL
(ABRSRHT(2))0=EMPTY 259760=FULL
CVC58     HOLDUP TK #3 LEVEL
(ABRSRHT(3))0=EMPTY 259760=FULL
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CVC59     VCT H2 SUPPLY PRESS CONT VLV (PCV113)
(PCVC113)    14.7=CLOSED 114.7=OPEN
CVC60     VCT N2 SUPPLY PRESS CONT VLV (PCV114)
(PCVC114)    14.7=CLOSED 114.7=OPEN
CVC61     CVC LETDOWN ISOLATION VLV (V543)
(RCVV543)     0=CLOSED  1=OPEN
CVC62     RMW TO BA PUMP 1A VLV (V336)
(RCVV336(1))  0=CLOSED  1=OPEN
CVC63     RMW TO BA PUMP 1B VLV (V337)
(RCVV336(2)) 0=CLOSED  1=OPEN
CVC64     SET BORIC ACID TANK 1A TEMPERATURE
(TCVCTNK(1))
CVC65     SET BORIC ACID TANK 1B TEMPERATURE
(TCVCTNK(2))
CVC66     ALTERNATE CHARGING ISOL OF AOV392B (V323)
(RCVV323)      0=CLOSED 1=OPEN
CVC67     RCS FILTER INLET (V249)
(RCVV249)      0=CLOSED 1=OPEN
CVC68     RCS FILTER BYPASS (V250)
(RCVV250)      0=CLOSED 1=OPEN
CVC69     EXCESS LETDOWN MANUAL ISOLATION (V544)
(RCVV544)      0=CLOSED 1=OPEN
CVC70     MOV-313 SEAL RETURN TO VCT MOTOR DISENG
(J313MAN)    F=ENGAGED T=DISENGAGED
CVC71     MOV-313 SEAL RETURN TO VCT MANUAL POSITION
(R313MAN)    RANGE:  0.0/1.0  (CLOSED/OPEN)
CVC72     BA BLENDER ISOLATION (V-109)                          !R29
(RCVV109)    RANGE:  0.0/1.0  (CLOSED/OPEN)
EDS1      TSC BATTERY TIE IN TO DC FUSE CABINETS A & B          !R15
(NLOEDS1)    0=NONE  1=A  2=B                                   !R15
EDS2      EMERGENCY TRANSFORMER SUPPLY 52/ET
(LBKVBXFR)   T=CLOSED  F=OPEN
EDS3      480V MCC 1K SUPPLY BKR (52/MCC1K)                     !R15
(LBK:1K)     T=CLOSED  F=OPEN                                   !R15
EDS4      480V MCC 1J SUPPLY BKR (52/MCC1J)
(LBK:1J)     T=CLOSED  F=OPEN
EDS5      BATTERY CHARGER 1A1 SUPPLY FM MCC 1C (52/1A1C)        !R15
(LBKQ1A1C)   T=CLOSED  F=OPEN                                   !R15
EDS6      BATTERY CHARGER 1A SUPPLY FM MCC 1C (52/1AC)          !R15
(LBKQ1AC)    T=CLOSED  F=OPEN                                   !R15
EDS7      BATTERY CHARGER 1B1 SUPPLY FM MCC 1D (52/1B1D)        !R15
(LBKQ1B1D)   T=CLOSED  F=OPEN                                   !R15
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EDS8      BATTERY CHARGER 1B SUPPLY FM MCC 1D (52/1BD)                !R15
(LBKQ1BD)    T=CLOSED   F=OPEN                                        !R15
EDS9      1A BATTERY DISCONNECT SWITCH                                !R15
(LBKBAT1A)   T=CLOSED   F=OPEN                                        !R15
EDS10     1B BATTERY DISCONNECT SWITCH                                !R15
(LBKBAT1B)   T=CLOSED   F=OPEN                                        !R15
EDS11     AC BREAKER DISCONNECT FOR RHR MOV-851A                      !R21
(J851ALOA)   T=CLOSED   F=OPEN                                        !R21
EDS12     AC BREAKER DISCONNECT FOR RHR MOV-851B                      !R21
(J851BLOA)   T=CLOSED   F=OPEN                                        !R21
EDS13     (DELETED)                                                   !R28
(JEPSTRUE)   T=RESET    F=NO RESET                              !R20!R28
EDS14     SWITCHYARD DISCONNECT 1G13A71
(KDIS1G71)   T=CLOSED   F=OPEN
EDS15     SWITCHYARD DISCONNECT 9X13A73
(KDIS9X73)   T=CLOSED   F=OPEN
EDS16     SWITCHYARD MANUAL DISCONNECT 9X13A71
(KDIS9X71)   T=CLOSED   F=OPEN
EDS17     SWITCHYARD MANUAL DISCONNECT 1G13A73
(KDIS1G73)   T=CLOSED   F=OPEN
EDS18     STATION MANUAL DISCONNECTS 75111, 75113
(KDIS751)    T=CLOSED   F=OPEN
EDS19     STATION MANUAL DISCONNECTS 76701, 76703
(KDIS767)    T=CLOSED   F=OPEN
EDS20     SWITCHYARD BREAKER 90912
(KBK909)     T=CLOSED   F=OPEN
EDS21     SWITCHYARD BREAKER 6T13A72
(KBK6T72)    T=CLOSED   F=OPEN
EDS22     SWITCHYARD MANUAL DISCONNECT 6T13A74
(KDIS6T74)   T=CLOSED   F=OPEN
EDS23     SWITCHYARD BREAKER 7X13A72
(KBK7X72)    T=CLOSED   F=OPEN
EDS24     SWITCHYARD BREAKER 8X13A72
(KBK8X72)    T=CLOSED   F=OPEN
EDS25     SWITCHYARD BREAKER 90812
(KBK908)     T=CLOSED   F=OPEN
EDS26     SWITCHYARD MANUAL DISCONNECT 90804
(KDIS908)    T=CLOSED   F=OPEN
EDS27     SWITCHYARD BREAKER 91102
(KBK911)     T=CLOSED   F=OPEN
EDS28     SWITCHYARD MANUAL DISCONNECT 91104
(KDIS911)    T=CLOSED   F=OPEN
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EDS29     SWITCHYARD BREAKER 91202
(KBK912)     T=CLOSED  F=OPEN
EDS30     SWITCHYARD MANUAL DISCONNECT 91204
(KDIS912)    T=CLOSED  F=OPEN
EDS31     SWITCHYARD BREAKER 91302
(KBK913)     T=CLOSED  F=OPEN
EDS32     SWITCHYARD MANUAL DISCONNECT 91304
(KDIS913)    T=CLOSED  F=OPEN
EDS33     MCC 1C LOAD SHED MAN. RESET PB
(IDSQLS:C)   T=RESET   F=NO RESET
EDS34     MCC 1D LOAD SHED MAN. RESET PB
(IDSQLS:D)   T=RESET   F=NO RESET
EDS35     AC BREAKER DISCONNECT FOR SI VALVE 865
(JV865LOA)   T=CLOSED  F=OPEN
EDS36     AC BREAKER DISCONNECT FOR SI VALVE 841
(JV841LOA)   T=CLOSED  F=OPEN
EDS37     AC BREAKER DISCONNECT FOR SI VALVE 878B
(J878BLOA)   T=CLOSED  F=OPEN
EDS38     AC BREAKER DISCONNECT FOR SI VALVE 878D
(J878DLOA)   T=CLOSED  F=OPEN
EDS39     AC BREAKER DISCONNECT FOR RHR VALVE 700
(JV700LOA)   T=CLOSED  F=OPEN
EDS40     AC BREAKER DISCONNECT FOR RHR VALVE 701
(JV701LOA)   T=CLOSED  F=OPEN
EDS41     AC BREAKER DISCONNECT FOR RHR VALVE 720
(JV720LOA)   T=CLOSED  F=OPEN
EDS42     AC BREAKER DISCONNECT FOR RHR VALVE 721
(JV721LOA)   T=CLOSED  F=OPEN
EDS43     AC BREAKER DISCONNECT FOR SI VALVE 878A
(J878ALOA)   T=CLOSED  F=OPEN
EDS44     AC BREAKER DISCONNECT FOR SI VALVE 878C
(J878CLOA)   T=CLOSED  F=OPEN
EDS45     AC BREAKER DISCONNECT FOR RHR VALVE 856
(JV856LOA)   T=CLOSED  F=OPEN
EDS46     VOLTAGE REGULATOR RESET
(JVRCRST)    T=RESET   F=NO CHANGE
EDS47     4160V BUS 11A CONTROL PWR XFER SW
(LEPSD11A)   T=DC PNL A    F=DC BUS B
EDS48     4160V BUS 11B CONTROL PWR XFER SW
(LEPSD11B)   T=DC PNL A    F=DC BUS B
EDS49     12A ANNUNCIATOR PANEL RESET                    !R23
(JLOA12A)    T=RESET       F=NOT RESET
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EDS50     12B ANNUNCIATOR PANEL RESET                                  !R23
(JLOA12B)   T=RESET       F=NOT RESET
EDS51     07C RESET
(JEPSRST)   T=TRUE
EDS52     MANUAL TIE BR. (527BT 14-16)
(LBK1416M)  T=CLOSED  F=OPEN
EDS53     BKR 527EG1B3 "B" DIESEL GEN
(LBKEG1B3)  T=CLOSED  F=OPEN
EDS54     AC BREAKER DISCONNECT FOR RHR MOV-817                        !R22
(J817LOA)   T=CLOSED  F=OPEN                                           !R22
EDS55     AC BREAKER DISCONNECT FOR RHR MOV-1813A                      !R22
(J1813ALO)  T=CLOSED  F=OPEN                                           !R22
EDS56     AC BREAKER DISCONNECT FOR RHR MOV-1813B                      !R22
(J1813BLO)  T=CLOSED  F=OPEN                                           !R22
FDW1      1B FW PMP SUCTION VLV (V3970)
(RCFV3970)  0=CLOSED  1=OPEN
FDW2      1A FW PMP SUCTION VLV (V3971)
(RCFV3971)  0=CLOSED  1=OPEN
FDW3      5B FW HTR INLET ISOL VLV (V3978)
(RCFV3978)  0=CLOSED  1=OPEN
FDW4      5A FW HTR INLET ISOL VLV (V3979)
(RCFV3979)  0=CLOSED  1=OPEN
FDW5      5B HTR COND OUTLET STOP CHECK VLV (V3982)
(RCFV3982)  0=CLOSED  1=OPEN
FDW6      5B HTR COND OUTLET TO CONDENSER ISOL VLV (V3982B)            !R26
(RCF3982B)  0=CLOSED  1=OPEN
FDW7      5A HTR COND OUTLET STOP CHECK VLV (V3983)
(RCFV3983)  0=CLOSED  1=OPEN
FDW8      5A HTR COND OUTLET TO CONDENSER ISOL VLV (V3983B)
(RCF3983B)  0=CLOSED  1=OPEN
FDW9      1B S/G MN FW CONTROL VLV ISOL VLV (V3984)
(RCFV3984)  0=CLOSED  1=OPEN
FDW10     1A S/G MN FW CONTROL VLV ISOL VLV (V3985)
(RCFV3985)  0=CLOSED  1=OPEN
FDW11     1B S/G MN FW STOP VLV (V3994)
(RCFV3994)  0=CLOSED  1=OPEN
FDW12     1A S/G MN FW STOP VLV (V3995)
(RCFV3995)  0=CLOSED  1=OPEN
FDW13     COND STOR TK 1B TO AFW ISOL VLV (V4070)
(RCDV4070)  0=CLOSED  1=OPEN
FDW14     COND STOR TK 1A TO AFW ISOL VLV (V4071)
(RCDV4071)  0=CLOSED  1=OPEN
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FDW15    AFW PMP RECIRC TO 1B COND STOR TK ISOL VLV (V4074)
(RCDV4074)  0=CLOSED  1=OPEN
FDW16    AFW PMP RECIRC TO 1A COND STOR TK ISOL VLV (V4075)
(RCDV4075)  0=CLOSED  1=OPEN
FDW17    COND SUPPLY TO AFW PMPS CONTROL ISOL VLV (V4084)
(RCFV4084)  0=CLOSED  1=OPEN
FDW18    FW HTR HIGH PRESS HTR RECIRC STOP VLV (V4365)
(RCFV4365)  0=CLOSED  1=OPEN
FDW19    MOTOR DRIVEN AFW PMP DISCHARGE LINE (V4360)
(RAFV4360)  0=CLOSED  1=OPEN
FDW20    "C" SAFW PMP COND SUCTION MANUAL ISOL VLV (V9707A)
(RSA9707A)  0=CLOSED  1=OPEN
FDW21    "D" SAFW PMP COND SUCTION MANUAL ISOL VLV (V9707B)
(RSA9707B)  0=CLOSED  1=OPEN
FDW22    MN FW PMP 1A LOCAL TRIP
(XCFFP1A)   T=TRIP
FDW23    MN FW PMP 1B LOCAL TRIP
(XCFFP1B)   T=TRIP
FDW24    COND PMP DISCHARGE TO TDAFP (V4024)
(RAFV4024)  0=CLOSED  1=OPEN
FDW25    COND PMP DISCHARGE TO MDAFP 1A (V4025)
(RAFV4025)  0=CLOSED  1=OPEN
FDW26    COND PMP DISCHARGE TO MDAFP 1B (V4026)
(RAFV4026)  0=CLOSED  1=OPEN
FDW27    CST TO TDAFP (V4015)
(RAFV4015)  0=CLOSED  1=OPEN
FDW28    CST TO MDAFP 1B (V4018)
(RAFV4018)  0=CLOSED  1=OPEN
FDW29    CST TO MDAFP 1A (V4019)
(RAFV4019)  0=CLOSED  1=OPEN
FDW30    TDAFWP LOCAL TRIP
(JFWATTPB)  TRUE=PUMP TRIP  FALSE=RESET
FDW31    TDAFP SPEED SETPOINT
(OFWASGS)   RANGE=3600 TO 4575 RPM   NORMALLY=4400
FDW32    TDAFP TRIP VLV 3652 RESET
(RFWATTV)   0=CLOSED  1=OPEN
FDW33    MFW 1A DISCHARGE VLV INTERLOCK DEFEAT SW
(JCFMFW1A)  TRUE = DEFEAT
FDW34    MFW 1B DISCHARGE VLV INTERLOCK DEFEAT SW
(JCFMFW1B)  TRUE = DEFEAT
FDW35    SAFW 'C' TEST SWITCH
(KXSWPP1C)  T=TEST   F=NORMAL
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FDW36     SAFW 'D' TEST SWITCH
(KXSWPP1D)  T=TEST   F=NORMAL
FDW37     MFW PMP 1A RECIRC ISOL (V4147A)
(RCFV147A)  0=CLOSED  1=OPEN
FDW38     MFW PMP 1B RECIRC ISOL (V4148A)
(RCFV148A)  0=CLOSED  1=OPEN
FDW39     MFP RECIRC X-TIE (V4496)
(RCFV4496)  0=CLOSED  1=OPEN
FDW40     MFW CLEANUP TO CONDENSER AIR LOAD (AOV-4262)
(RCFAIR62)  0=CLOSED  1=OPEN
FDW41     MFW CLEANUP TO CONDENSER AIR LOAD (AOV-4263)
(RCFAIR63)  0=CLOSED  1=OPEN
FDW42     MFW COND. CLEANUP VIA 5A HTR (V4497)
(RCFV4497)  0=CLOSED  1=OPEN
FDW43     MFW COND. CLEANUP VIA 5B HTR (V4498)
(RCFV4498)  0=CLOSED  1=OPEN
FDW44     AOV-4297 TDAFP TO A SG SHAFT PINNING
(J4297MAN)  F=ENGAGED T=DISENGAGED
FDW45     AOV-4297 TDAFP TO A SG MANUAL POSITION
(R4297MAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
FDW46     AOV-4298 TDAFP TO B SG SHAFT PINNING
(J4298MAN)  F=ENGAGED T=DISENGAGED
FDW47     AOV-4298 TDAFP TO B SG MANUAL POSITION
(R4298MAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
FDW48     MOV-3977 MFP A DISCH VLV MOTOR DISENGAGE
(J3977MAN)  F=ENGAGED T=DISENGAGED
FDW49     MOV-3977 MFP A DISCH VLV MANUAL POSITION
(R3977MAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
FDW50     MOV-3976 MFP B DISCH VLV MOTOR DISENGAGE
(J3976MAN)  F=ENGAGED T=DISENGAGED
FDW51     MOV-3976 MFP B DISCH VLV MANUAL POSITION
(R3976MAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
FDW52     MFP A DISCH VLV BYPASS (V3977A)
(RCF3977A)  0=CLOSED  1=OPEN
FDW53     MFP B DISCH VLV BYPASS (V3976A)
(RCF3976A)  0=CLOSED  1=OPEN
FDW54     MFP A SEAL WATER ISOLATION VALVE
(RCFV3769)  0=CLOSED  1=OPEN
FDW55     MFP B SEAL WATER ISOLATION VALVE
(RCFV3768)  0=CLOSED  1=OPEN
FDW56     MAIN FEED PUMPS A & B SEAL PUMPS
(KMFPSEAL)  F=OFF  T=AUTO
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GEN1      DIESEL GEN A LOCAL START PB-6
(KDSGSTR(1))  T=START  F=STOP
GEN2      DIESEL GEN B LOCAL START PB-6
(KDSGSTR(2))  T=START  F=STOP
GEN3      DIESEL GEN A LOCAL STOP PB-2
(KDSGSTP(1))  T=STOP  F=START
GEN4      DIESEL GEN B LOCAL STOP PB-2
(KDSGSTP(2))  T=STOP  F=START
GEN5      DIESEL GEN A REM/LOC SW
(KDSGLOC(1))  T=LOCAL  F=REMOTE
GEN6      DIESEL GEN B REM/LOC SW
(KDSGLOC(2))  T=LOCAL  F=REMOTE
GEN7      DIESEL GEN A LOCAL GOV RAISE
(KDSGGR(1))   T=RAISE  F=LOWER
GEN8      DIESEL GEN B LOCAL GOV RAISE
(KDSGGR(2))   T=RAISE  F=LOWER
GEN9      DIESEL GEN A LOCAL GOV LOWER
(KDSGGL(1))   T=LOWER  F=RAISE
GEN10     DIESEL GEN B LOCAL GOV LOWER
(KDSGGL(2))   T=LOWER  T=RAISE
GEN11     DIESEL GEN A LOCAL ALARM RESET
(KDSGALRS(1)) T=RESET
GEN12     DIESEL GEN B LOCAL ALARM RESET PB-5
(KDSGALRS(2)) T=RESET
GEN13     DIESEL GEN A FUEL PUMP MODE
(MDSGFPMP(1)) 0=AUTO  1=AUTO A&B  2=RUN  3=SHUTDOWN FOR MAINT
GEN14     DIESEL GEN B FUEL PUMP MODE
(MDSGFPMP(2)) 0=AUTO  1=AUTO A&B  2=RUN  3=SHUTDOWN FOR MAINT
GEN15     1A DIESEL GEN AIR RECEIVER OUTLET VLV (V5947)
(LDSGSAR(1))  T=OPEN  F=CLOSED
GEN16     1B DIESEL GEN AIR RECEIVER OUTLET VLV (V5948)
(LDSGSAR(2))  T=OPEN  F=CLOSED
GEN17     1A AND 1B DIESEL GEN AIR SUPPLY SEGREGATING VLV (V5975)
(LDSGSAX0)  T=OPEN  F=CLOSED
GEN18     DIESEL GEN FUEL OIL PMP DISCHARGE CROSSTIE VLV (V5976)
(LDSGXFO)   T=OPEN  F=CLOSED
GEN19     DIESEL GEN 1A OVERSPEED SWITCH (MECHANICALLY LATCHED)
(JDSGOS(1)) T=TRIP  F=MANUAL RESET
GEN20     DIESEL GEN 1B OVERSPEED SWITCH (MECHANICALLY LATCHED)
(JDSGOS(2)) T=TRIP  F=MANUAL RESET
HTR1      5A HP HTR LVL CONTROL TO 4A LP HTR ISOL VLV (V4103)
(RFHV4103)  0=CLOSED 1=OPEN
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HTR2 5B HP HTR LVL CONTROL TO 4B LP HTR ISOL VLV (V4104)
(RFHV4104) 0=CLOSED 1=OPEN
HTR3 2A HP HTR LVL CONTROL TO 1A LP HTR ISOL VLV (V4105)
(RFHV4105) 0=CLOSED 1=OPEN
HTR4 2B HP HTR LVL CONTROL TO 1B LP HTR ISOL VLV (V4106)
(RFHV4106) 0=CLOSED 1=OPEN
HTR5 3A HP HTR LVL CONTROL TO 2A LP HTR ISOL VLV (V4109)
(RFHV4109) 0=CLOSED 1=OPEN
HTR6 3B HP HTR LVL CONTROL TO 2B LP HTR ISOL VLV (V4110)
(RFHV4110) 0=CLOSED 1=OPEN
HTR7 HTR DRAIN TK PMP DISCHARGE CONTROL VLV 3345 (V4122)
(RFHV4122) 0=CLOSED 1=OPEN
HTR8 HTR DRAIN TK PMP DISCHARGE CONTROL VLV 3345 (V4123)
(RFHV4123) 0=CLOSED 1=OPEN
HTR9 4B LP HTR COND DRAIN LINE ISOL VLV (V4128)
(RFHV4128) 0=CLOSED 1=OPEN
HTR10 4A LP HTR CONT DRAIN LINE ISOL VLV (V4129)
(RFHV4129) 0=CLOSED 1=OPEN
HTR11 5B HP HTR DUMP ISOL VLV (HEATER SIDE) (V4132)
(RFHV4132) 0=CLOSED 1=OPEN
HTR12 5A HP HTR DUMP ISOL VLV (HEATER SIDE) (V4133)
(RFHV4133) 0=CLOSED 1=OPEN
HTR13 1A LP HTR LVL CONTROL 3367 ISOL VLV (V4137)
(RFHV4137) 0=CLOSED 1=OPEN
HTR14 1B LP HTR LVL CONTROL 3368 ISOL VLV (V4138)
(RFHV4138) 0=CLOSED 1=OPEN
HTR15 HTR DRAIN TK LVL CONTROL 3343 ISOL VLV (V4141)
(RFHV4141) 0=CLOSED 1=OPEN
HTR16 HTR DRAIN TK LVL CONTROL 3343 BYPASS VLV (V4142)
(RFHV4142) 0=CLOSED 1=OPEN
HTR17 HP TURBINE STM EXTRACTION TO 4A LP HTR ISOL (V5601)
(RFHV5601) 0=CLOSED 1=OPEN
HTR18 HP TURBINE STM EXTRACTION TO 4B LP HTR ISOL (V5602)
(RFHV5602) 0=CLOSED 1=OPEN
HTR19 HP TURBINE STM EXTRACTION TO 5A LP HTR ISOL (V5603)
(RFHV5603) 0=CLOSED 1=OPEN
HTR20 HP TURBINE STM EXTRACTION TO 5B LP HTR ISOL (V5604)
(RFHV5604) 0=CLOSED 1=OPEN
HTR21 ISOL VLV TO HTR DRAIN VLV 5556 (V5608)
(RFHV5608) 0=CLOSED 1=OPEN
HTR22 ISOL VLV TO HTR DRAIN VLV 5561 (V5609)
(RFHV5609) 0=CLOSED 1=OPEN

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HTR23     ISOL VLV TO HTR DRAIN VLV 5558 (V5612)
(RFHV5612)  0=CLOSED 1=OPEN
HTR24     ISOL VLV TO HTR DRAIN VLV 5559 (V5613)
(RFHV5613)  0=CLOSED 1=OPEN
HTR25     ISOL VLV TO HTR DRAIN VLV 5557 (V5617)
(RFHV5617)  0=CLOSED 1=OPEN
HTR26     ISOL VLV TO HTR DRAIN VLV 5560 (V5618)
(RFHV5618)  0=CLOSED 1=OPEN
HTR27     ISOL VLV TO HDR DRAIN TANK (V4100)
(RFHV4100)  0=CLOSED 1=OPEN
MIS1      HYDROGEN RECOMBINER (H2 REMOVAL)
(XCNMH2L)  H2 REMOVAL RATE
MIS2      AUX BLDG SUMP TK PMP 1
(OWPABS1)   0=OFF   1=ON
MIS3      AUX BLDG SUMP TK PMP 2
(OWPABS2)   0=OFF   1=ON
MIS4      RCDT DISCHARGE TO CVCS HOLDUP TK (V1100A)
(RWPV1100)  0=CLOSED  1=OPEN
MIS5      1A RCDP DISCHARGE VLV (V1726)
(RWPV1726)  0=CLOSED  1=OPEN
MIS6      1B RCDP DISCHARGE VLV (V1727)
(RWPV1727)  0=CLOSED  1=OPEN
MIS7      RCDP DISCHARGE STOP VLV TO WHUT (V1731)
(RWPV1731)  0=CLOSED  1=OPEN
MIS8      RCDP STOP VLV TO RWST (V1733)
(RWPV1733)  0=CLOSED  1=OPEN
MIS9      1A RC DRAIN PMP TO 1B RHR HX (V1811A)
(RWPV811A)  0=CLOSED  1=OPEN
MIS10     1B RC DRAIN PMP TO 1A RHR HX (V1811B)
(RWPV811B)  0=CLOSED  1=OPEN
MIS11     RCDT TO AUX BLDG SUMP DRAIN VLV (V1003)
(RWPV1003)  0=CLOSED  1=OPEN
MIS12     SPENT FUEL PIT PMP
(OSFPPMP)   0=OFF  1=ON
MIS13     MAKEUP WTR VLV TO SFP (V788A)
(RSFPV788)  0=CLOSED  1=OPEN
MIS14     SFP DI INLET VLV (V790)
(RSFPV790)   0=CLOSED  1=OPEN
MIS15     1A INST AIR RECEIVER AIR OUTLET HDR ISOL VLV (V5303)
(RCAS5303)   0=CLOSED  1=OPEN
MIS16     1B INST AIR RECEIVER AIR OUTLET HDR ISOL VLV (V5304)
(RCAS5304)   0=CLOSED  1=OPEN
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MIS17     INST AIR INLET ISOL VLV TO LOOP HDR (V5311)
(RCAS5311)    0=CLOSED  1=OPEN
MIS18     INST AIR INLET ISOL VLV TO LOOP HDR (V5312)
(RCAS5312)    0=CLOSED  1=OPEN
MIS19     INST AIR INLET, TURB RM, LOOP HDR DIVISION VLV (V5313)
(RCAS5313)    0=CLOSED  1=OPEN
MIS20     INST AIR INLET, TURB RM, LOOP HDR DIVISION VLV (V5315)
(RCAS5315)    0=CLOSED  1=OPEN
MIS21     SERVICE AIR RECEIVER AIR OUTLET ISOL VLV (V5357)
(RCAS5357)    0=CLOSED  1=OPEN
MIS22     INST AIR TO CONTAIN MANUAL ISOL VLV (V5397)
(RCAS5397)    0=CLOSED  1=OPEN
MIS23     INST AIR RECEIVER 1C OUTLET ISOL VLV (V8217)
(RCAS8217)    0=CLOSED  1=OPEN
MIS24     EMERG INST AIR FROM SERVICE AIR (V5365)
(RCAS5365)    0=CLOSED  1=OPEN
MIS25     AUX BLDG EXHAUST FAN 1-A (ABEF1A)
(NHVABE1A)    FAN STATUS  0=OFF 1=ON
MIS26     AUX BLDG EXHAUST FAN 1-B (ABEF1B)
(NHVABE1B)    FAN STATUS  0=OFF 1=ON
MIS27     AUX BLDG EXHAUST FAN 1-C (ABEF1C)
(NHVABE1C)    FAN STATUS  0=OFF 1=ON
MIS28     AUX BLDG EXHAUST FAN 1-F (ABEF1F)
(NHVABE1F)    FAN STATUS  0=OFF 1=ON
MIS29     AUX BLDG EXHAUST FAN 1-G (ABEF1G)
(NHVABE1G)    FAN STATUS  0=OFF 1=ON
MIS30     AUX BLDG CHARCOAL FILTER FAN 1-A (ABCFF1A)
(NHVACF1A)    FAN STATUS  0=OFF 1=ON
MIS31     AUX BLDG CHARCOAL FILTER FAN 1-B (ABCFF1B)
(NHVACF1B)    FAN STATUS  0=OFF 1=ON
MIS32     CONTROL ACCESS AREA EXHAUST FAN 1-A (CAEF1A)
(NHVACAEA)    FAN STATUS  0=OFF 1=ON
MIS33     CONTROL ACCESS AREA EXHAUST FAN 1-B (CAEF1B)
(NHVACAEB)    FAN STATUS  0=OFF 1=ON
MIS34     AUX BLDG SUPPLY FAN 1-B (ABSF1B)
(NHVAABSF)    FAN STATUS  0=OFF 1=ON
MIS35     AUX BLDG SUPPLY AIR HANDLING UNIT (ABSAHU)
(NHVAABAH)    FAN STATUS  0=OFF 1=ON
MIS36     INT BLDG EXHAUST FAN 1-A (IEF1A)
(NHVAIBEA)    FAN STATUS  0=OFF 1=ON
MIS37     INT BLDG EXHAUST FAN 1-B (IEF1B)
(NHVAIBEB)    FAN STATUS  0=OFF 1=ON
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MIS38     INT BLDG EXHAUST FAN 1-C (IEF1C)
(NHVAIBEC)    FAN STATUS  0=OFF 1=ON
MIS39     BYPASS DAMPER 1A (BPD-1A)
(RHVABD1A)    VALVE APERTURE  0=CLOSED 1=OPEN
MIS40     CONTROL RM DAMPER MODE 2
(XHVAM2)      SELECT MODE  (T/F)
MIS41     CONTROL RM DAMPER MODE 3
(XHVAM3)      SELECT MODE  (T/F)
MIS42     CONTROL RM DAMPER MODE 4
(XHVAM4)      SELECT MODE  (T/F)
MIS43     INSTR AIR COMP 1A OPER MODE
(NXIA1A)      RANGE: 0=OFF 1=FEED 2=AUTO
MIS44     INSTR AIR COMP 1B OPER MODE
(NXIA1B)      RANGE: 0=OFF 1=FEED 2=AUTO
MIS45     INSTR AIR COMP 1C OPER MODE
(NXIA1C)      RANGE: 0=OFF 1=FEED 2=AUTO
MIS46     SERV AIR COMP OPER MODE
(NSACSS)      RANGE: 0=OFF 1=FEED 2=AUTO
MIS47     SERV AIR COMP RESET
(KSACRST)     SELECT (T/F)
MIS48     INSTR AIR COMP 1A RESET
(KXIA1A)      SELECT (T/F)
MIS49     INSTR AIR COMP 1B RESET
(KXIA1B)      SELECT (T/F)
MIS50     INSTR AIR COMP 1C RESET
(KXIA1C)      SELECT (T/F)
MIS51     RCDT PMP A LOCAL SWITCH
(NPMP35SW(1))   2=CLOSE  3=TRIP  4=PULL TO LOCK
MIS52     RCDT PMP B LOCAL SWITCH
(NPMP35SW(2))   2=CLOSE  3=TRIP  4=PULL TO LOCK
MIS53     AVT H2O TREATMENT PANEL ACK PB
(KAVTWTPB)    SELECT (T/F)
MIS54     H2 PANEL ACK PB
(KH2PPB)      SELECT (T/F)
MIS55     GENERATOR MAIN TRANSFORMER ACK PB
(KGENXPB)     SELECT (T/F)
MIS56     EMERGENCY DG 1A PANEL ACK PB
(KEDGAPB)     SELECT (T/F)
MIS57     EMERGENCY DG 1B PANEL ACK PB
(KEDGBPB)     SELECT (T/F)
MIS58     HEAT TRACING SYSTEM PANEL ACK PB
(KHTSPB)      SELECT (T/F)
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MIS59     PRIMARY WATER TREATMENT PANEL ACK PB
(KWTPPB)      SELECT (T/F)
MIS60     WASTE DISPOSAL PANEL ACK PB
(KWDPPB)      SELECT (T/F)
MIS61     AUX TRANSFORMER 11X PANEL ACK PB
(K11XPB)      SELECT (T/F)
MIS62     STATION SERVICE TRANSFORMER 12A&B ACK PB
(K12XPB)      SELECT (T/F)
MIS63     SFP: DEMINERALIZER TO SFP V804
(RSFPV804)    OPEN=1 CLOSE=0
MIS64     SFP: FLOW THRU SFP HTX V787
(RSFPV787)    OPEN=1 CLOSE=0
MIS65     SFP: FLOW FM DEMNRLZR TO RWST V803
(RSFPV803)    OPEN=1 CLOSE=0
MIS66     WPS: PRESSURE SET FOR PCV-1014 (PSIG)
(PWPSSETP)    PRESSURE RANGE
MIS67     WPS: RCDT PUMP 1A SUCTION AOV-1003A
(KWP1003A)    CLOSE=0 AUTO=1 OPEN=2
MIS68     WPS: RCDT PUMP 1B SUCTION AOV-1003B
(KWP1003B)    CLOSE=0 AUTO=1 OPEN=2
MIS69     CNM: CHARCOAL FILTER DAMPER 1A RESET
(JLOADP1A)    TRUE = RESET
MIS70     CNM: CHARCOAL FILTER DAMPER 1C RESET
(JLOADP1C)    TRUE = RESET
MIS71     TURBINE BUILDING WALL FANS ON/OFF
(KPM41LOA)    TRUE = ON    FALSE = OFF
MIS72     MOTOR DRIVEN FIRE PUMP STOP PB
(KPM42LOA)    TRUE = STOP
MIS73     ENGINE DRIVEN FIRE PUMP SELECTOR SWITCH
(KPM43LOA)    0=OFF 1=MANUAL 2=AUTO 3=TEST
MIS74     ENGINE DRIVEN FIRE PUMP RESET PB
(KPM43RST)    T = RESET
MIS75     ENGINE DRIVEN FIRE PUMP LOCAL START
(KPM43LST)    T = START
MIS76     FIRE SERVICE TANK AIR REG SETPNT
(PFPSSTPT)      RANGE BETWEEN 0 AND 150 PSIG
MIS77     FIRE DELUGE MASTER RESET
(JFIRERST)    T = RESET
MIS78     PURGE EXH/SUP BLIND FLANGES                                  !R25
(RCNXPSPE)      0=CLOSED 1=OPEN
NIS1      DETECTOR A TOP CORE LIMIT - CALIBRATION
(ZCFMDTLC(1))   RANGE BETWEEN 1000.0 & 2000.0
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NIS2      DETECTOR A BOTTOM CORE LIMIT - CALIBRATION
(ZCFMDBLC(1))  RANGE BETWEEN 1000.0 & 2000.0
NIS3      DETECTOR A TOP CORE LIMIT - EMER & STOR
(ZCFMDTLE(1))  RANGE BETWEEN  200.0 & 2000.0
NIS4      DETECTOR A BOTTOM CORE LIMIT - EMER & STO
(ZCFMDBLE(1))  RANGE BETWEEN  200.0 & 2000.0
NIS5      DETECTOR A PATH 1 TOP CORE LIMIT
(ZCFMDTL(1))   RANGE BETWEEN 1000.0 & 2000.0
NIS6      DETECTOR A PATH 1 BOTTOM CORE LIMIT
(ZCFMDBL(1))   RANGE BETWEEN 1000.0 & 2000.0
NIS7      DETECTOR A PATH 2 TOP CORE LIMIT
(ZCFMDTL(2))   RANGE BETWEEN 1000.0 & 2000.0
NIS8      DETECTOR A PATH 2 BOTTOM CORE LIMIT
(ZCFMDBL(2))   RANGE BETWEEN 1000.0 & 2000.0
NIS9      DETECTOR A PATH 3 TOP CORE LIMIT
(ZCFMDTL(3))   RANGE BETWEEN 1000.0 & 2000.0
NIS10     DETECTOR A PATH 3 BOTTOM CORE LIMIT
(ZCFMDBL(3))   RANGE BETWEEN 1000.0 & 2000.0
NIS11     DETECTOR A PATH 4 TOP CORE LIMIT
(ZCFMDTL(4))   RANGE BETWEEN 1000.0 & 2000.0
NIS12     DETECTOR A PATH 4 BOTTOM CORE LIMIT
(ZCFMDBL(4))   RANGE BETWEEN 1000.0 & 2000.0
NIS13     DETECTOR A PATH 5 TOP CORE LIMIT
(ZCFMDTL(5))   RANGE BETWEEN 1000.0 & 2000.0
NIS14     DETECTOR A PATH 5 BOTTOM CORE LIMIT
(ZCFMDBL(5))   RANGE BETWEEN 1000.0 & 2000.0
NIS15     DETECTOR A PATH 6 TOP CORE LIMIT
(ZCFMDTL(6))   RANGE BETWEEN 1000.0 & 2000.0
NIS16     DETECTOR A PATH 6 BOTTOM CORE LIMIT
(ZCFMDBL(6))   RANGE BETWEEN 1000.0 & 2000.0
NIS17     DETECTOR A PATH 7 TOP CORE LIMIT
(ZCFMDTL(7))   RANGE BETWEEN 1000.0 & 2000.0
NIS18     DETECTOR A PATH 7 BOTTOM CORE LIMIT
(ZCFMDBL(7))   RANGE BETWEEN 1000.0 & 2000.0
NIS19     DETECTOR A PATH 8 TOP CORE LIMIT
(ZCFMDTL(8))   RANGE BETWEEN 1000.0 & 2000.0
NIS20     DETECTOR A PATH 8 BOTTOM CORE LIMIT
(ZCFMDBL(8))   RANGE BETWEEN 1000.0 & 2000.0
NIS21     DETECTOR A PATH 9 TOP CORE LIMIT
(ZCFMDTL(9))   RANGE BETWEEN 1000.0 & 2000.0
NIS22     DETECTOR A PATH 9 BOTTOM CORE LIMIT
(ZCFMDBL(9))   RANGE BETWEEN 1000.0 & 2000.0
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NIS23     DETECTOR A PATH 10 TOP CORE LIMIT
(ZCFMDTL(10))  RANGE BETWEEN 1000.0 & 2000.0
NIS24     DETECTOR A PATH 10 BOTTOM CORE LIMIT
(ZCFMDBL(10))  RANGE BETWEEN 1000.0 & 2000.0
NIS25     DETECTOR B TOP CORE LIMIT - CALIBRATION
(ZCFMDTLC(2))  RANGE BETWEEN 1000.0 & 2000.0
NIS26     DETECTOR B BOTTOM CORE LIMIT - CALIBRATION
(ZCFMDBLC(2))  RANGE BETWEEN 1000.0 & 2000.0
NIS27     DETECTOR B TOP CORE LIMIT - EMER & STOR
(ZCFMDTLE(2))  RANGE BETWEEN  200.0 & 2000.0
NIS28     DETECTOR B BOTTOM CORE LIMIT - EMER & STO
(ZCFMDBLE(2))  RANGE BETWEEN  200.0 & 2000.0
NIS29     DETECTOR B PATH 1 TOP CORE LIMIT
(ZCFMDTL(11))  RANGE BETWEEN 1000.0 & 2000.0
NIS30     DETECTOR B PATH 1 BOTTOM CORE LIMIT
(ZCFMDBL(11))  RANGE BETWEEN 1000.0 & 2000.0
NIS31     DETECTOR B PATH 2 TOP CORE LIMIT
(ZCFMDTL(12))  RANGE BETWEEN 1000.0 & 2000.0
NIS32     DETECTOR B PATH 2 BOTTOM CORE LIMIT
(ZCFMDBL(12))  RANGE BETWEEN 1000.0 & 2000.0
NIS33     DETECTOR B PATH 3 TOP CORE LIMIT
(ZCFMDTL(13))  RANGE BETWEEN 1000.0 & 2000.0
NIS34     DETECTOR B PATH 3 BOTTOM CORE LIMIT
(ZCFMDBL(13))  RANGE BETWEEN 1000.0 & 2000.0
NIS35     DETECTOR B PATH 4 TOP CORE LIMIT
(ZCFMDTL(14))  RANGE BETWEEN 1000.0 & 2000.0
NIS36     DETECTOR B PATH 4 BOTTOM CORE LIMIT
(ZCFMDBL(14))  RANGE BETWEEN 1000.0 & 2000.0
NIS37     DETECTOR B PATH 5 TOP CORE LIMIT
(ZCFMDTL(15))  RANGE BETWEEN 1000.0 & 2000.0
NIS38     DETECTOR B PATH 5 BOTTOM CORE LIMIT
(ZCFMDBL(15))  RANGE BETWEEN 1000.0 & 2000.0
NIS39     DETECTOR B PATH 6 TOP CORE LIMIT
(ZCFMDTL(16))  RANGE BETWEEN 1000.0 & 2000.0
NIS40     DETECTOR B PATH 6 BOTTOM CORE LIMIT
(ZCFMDBL(16))  RANGE BETWEEN 1000.0 & 2000.0
NIS41     DETECTOR B PATH 7 TOP CORE LIMIT
(ZCFMDTL(17))  RANGE BETWEEN 1000.0 & 2000.0
NIS42     DETECTOR B PATH 7 BOTTOM CORE LIMIT
(ZCFMDBL(17))  RANGE BETWEEN 1000.0 & 2000.0
NIS43     DETECTOR B PATH 8 TOP CORE LIMIT
(ZCFMDTL(18))  RANGE BETWEEN 1000.0 & 2000.0
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NIS44     DETECTOR B PATH 8 BOTTOM CORE LIMIT
(ZCFMDBL(18))  RANGE BETWEEN 1000.0 & 2000.0
NIS45     DETECTOR B PATH 9 TOP CORE LIMIT
(ZCFMDTL(19))  RANGE BETWEEN 1000.0 & 2000.0
NIS46     DETECTOR B PATH 9 BOTTOM CORE LIMIT
(ZCFMDBL(19))  RANGE BETWEEN 1000.0 & 2000.0
NIS47     DETECTOR B PATH 10 TOP CORE LIMIT
(ZCFMDTL(20))  RANGE BETWEEN 1000.0 & 2000.0
NIS48     DETECTOR B PATH 10 BOTTOM CORE LIMIT
(ZCFMDBL(20))  RANGE BETWEEN 1000.0 & 2000.0
NIS49     DETECTOR C TOP CORE LIMIT - CALIBRATION
(ZCFMDTLC(3))  RANGE BETWEEN 1000.0 & 2000.0
NIS50     DETECTOR C BOTTOM CORE LIMIT - CALIBRATION
(ZCFMDBLC(3))  RANGE BETWEEN 1000.0 & 2000.0
NIS51     DETECTOR C TOP CORE LIMIT - EMER & STOR
(ZCFMDTLE(3))  RANGE BETWEEN  200.0 & 2000.0
NIS52     DETECTOR C BOTTOM CORE LIMIT - EMER & STO
(ZCFMDBLE(3))  RANGE BETWEEN  200.0 & 2000.0
NIS53     DETECTOR C PATH 1 TOP CORE LIMIT
(ZCFMDTL(21))  RANGE BETWEEN 1000.0 & 2000.0
NIS54     DETECTOR C PATH 1 BOTTOM CORE LIMIT
(ZCFMDBL(21))  RANGE BETWEEN 1000.0 & 2000.0
NIS55     DETECTOR C PATH 2 TOP CORE LIMIT
(ZCFMDTL(22))  RANGE BETWEEN 1000.0 & 2000.0
NIS56     DETECTOR C PATH 2 BOTTOM CORE LIMIT
(ZCFMDBL(22))  RANGE BETWEEN 1000.0 & 2000.0
NIS57     DETECTOR C PATH 3 TOP CORE LIMIT
(ZCFMDTL(23))  RANGE BETWEEN 1000.0 & 2000.0
NIS58     DETECTOR C PATH 3 BOTTOM CORE LIMIT
(ZCFMDBL(23))  RANGE BETWEEN 1000.0 & 2000.0
NIS59     DETECTOR C PATH 4 TOP CORE LIMIT
(ZCFMDTL(24))  RANGE BETWEEN 1000.0 & 2000.0
NIS60     DETECTOR C PATH 4 BOTTOM CORE LIMIT
(ZCFMDBL(24))  RANGE BETWEEN 1000.0 & 2000.0
NIS61     DETECTOR C PATH 5 TOP CORE LIMIT
(ZCFMDTL(25))  RANGE BETWEEN 1000.0 & 2000.0
NIS62     DETECTOR C PATH 5 BOTTOM CORE LIMIT
(ZCFMDBL(25))  RANGE BETWEEN 1000.0 & 2000.0
NIS63     DETECTOR C PATH 6 TOP CORE LIMIT
(ZCFMDTL(26))  RANGE BETWEEN 1000.0 & 2000.0
NIS64     DETECTOR C PATH 6 BOTTOM CORE LIMIT
(ZCFMDBL(26))  RANGE BETWEEN 1000.0 & 2000.0
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NIS65     DETECTOR C PATH 7 TOP CORE LIMIT
(ZCFMDTL(27))  RANGE BETWEEN 1000.0 & 2000.0
NIS66     DETECTOR C PATH 7 BOTTOM CORE LIMIT
(ZCFMDBL(27))  RANGE BETWEEN 1000.0 & 2000.0
NIS67     DETECTOR C PATH 8 TOP CORE LIMIT
(ZCFMDTL(28))  RANGE BETWEEN 1000.0 & 2000.0
NIS68     DETECTOR C PATH 8 BOTTOM CORE LIMIT
(ZCFMDBL(28))  RANGE BETWEEN 1000.0 & 2000.0
NIS69     DETECTOR C PATH 9 TOP CORE LIMIT
(ZCFMDTL(29))  RANGE BETWEEN 1000.0 & 2000.0
NIS70     DETECTOR C PATH 9 BOTTOM CORE LIMIT
(ZCFMDBL(29))  RANGE BETWEEN 1000.0 & 2000.0
NIS71     DETECTOR C PATH 10 TOP CORE LIMIT
(ZCFMDTL(30))  RANGE BETWEEN 1000.0 & 2000.0
NIS72     DETECTOR C PATH 10 BOTTOM CORE LIMIT
(ZCFMDBL(30))  RANGE BETWEEN 1000.0 & 2000.0
NIS73     DETECTOR D TOP CORE LIMIT - CALIBRATION
(ZCFMDTLC(4))  RANGE BETWEEN 1000.0 & 2000.0
NIS74     DETECTOR D BOTTOM CORE LIMIT - CALIBRATION
(ZCFMDBLC(4))  RANGE BETWEEN 1000.0 & 2000.0
NIS75     DETECTOR D TOP CORE LIMIT - EMER & STOR
(ZCFMDTLE(4))  RANGE BETWEEN  200.0 & 2000.0
NIS76     DETECTOR D BOTTOM CORE LIMIT - EMER & STO
(ZCFMDBLE(4))  RANGE BETWEEN  200.0 & 2000.0
NIS77     DETECTOR D PATH 1 TOP CORE LIMIT
(ZCFMDTL(31))  RANGE BETWEEN 1000.0 & 2000.0
NIS78     DETECTOR D PATH 1 BOTTOM CORE LIMIT
(ZCFMDBL(31))  RANGE BETWEEN 1000.0 & 2000.0
NIS79     DETECTOR D PATH 2 TOP CORE LIMIT
(ZCFMDTL(32))  RANGE BETWEEN 1000.0 & 2000.0
NIS80     DETECTOR D PATH 2 BOTTOM CORE LIMIT
(ZCFMDBL(32))  RANGE BETWEEN 1000.0 & 2000.0
NIS81     DETECTOR D PATH 3 TOP CORE LIMIT
(ZCFMDTL(33))  RANGE BETWEEN 1000.0 & 2000.0
NIS82     DETECTOR D PATH 3 BOTTOM CORE LIMIT
(ZCFMDBL(33))  RANGE BETWEEN 1000.0 & 2000.0
NIS83     DETECTOR D PATH 4 TOP CORE LIMIT
(ZCFMDTL(34))  RANGE BETWEEN 1000.0 & 2000.0
NIS84     DETECTOR D PATH 4 BOTTOM CORE LIMIT
(ZCFMDBL(34))  RANGE BETWEEN 1000.0 & 2000.0
NIS85     DETECTOR D PATH 5 TOP CORE LIMIT
(ZCFMDTL(35))  RANGE BETWEEN 1000.0 & 2000.0
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NIS86     DETECTOR D PATH 5 BOTTOM CORE LIMIT
(ZCFMDBL(35))  RANGE BETWEEN 1000.0 & 2000.0
NIS87     DETECTOR D PATH 6 TOP CORE LIMIT
(ZCFMDTL(36))  RANGE BETWEEN 1000.0 & 2000.0
NIS88     DETECTOR D PATH 6 BOTTOM CORE LIMIT
(ZCFMDBL(36))  RANGE BETWEEN 1000.0 & 2000.0
NIS89     DETECTOR D PATH 7 TOP CORE LIMIT
(ZCFMDTL(37))  RANGE BETWEEN 1000.0 & 2000.0
NIS90     DETECTOR D PATH 7 BOTTOM CORE LIMIT
(ZCFMDBL(37))  RANGE BETWEEN 1000.0 & 2000.0
NIS91     DETECTOR D PATH 8 TOP CORE LIMIT
(ZCFMDTL(38))  RANGE BETWEEN 1000.0 & 2000.0
NIS92     DETECTOR D PATH 8 BOTTOM CORE LIMIT
(ZCFMDBL(38))  RANGE BETWEEN 1000.0 & 2000.0
NIS93     DETECTOR D PATH 9 TOP CORE LIMIT
(ZCFMDTL(39))  RANGE BETWEEN 1000.0 & 2000.0
NIS94     DETECTOR D PATH 9 BOTTOM CORE LIMIT
(ZCFMDBL(39))  RANGE BETWEEN 1000.0 & 2000.0
NIS95     DETECTOR D PATH 10 TOP CORE LIMIT
(ZCFMDTL(40))  RANGE BETWEEN 1000.0 & 2000.0
NIS96     DETECTOR D PATH 10 BOTTOM CORE LIMIT
(ZCFMDBL(40))  RANGE BETWEEN 1000.0 & 2000.0
NIS97     DC PW SWCH TO DEENERGIZE SR BLOK RELAYS
(JNIDCPWS)   F=SWITCH ON   T=SWITCH OFF
PZR1      SPRAY VLV PCV-431B BYPASS VLV (V517)
(RRRV517)   VALVE APERTURE  0=CLOSED 1=OPEN
PZR2      SPRAY VLV PCV-431A BYPASS VLV (V518)
(RRRV518)   VALVE APERTURE  0=CLOSED 1=OPEN
PZR3      NITROGEN SUPPY TO PRT VLV SETPOINT (PCV-441)
(PPRTPN2)   PRESSURE RANGE 0.0 - 5.0 PSIG
PZR4      PRESSURIZER COLD SHUTDOWN VENT VALVE (V-535)
(RPRS535)   VALVE APERTURE  0=CLOSED 1=OPEN
PZR5      MANUAL SETPOINT FOR PZR REF LEVEL
(RPCPRGSP)  RANGE: 0 - 100% (0=AUTO)
RCS1      REACTOR VESSEL VENT ISOL VLV (V500)
(RRRV500)   VALVE APERTURE  0=CLOSED 1=OPEN
RCS2      LOOP A DRAIN VLV (V503)
(RRRV503)   VALVE APERTURE  0=CLOSED 1=OPEN
RCS3      LOOP B DRAIN VLV (V507)
(RRRV507)   VALVE APERTURE  0=CLOSED 1=OPEN
RCS4      OUTER FLANGE LEAKOFF VLV (V519)
(RRRV519)   VALVE APERTURE  0=CLOSED 1=OPEN
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RCS5      INNER FLANGE LEAKOFF VLV (V520)
(RRRV520)    VALVE APERTURE  0=CLOSED 1=OPEN
RCS6      LOOP B LEVEL INDICATOR STOP VLV (V949)
(RNSV949)
RHR1      DISCHARGE STOP VLV RHR PMP 1A (V709A)
(RRH709A)     0=CLOSED  1=OPEN
RHR2      DISCHARGE STOP VLV RHR PMP 1B (V709B)
(RRH709B)     0=CLOSED  1=OPEN
RHR3      RHR PMPS DISCHARGE CROSS TIE (V709C)
(RRH709C)     0=CLOSED  1=OPEN
RHR4      RHR PMPS DISCHARGE CROSS TIE (V709D)
(RRH709D)     0=CLOSED  1=OPEN
RHR5      RHR HX BYPASS VLV (V712A)
(RRH712A)     0=CLOSED  1=OPEN
RHR6      RHR HX BYPASS VLV (V712B)
(RRH712B)     0=CLOSED  1=OPEN
RHR7      RHR HX A INLET STOP VLV (V714)
(RRH714)      0=CLOSED  1=OPEN
RHR8      RHR HX B INLET STOP VLV (V716)
(RRH716)      0=CLOSED  1=OPEN
RHR9      RHR HX B OUTLET STOP VLV (V715)
(RRH715)      0=CLOSED  1=OPEN
RHR10     RHR HX A OUTLET STOP VLV (V717)
(RRH717)      0=CLOSED  1=OPEN
RHR11     REACTOR COOLANT FILTER TO RHR PMP SUCTION VLV (V822A)
(RRH822A)     0=CLOSED  1=OPEN
RHR12     RHR PMP MINIMUM RECIRC STOP VLV (V822B)
(RRH822B)     0=CLOSED  1=OPEN
RHR13     ALTERNATE SUPPLY TO C SI PMPS FM RHX 1 (V1816A)
(RRH1816)     0=CLOSED  1=OPEN
RHR14     LOW FLOW ALARM SETPOINT
(WRHRSETP)    0-4000 GPM
RHR15     RHR PUMP DISCHARGE VLV MOTOR DISENGAGE (V857A)
(J857ALOA)   F=ENGAGED T=DISENGAGED
RHR16     RHR PUMP DISCHARGE VLV MANUAL POSITION (857A)
(R857ALOA)   RANGE:  0.0/1.0  (CLOSED/OPEN)
RHR17     RHR PUMP DISCHARGE VLV MOTOR DISENGAGE (V857B)
(J857BLOA)   F=ENGAGED T=DISENGAGED
RHR18     RHR PUMP DISCHARGE VLV MANUAL POSITION (857B)
(R857BLOA)   RANGE:  0.0/1.0  (CLOSED/OPEN)
RMS1      R10A, R10B INLET PLANT VENT ISOL (V1588)
(RRMV1588)    0=CLOSED   1=OPEN
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RMS2      R10B INLET ISOL VLV (V1581)
(RRMV1581)   0=CLOSED   1=OPEN
RMS3      R10A, R10B DIVISION VLV (V1590)
(RRMV1590)   0=CLOSED   1=OPEN
RMS4      R10A AND R10B INLET CV VENT ISOL (V1592)
(RRMV1592)   0=CLOSED   1=OPEN
RMS5      R10A ALARM SETPOINT (R-10A)
(ZRMS10A)   RANGE=2000 CPM - 3.0E+4 CPM
RMS6      R11 ALARM SETPOINT (R-11)
(ZRMS11)    RANGE=5.0E+4 CPM - 3.0E+5 CPM
RMS7      RE-19 PURGE WTR ISOL VLV (V6799)
(RRMV6799)   0=CLOSED   1=OPEN
RMS8      RESET DOSE ACCUMULATORS FOR R-33 & R-34                    !R24
(IRMSDOSE)   1=R-33     2=R34
RMS9      R-10A & B CHARCOAL FILTER REPLACEMENT                      !R27
(NLOAR10A)   1=R-10A    2=R-10B
ROD1      ROD DRIVE MG SET 1A CONTROL SWITCH (SPRING RETURN)         !R12
(KCRFGSW(1))  2=CLOSE  3=TRIP
ROD2      ROD DRIVE MG SET 1B CONTROL SWITCH (SPRING RETURN)         !R12
(KCRFGSW(2))  2=CLOSE  3=TRIP
ROD3      ROD DRIVE MG SET 1A SYNCHROSWITCH
(KCRFGSS(1))  0=OFF  1=ON
ROD4      ROD DRIVE MG SET 1B SYNCHROSWITCH
(KCRFGSS(2))  0=OFF  1=ON
ROD5      ROD DRIVE MG SET 1A OC/UV ALARM SWITCH
(JSWCR1A)     TRUE=SET  FALSE=RESET
ROD6      ROD DRIVE MG SET 1B OC/UV ALARM SWITCH
(JSWCR1B)     TRUE=SET  FALSE=RESET
ROD7      TURBINE RUNBACK ARM/DEFEAT SWITCH - MRPI DISPLAY CAB.
(JCRFTRBD)  T=DEFEAT  F=NOT DEFEATED
ROD8      MRPI CHANNEL IN CONTROL
(NCRFCHAN)  0=CHANNEL A  1=CHANNEL B
ROD9      CONTROL ROD "A" P/A CONVERTER RESET
(MLOAPAA)   RANGE:  0 - 230
ROD10     CONTROL ROD "B" P/A CONVERTER RESET
(MLOAPAB)   RANGE:  0 - 230
ROD11     CONTROL ROD "C" P/A CONVERTER RESET
(MLOAPAC)   RANGE:  0 - 230
ROD12     CONTROL ROD "D" P/A CONVERTER RESET
(MLOAPAD)   RANGE:  0 - 230
ROD13     CONTROL ROD P/A CONVERTER OVERRIDE
(JLOAPA)    RANGE:  T=OVERIDE MODE  F=MCB MODE
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RPS1      TEST CONNECTION ON DISCHARGE LINE OF CS PMP 1A (V864A)
(RCS864A)   0=CLOSED  1=OPEN
RPS2      TEST CONNECTION ON DISCHARGE LINE OF CS PMP 1B (V864B)
(RCS864B)   0=CLOSED  1=OPEN
RPS3      SPRAY LINE 1A ISOL VLV (V868A)
(RCS868A)   0=CLOSED  1=OPEN
RPS4      SPRAY LINE 1B ISOL VLV (V868B)
(RCS868B)   0=CLOSED  1=OPEN
RPS5      SPRAY ADD TK LEVEL
(BCNSSAT )  RANGE BETWEEN 0 - 100
RPS6      CLOSE BYPASS TRIP BREAKER
(XPPLBYPC)  1=BYA CL  2=BYB CL  3=BYA OP  4=BYB OP  5=BOTH REMOVED
RPS7      SIMULATED RX TRIP (TEST BRKR RTA OR RTB)
(XPPLTTRN)  1=TRIP TRN A  2=TRIP TRN B  0=NO TRIP
RPS8      MOV-860A CNS SPRAY PMP DIS MOTOR DISENG
(J860AMAN)  F=ENGAGED T=DISENGAGED
RPS9      MOV-860A CNS SPRAY PMP DIS MANUAL POSITION
(R860AMAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
RPS10     MOV-860B CNS SPRAY PMP DIS MOTOR DISENG
(J860BMAN)  F=ENGAGED T=DISENGAGED
RPS11     MOV-860B CNS SPRAY PMP DIS MANUAL POSITION
(R860BMAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
RPS12     MOV-860C CNS SPRAY PMP DIS MOTOR DISENG
(J860CMAN)  F=ENGAGED T=DISENGAGED
RPS13     MOV-860C CNS SPRAY PMP DIS MANUAL POSITION
(R860CMAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
RPS14     MOV-860D CNS SPRAY PMP DIS MOTOR DISENG
(J860DMAN)  F=ENGAGED T=DISENGAGED
RPS15     MOV-860D CNS SPRAY PMP DIS MANUAL POSITION
(R860DMAN)  RANGE:  0.0/1.0  (CLOSED/OPEN)
SGN1      "B" S/G BLOWDOWN CONTROL VLV TO HX (V5771)
(RSGV5771)  0=CLOSED  1=OPEN
SGN2      "A" S/G BLOWDOWN CONTROL VLV TO HX (V5772)
(RSGV5772)  0=CLOSED  1=OPEN
SGN3      SG BLOWDOWN CONDENSER ISOLATION (V9522G)
(RSG9522G)  0=CLOSED  1=OPEN
SGN4      BLWDWN HX OUTLET TO FLASH TK MAN ISOL VLV (V9518C)
(RSG9518C)  0=CLOSED  1=OPEN
SGN5      BLOWDOWN HI-HI TEMP MANUAL RESET (N/A)
(JSGRESET)  T=RESET   F=NO RESET
SGN6      SG A STEAM LINE DRAIN FLOW (V3521)
(RSGV3521)  0=CLOSED  1=OPEN
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SGN7      SG B STEAM LINE DRAIN FLOW (V3520)
(RSGV3520)  0=CLOSED  1=OPEN
SGN8      SG BLOWDOWN SAMPLE CV-76 LOCAL SWITCH
(KSGLCV76)  F=AUTO  T=OPEN
SGN9      SG BLOWDOWN SAMPLE CV-77 LOCAL SWITCH
(KSGLCV77)  F=AUTO  T=OPEN
SGN10     SG BLOWDOWN SAMPLE CV-70 LOCAL SWITCH
(KSGLCV70)  F=CLOSED  T=AUTO
SGN11     SG BLOWDOWN SAMPLE CV-71 LOCAL SWITCH
(KSGLCV71)  F=CLOSED  T=AUTO
SGN12     SGB VALVE 5709
(RSGV5709)  0=CLOSED  1=OPEN
SGN13     SGB VALVE 5710
(RSGV5710)  0=CLOSED  1=OPEN
SIS1      SIS TEST ISOL VLV (V879)
(RSIH879)   0=CLOSED  1=OPEN
SIS2      RWST FILL CONNECTION FM BORIC ACID BLENDER (V1801)
(RSI1801)   0=CLOSED  1=OPEN
SIS3      REFUELING WTR PURIFICATION PMP (ACAPPW)
(OSFPRWP)   0=OFF  1=ON
SIS4      REFUELING WTR CIRC PMP SUCTION FM RWST (V808)
(RSFPV808)  0=CLOSED  1=OPEN
SIS5      REFUELING WTR CIRC PMP DISCHARGE (V810)
(RSFPV810)  0=CLOSED  1=OPEN
SIS6      N2 CLUSTER SUPPLY PRESSURE TO SI ACCUM
(CSISN2SU) RANGE:  0.0/2500 PSIA  (CLOSED/OPEN)
SIS7      RWST LEVEL
(WSISRWST)  FLOW RANGE 0 - 1000 GPM
SIS8      MOV-825A/B BYPASS STOP VALVE (V1826)                    !R16
(RSIV1826)  0=CLOSED  1=OPEN
SIS9      BLOCK VALVE MOTION FOR SI PUMP RECIRC TO RWST (V897)    !R16
(JL0897)    F=NOT BLOCKED   T=BLOCKED                             !R16
SIS10     BLOCK VALVE MOTION FOR SI PUMP RECIRC TO RWST (V898)    !R16
(JL0898)    F=NOT BLOCKED   T=BLOCKED                             !R16
STM1      MN STM TO ATMO ISOL VLV FM 1B S/G (V3506)
(RSGN3506)  0=CLOSED  1=OPEN
STM2      MN STM TO ATMO ISOL VLV FM 1A S/G (V3507)
(RSGN3507)  0=CLOSED  1=OPEN
STM3      S/G 1B ISOL VLV 3516 BYPASS VLV (V3614)
(RSGN3614)  0=CLOSED  1=OPEN
STM4      S/G 1A ISOL VLV 3517 BYPASS VLV (V3615)
(RSGN3615)  0=CLOSED  1=OPEN
```

```
STM5      STM DUMP ISOL VLV TO COND 1B (V3532)
(RSGN3532)  0=CLOSED  1=OPEN
STM6      STM DUMP ISOL VLV TO COND 1A (V3533)
(RSGN3533)  0=CLOSED  1=OPEN
STM7      STM DUMP ISOL VLV TO COND 1A (V4171)
(RSGN4171)  0=CLOSED  1=OPEN
STM8      STM DUMP ISOL VLV TO COND 1B (V4172)
(RSGN4172)  0=CLOSED  1=OPEN
STM9      STM DUMP ISOL VLV TO COND 1A (V4173)
(RSGN4173)  0=CLOSED  1=OPEN
STM10     STM DUMP ISOL VLV TO COND 1B (V4174)
(RSGN4174)  0=CLOSED  1=OPEN
STM11     STM DUMP ISOL VLV TO COND 1A (V4175)
(RSGN4175)  0=CLOSED  1=OPEN
STM12     STM DUMP ISOL VLV TO COND 1B (V4176)
(RSGN4176)  0=CLOSED  1=OPEN
STM13     STM DUMP ISOL VLV TO COND 1A (V4177)
(RSGN4177)  0=CLOSED  1=OPEN
STM14     STM DUMP ISOL VLV TO COND 1B (V4178)
(RSGN4178)  0=CLOSED  1=OPEN
STM15     REHEATER 1A MAIN STM ISOL VLV (AOV-3425B)
(RMS3425B)  0=CLOSED  1=OPEN
STM16     REHEATER 1B MAIN STM ISOL VLV (AOV-3426B)
(RMS3426B)  0=CLOSED  1=OPEN
STM17     REHEATER 2A MAIN STM ISOL VLV (AOV-3427B)
(RMS3427B)  0=CLOSED  1=OPEN
STM18     REHEATER 2B MAIN STM ISOL VLV (AOV-3428B)
(RMS3428B)  0=CLOSED  1=OPEN
STM19     AIR EJECTOR AND GLAND STM SUPPLY (3540)
(RMS3540)   0=CLOSED  1=OPEN
STM20     MN STM SUPPLY TO 1B PRIMING EJECTOR (3580)
(RMS3580)   0=CLOSED  1=OPEN
STM21     MN STM SUPPLY TO 1A PRIMING EJECTOR (3581)
(RMS3581)   0=CLOSED  1=OPEN
STM22     MN AIR EJECTOR MN STM ISOL VLV (3583)
(RMS3583)   0=CLOSED  1=OPEN
STM23     HP SHAFT GLAND STM SUPPLY PRESSURE REG ISOL VLV (3871)
(RMS3871)   0=CLOSED  1=OPEN
STM24     HP SHAFT GLAND STM SUPPLY PRESSURE REG BYPASS VLV (3873)
(RMS3873)   0=CLOSED  1=OPEN
STM25     MOISTURE SEPARATOR REHEATER  1A ISOLATION VALVE (3551)
(RMS3551)   0=CLOSED  1=OPEN
```

```
STM26     MOISTURE SEPARATOR REHEATER  1B ISOLATION VALVE (3550)
(RMS3550)    0=CLOSED  1=OPEN
STM27     MOISTURE SEPARATOR REHEATER  2A ISOLATION VALVE (3553)
(RMS3553)    0=CLOSED  1=OPEN
STM28     MOISTURE SEPARATOR REHEATER  2B ISOLATION VALVE (3552)
(RMS3552)    0=CLOSED  1=OPEN
STM29     REHEAT STEAM CNRTL LOGICAL FOR 3425A/3428A
(JMSSRSC)    SELECT (T/F) T=AUTO FROM CONTRL  F=MAN CNTRL 3425A/28A
STM30     MANUAL CONTROL OF 3425A FOR MOIS SEP 1A
(RMS3425A)   0=CLOSED  1=OPEN
STM31     MANUAL CONTROL OF 3426A FOR MOIS SEP 1B
(RMS3426A)   0=CLOSED  1=OPEN
STM32     MANUAL CONTROL OF 3427A FOR MOIS SEP 2A
(RMS3427A)   0=CLOSED  1=OPEN
STM33     MANUAL CONTROL OF 3428A FOR MOIS SEP 2B
(RMS3428A)   0=CLOSED  1=OPEN
TUR1      GLAND STEAM EXHAUSTER
(XMSGLNDB)   PUMP STATUS T=ON  F=OFF
TUR2      TURNING GEAR START/ENGAGE PB
(XTATGPBB)   SELECT (T/F)
TUR3      TURNING GEAR STOP/DISENGAGE PB
(XTATGPBS)   SELECT (T/F)
TUR4      OIL COOLER MANUAL 3-WAY VLV (MV-5451)
(RMV5451)    OIL COOLER   0=FLOW THROUGH A, 1=FLOW THROUGH B  (0 OR 1)
TUR5      AIR SIDE SEAL OIL PUMP
(NTGAASO)    PUMP STATUS 0=OFF 1=ON
TUR6      AIR SIDE SEAL OIL BACKUP PMP
(NTGAASBO)   PUMP STATUS 0=OFF 1=ON
TUR7      HYDROGEN SIDE SEAL OIL PUMP
(NTGAH2SO)   PUMP STATUS 0=OFF 1=ON
TUR8      HYDROGEN SUPPLY PRESSURE CONTROL VLV (PCV-1)
(PTGA1)      PRESSURE RANGE  0.0 - 100.0 PSIG
TUR9      CO2 SUPPLY VLV (V5)
(RTGALOA5)   VALVE STATUS 0=CLOSED  1=OPEN
TUR10     CO2 MANIFOLD VENT VLV (V6)
(RTGALOA6)   VALVE STATUS 0=CLOSED  1=OPEN
TUR11     H2 MANIFOLD VENT VLV (V7)
(RTGALOA7)   VALVE STATUS 0=CLOSED  1=OPEN
TUR12     H2 SUPPLY VLV (V8)
(RTGALOA8)   VALVE STATUS 0=CLOSED  1=OPEN
TUR13     LUBE OIL RESERVOIR LEVEL
(BTLOTKN)     RANGE=0.0 TO 120.0 INCHES   NORMALLY=80
```

```
TUR14     TURBINE VAPOR EXHAUSTER
(XTAVAPXB)  PUMP STATUS T=ON  F=OFF
TUR15     GENERATOR VAPOR EXHAUSTER
(XTAGVAPB)  PUMP STATUS T=ON  F=OFF
TUR16     LUBE OIL PURIFIER CIRC. PUMP
(XTALOPPB)  PUMP STATUS T=ON  F=OFF
TUR17     LUBE OIL PURIFIER VAPOR EXHAUSTER
(XTALOPVB)  PUMP STATUS T=ON  F=OFF
TUR18     BISTABLE TRIP FOR AMSAC F466
(JLOAF466)  BISTABLE STATUS T=TRIP F=NORMAL
TUR19     BISTABLE TRIP FOR AMSAC F467
(JLOAF467)  BISTABLE STATUS T=TRIP F=NORMAL
TUR20     BISTABLE TRIP FOR AMSAC F476
(JLOAF476)  BISTABLE STATUS T=TRIP F=NORMAL
TUR21     BISTABLE TRIP FOR AMSAC F477
(JLOAF477)  BISTABLE STATUS T=TRIP F=NORMAL
TUR22     BISTABLE TRIP FOR AMSAC P485
(JLOAP485)  BISTABLE STATUS T=TRIP F=NORMAL
TUR23     BISTABLE TRIP FOR AMSAC P486
(JLOAP486)  BISTABLE STATUS T=TRIP F=NORMAL
```

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LIST OF SIMULATOR MALFUNCTIONS

```
CLG1      SERVICE WATER PUMP TRIP
/
CLG1A     SERVICE WATER PUMP TRIP : PUMP A
/
CLG1B     SERVICE WATER PUMP TRIP : PUMP B
/
CLG1C     SERVICE WATER PUMP TRIP : PUMP C
/
CLG1D     SERVICE WATER PUMP TRIP : PUMP D
/
CLG2      CCW PUMP TRIP
/
CLG2A     CCW PUMP TRIP : CCW PUMP 1A
/
CLG2B     CCW PUMP TRIP : CCW PUMP 1B
/
CLG3      NON-REGENERATIVE LETDOWN HX TUBE LEAK
N SELECT LEAK RATE (0/200 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG4      LOSS OF CCW TO RHR HEAT EXCHANGER
/
CLG4A     LOSS OF CCW TO RHR HX : MOV-738A
/
CLG4B     LOSS OF CCW TO RHR HX : MOV-738B
/
CLG5      CCW SUPPLY LINE BREAK
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG6      SEAL WATER HEAT EXCHANGER TUBE LEAK
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG7      CCW HEAT EXCHANGER TUBE LEAK
/
CLG7A     CCW HEAT EXCHANGER TUBE LEAK : HX 1A
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG7B     CCW HEAT EXCHANGER TUBE LEAK : HX 1B
N SELECT LEAK RATE (0/100 GPM)
```

MAL FUNCTIONS

```
F SELECT RAMP TIME (0/3600 SEC)
/
CLG8      SERVICE WATER SYSTEM LEAKS
/
CLG8A     SWS TURBINE LOOP A LEAK
N SELECT LEAK RATE (0/2500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG8B     SWS TURBINE LOOP B LEAK
N SELECT LEAK RATE (0/2500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG8C     SWS CONTAINMENT RECIRC FAN C/D INLET LEAK
N SELECT LEAK RATE (0/1500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG8D     SWS AUX BUILDING 1A CCW/SFP HX INLET (ISOLABLE W/MOV'S)
N SELECT LEAK RATE (0/5000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CLG8E     SWS AUX BUILDING 1A MAIN HDR (UPSTREAM MOV'S)
N SELECT LEAK RATE (0/10000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CND1      CONDENSATE BOOSTER PUMP TRIP
/
CND1A     CONDENSATE BOOSTER PUMP TRIP : PUMP 1A
/
CND1B     CONDENSATE BOOSTER PUMP TRIP : PUMP 1B
/
CND1C     CONDENSATE BOOSTER PUMP TRIP : PUMP 1C
/
CND2      MAIN CONDENSER TUBE LEAK
/
CND2A     MAIN CONDENSER TUBE LEAK : 1A (VIA MOV-3125)
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CND2B     MAIN CONDENSER TUBE LEAK : 1A (VIA MOV-3154)
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
```

```
CND2C     MAIN CONDENSER TUBE LEAK : 1B (VIA MOV-3153)
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CND2D     MAIN CONDENSER TUBE LEAK : 1B (VIA MOV-3155)
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CND3      HOTWELL LEVEL CONTROLLER OR TRANSMITTER FAILURE
/
CND3A     HOTWELL LEVEL TRANSMITTER FAILURE : LT-2006
V (T:L2001) SELECT FAILED LEVEL (0/48 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
CND3B     HOTWELL LEVEL TRANSMITTER FAILURE : LT-2006A
V (T:L2002) SELECT FAILED LEVEL (0/48 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
CND4      CONDENSATE PUMP FAILURE
/
CND4A     CONDENSATE PUMP FAILURE : 1A
/
CND4B     CONDENSATE PUMP FAILURE : 1B
/
CND4C     CONDENSATE PUMP FAILURE : 1C
/
CND5      CONDENSATE BYPASS VALVE FAILURE
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CND6      CONDENSATE TRIM VALVE FAILURE
/
CND6A     CONDENSATE TRIM VALVE FAILURE : 9508D
S SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
CND6B     CONDENSATE TRIM VALVE FAILURE : 9508G
S SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
CND7      LOSS OF CONDENSER VACUUM
/
```

```
CND7A     LOSS OF CONDENSER VACUUM : EAST
N SELECT LEAK RATE (0/900 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
CND7B     LOSS OF CONDENSER VACUUM : WEST
N SELECT LEAK RATE (0/900 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
CND8      CONDENSATE PIPE BREAK
N SELECT LEAK RATE (0/20000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CRC1      CIRCULATION WATER PUMP TRIP
/
CRC1A     CIRCULATION WATER PUMP TRIP : PUMP A
/
CRC1B     CIRCULATION WATER PUMP TRIP : PUMP B
/
CRC2      LOSS OF CIRCULATING WATER
N SELECT PERCENT OF BLOCK (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
CRC3      CIRC WATER SYSTEM LEAKS
/
CRC3A     SCREEN HOUSE COMBINED HEADER LEAK
N SELECT LEAK RATE (0/200000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CRC3B     CONDENSER B INLET LEAK
N SELECT LEAK RATE (0/100000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CRC3C     CONDENSER A INLET LEAK
N SELECT LEAK RATE (0/100000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC1      LETDOWN LINE LEAK INSIDE CONTAINMENT
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC2      LETDOWN LINE LEAK OUTSIDE CONTAINMENT
N SELECT LEAK RATE (0/300 GPM)
```

```
F SELECT RAMP TIME (0/3600 SEC)
/
CVC3      CHARGING LINE LEAK INSIDE CONTAINMENT
N SELECT LEAK RATE (0/500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC4      MAKEUP CONTROL FAILURE IN ALL MODES
T SELECT MODE (NBDO) B=FAIL BORATE,D=FAIL DILUTE,O=FAIL OFF
/
CVC5      LOSS OF CCW TO NON-REGENERATIVE LETDOWN HX
V (T:T130) SELECT TEMPERATURE (0/200 F)
/
CVC6      LETDOWN ORIFICE ISOLATION VALVE FAILURE
/
CVC6A     LETDOWN ORIFICE ISOLATION VALVE FAILURE : AOV-200A
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC6B     LETDOWN ORIFICE ISOLATION VALVE FAILURE : AOV-200B
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC6C     LETDOWN ORIFICE ISOLATION VALVE FAILURE : AOV-202
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC7      LETDOWN PRESSURE CONTROL VALVE FAILURE
/
CVC7A     LETDOWN PRESSURE CNTRL VLV FAILURE : MANUAL CNTRL AVAIL
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
-1,1/
CVC7B     LETDOWN PRESSURE CNTRL VLV FAILURE : MANUAL CNTRL NOT AVAIL
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
-1,1/
CVC8      RCS FILTER PLUGGED
N SELECT BLOCKAGE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC9      VCT DIVERT CONTROL VALVE FAILURE
S SELECT POSITION (0/100 %)
```

```
F SELECT RAMP TIME (0/3600 SEC)
/
CVC10     VCT LEVEL TRANSMITTER FAILURE
/
CVC10A    VCT LEVEL TRANSMITTER FAILURE : LT-112
V (T:L112) SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
17/
CVC10B    VCT LEVEL TRANSMITTER FAILURE : LT-139
V (T:L139) SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
17/
CVC11     CHARGING LINE LEAK OUTSIDE CONTAINMENT
N SELECT LEAK RATE (0/500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC12     CHARGING PUMP TRIP
/
CVC12A    CHARGING PUMP TRIP : PUMP 1
/
CVC12B    CHARGING PUMP TRIP : PUMP 2
/
CVC12C    CHARGING PUMP TRIP : PUMP 3
/
CVC13     BORIC ACID PUMP TRIP
/
CVC13A    BORIC ACID PUMP TRIP : PUMP 1A
/
CVC13B    BORIC ACID PUMP TRIP : PUMP 1B
/
CVC14     RMWT PUMP TRIP
/
CVC14A    RMWT PUMP TRIP : PUMP 1A
/
CVC14B    RMWT PUMP TRIP : PUMP 1B
/
CVC15     BORIC ACID FLOW TRANSMITTER FAILURE
V (T:F110) SELECT FINAL VALUE (0/10 GPM)
F SELECT RAMP TIME (0/3600 SEC)
1.34E-17/
CVC16     SEAL WATER RETURN LINE SAFETY VALVE FAILURE
/
```

```
CVC17     RMW TO BLENDER FLOW CONTROL VALVE FAILURE
N SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC18     CHARGING PUMP SPEED CONTROLLER FAILURE
/
CVC18A    CH PUMP SPEED CONTR FAIL : PUMP 1A
F SELECT PUMP OUTPUT (15/60 GPM)
F SELECT RAMP TIME (0/3600 SEC)
1.69E-2,-1.4E-2/
CVC18B    CH PUMP SPEED CONTR FAIL : PUMP 1B
F SELECT PUMP OUTPUT (15/60 GPM)
F SELECT RAMP TIME (0/3600 SEC)
1.69E-2,-1.4E-2/
CVC18C    CH PUMP SPEED CONTR FAIL : PUMP 1C
F SELECT PUMP OUTPUT (15/60 GPM)
F SELECT RAMP TIME (0/3600 SEC)
1.69E-2,-1.4E-2/
CVC19     PLUGGED SEAL INJECTION FILTER
N SELECT BLOCKAGE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC20     AUX SPRAY VALVE FAILURE
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC21     BORIC ACID STORAGE TANK LEAK
/
CVC21A    BORIC ACID STORAGE TANK LEAK : BAT 1A
V (WCVCML21(1)) SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC21B    BORIC ACID STORAGE TANK LEAK : BAT 1B
V (WCVCML21(2)) SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC22     REGENERATIVE LETDOWN HEAT EXCHANGER TUBE LEAK
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC23     LETDOWN LINE SAFETY VALVE FAILS OPEN
/
```

```
CVC24     CHARGING BACKPRESSURE CONTROL VALVE FAILURE
S SELECT VALVE FAIL POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC25     VCT H2 PRESSURE CONTROL VALVE FAILURE
S SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC26     VCT OUTLET PIPE RUPTURES UPSTREAM OF LCV-112C
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC27     CHARGING PUMP SUCTION LINE FAILURE
/
CVC27A    CHARG PUMP SUCTION LINE FAIL : PUMP 1
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC27B    CHARG PUMP SUCTION LINE FAIL : PUMP 2
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
CVC27C    CHARG PUMP SUCTION LINE FAIL : PUMP 3
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
EDS1      LOSS OF OFF-SITE POWER
/
EDS1A     LOSS OF OFF-SITE POWER : CKT 751
I SELECT TIME BETWEEN LOSSES (0/3600 SEC)
/
EDS1B     LOSS OF OFF-SITE POWER : CKT 767
I SELECT TIME BETWEEN LOSSES (0/3600 SEC)
/
EDS2      LOSS OF STATION SERVICE TRANSFORMER
/
EDS2A     LOSS OF STATION SERVICE TRANSFORMER : NO. 13
/
EDS2B     LOSS OF STATION SERVICE TRANSFORMER : NO. 14
/
EDS2C     LOSS OF STATION SERVICE TRANSFORMER : NO. 15
/
```

```
EDS2D     LOSS OF STATION SERVICE TRANSFORMER : NO. 16
/
EDS2E     LOSS OF STATION SERVICE TRANSFORMER : NO. 17
/
EDS2F     LOSS OF STATION SERVICE TRANSFORMER : NO. 18
/
EDS3      LOSS OF NUMBER 11 AUX TRANSFORMER
/
EDS4      LOSS OF EMERGENCY BUS
/
EDS4A     LOSS OF EMERGENCY BUS : 480V BUS 14
/
EDS4B     LOSS OF EMERGENCY BUS : 480V BUS 16
/
EDS4C     LOSS OF EMERGENCY BUS : 480V BUS 17
/
EDS4D     LOSS OF EMERGENCY BUS : 480V BUS 18
/
EDS5      LOSS OF DC BUS
/
EDS5A     LOSS OF DC BUS : 125VDC BUS 1A
/
EDS5B     LOSS OF DC BUS : 125VDC BUS 1B
/
EDS6      LOSS OF SWITCHYARD (STATION BLACKOUT)
I SELECT LOSS MODE (1/2 1=SEQUENTIAL, 2=FAST)
/
EDS7      LOSS OF INSTRUMENT BUS SUPPLY
/
EDS7A     LOSS OF INSTRUMENT BUS SUPPLY : BUS 1A (RED)
/
EDS7B     LOSS OF INSTRUMENT BUS SUPPLY : BUS 1B (WHITE)
/
EDS7C     LOSS OF INSTRUMENT BUS SUPPLY : BUS 1C (BLUE)
/
EDS7D     LOSS OF INSTRUMENT BUS SUPPLY : BUS 1D (YELLOW)
/
EDS8      (DELETED)
/
FDW1      FEEDPUMP SUCTION HEADER BREAK
N SELECT LEAK RATE (0/15600 GPM)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
FDW2      FEEDWATER PUMP TRIP
/
FDW2A     FEEDWATER PUMP TRIP : PUMP 1A
/
FDW2B     FEEDWATER PUMP TRIP : PUMP 1B
/
FDW3      FEEDWATER RECIRCULATION VALVE FAILURE
/
FDW3A     FEEDWATER RECIRCULATION VALVE FAILURE : CV-18
S SELECT FAILED POSITION (0/100 %OPEN)
/
FDW3B     FEEDWATER RECIRCULATION VALVE FAILURE : CV-19
S SELECT FAILED POSITION (0/100 %OPEN)
/
FDW4      FEEDWATER PUMP LUBE OIL SYSTEM FAILURE
I SELECT FAILED PUMP (1/2 1=PUMP 1A, 2=PUMP 1B)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW5      FEEDLINE LEAK BETWEEN FLOW ELEMENT AND CHECK VALVE      (UNRECO)
/
FDW5A     FEEDLINE LK BETWEEN FLOW ELEMENT & CK VLV : S/G 1A      (UNRECO)
N SELECT LEAK RATE (0/3.7E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW5B     FEEDLINE LK BETWEEN FLOW ELEMENT & CK VLV : S/G 1B      (UNRECO)
N SELECT LEAK RATE (0/3.7E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW6      FEED FLOW TRANSMITTER FAILURE
/
FDW6A     FEED FLOW TRANSMITTER FAILURE : FT-466 (I)
V (T:F466) SELECT LEAK RATE (0/3.7E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
FDW6B     FEED FLOW TRANSMITTER FAILURE : FT-467 (II)
V (T:F467) SELECT LEAK RATE (0/3.7E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
FDW6C     FEED FLOW TRANSMITTER FAILURE : FT-476 (III)
V (T:F476) SELECT LEAK RATE (0/3.7E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
```

```
2.777E-4/
FDW6D     FEED FLOW TRANSMITTER FAILURE : FT-477 (IV)
V (T:F477) SELECT LEAK RATE (0/3.7E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
FDW7      FEED REGULATING VALVE CONTROL FAILURE
/
FDW7A     FEED REGULATING VALVE CONTROL FAILURE : FCV-466 AUTO ONLY
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7B     FEED REGULATING VALVE CONTROL FAILURE : FCV-466
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7C     FEED REGULATING VALVE CONTROL FAILURE : FCV-476 AUTO ONLY
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7D     FEED REGULATING VALVE CONTROL FAILURE : FCV-476
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7E     FEED REGULATING VALVE CONTROL FAILURE : FCV-4271 AUTO ONLY
F SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7F     FEED REGULATING VALVE CONTROL FAILURE : FCV-4271
F SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7G     FEED REGULATING VALVE CONTROL FAILURE : FCV-4272 AUTO ONLY
F SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW7H     FEED REGULATING VALVE CONTROL FAILURE : FCV-4272
F SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW8      FEEDLINE BREAK OUTSIDE CNMT DOWNSTREAM OF CK VLV        (UNRECO)
/
FDW8A     FEEDLINE BRK OUSIDE CNMT DWNSTREAM OF CK VLV : S/G 1    (UNRECO)
```

```
N SELECT LEAK RATE (0/2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW8B     FEEDLINE BRK OUSIDE CNMT DWNSTREAM OF CK VLV : S/G 1B  (UNRECO)
N SELECT LEAK RATE (0/2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW9      FEEDLINE BREAK INSIDE CONTAINMENT                      (UNRECO)
/
FDW9A     FEEDLINE BREAK INSIDE CONTAINMENT : S/G 1A             (UNRECO)
N SELECT LEAK RATE (0/2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW9B     FEEDLINE BREAK INSIDE CONTAINMENT : S/G 1B             (UNRECO)
N SELECT LEAK RATE (0/2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW10     FEED REGULATING VALVE FAILURE
/
FDW10A    FEED REGULATING VALVE FAILURE : FCW-466
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW10B    FEED REGULATING VALVE FAILURE : FCW-476
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW11     AUXILIARY FEEDWATER PUMP FAILURE
/
FDW11A    AUX FEEDWATER PUMP FAILURE : MOTOR DRIVEN PUMP 1A
/
FDW11B    AUX FEEDWATER PUMP FAILURE : MOTOR DRIVEN PUMP 1B
/
FDW12     AFW TURBINE DRIVEN PUMP SPEED CONTROL FAILURE
F SELECT PUMP FLOW OUTPUT (0/5100 RPM)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW13     AFW PUMP SUCTION LINE BREAK
/
FDW13A    AFW PUMP SUCTION LINE BREAK : MOTOR DRIVEN PUMP 1A
N SELECT LEAK RATE (0/600 GPM)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
FDW13B   AFW PUMP SUCTION LINE BREAK : MOTOR DRIVEN PUMP 1B
N SELECT LEAK RATE (0/600 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW13C   AFW PUMP SUCTION LINE BREAK : TURBINE DRIVEN
N SELECT LEAK RATE (0/600 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW14    AFW FEED CONTROL VALVE FAILURE
/
FDW14A   AFW FEED CONTROL VALVE FAILURE : 4297 CV-54
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW14B   AFW FEED CONTROL VALVE FAILURE : 4298 CV-55
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW14C   AFW FEED CONTROL VALVE FAILURE : 4008
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW14D   AFW FEED CONTROL VALVE FAILURE : 4007
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW14E   AFW FEED CONTROL VALVE FAILURE : 4480
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW14F   AFW FEED CONTROL VALVE FAILURE : 4481
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW15    STANDBY AUXILIARY FEED PUMP FAILURE
/
FDW15A   STANDBY AUX FEED PUMP FAILURE : PUMP C
/
FDW15B   STANDBY AUX FEED PUMP FAILURE : PUMP D
/
FDW16    AFW PUMP DISCHARGE LINE RUPTURE
```

```
/
FDW16A    AFW PUMP DISCHARGE LINE RUPTURE : MOTOR DRIVEN PMP 1A
N SELECT LEAK RATE (0/200 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW16B    AFW PUMP DISCHARGE LINE RUPTURE : MOTOR DRIVEN PMP 1B
N SELECT LEAK RATE (0/200 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW16C    AFW PUMP DISCHARGE LINE RUPTURE : TURBINE DRIVEN PUMP
N SELECT LEAK RATE (0/200 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
FDW17     MAIN FEEDWATER PUMP FAILS TO TRIP
/
FDW17A    MAIN FEEDWATER PUMP FAILS TO TRIP : PUMP 1A
/
FDW17B    MAIN FEEDWATER PUMP FAILS TO TRIP : PUMP 1B
/
GEN1      MAIN GENERATOR TRIP
I SELECT FAIL (1/5 1=GRD,2=LOSS CRT,3=DIF CRT,4=NEG SEQ,5=BRK)
/
GEN2      FAILURE OF GENERATOR H2 COOLING CONTROLLER
V (T:T2023) SELECT FAILED VALUE (0/200 F)
/
GEN3      MAIN GENERATOR VOLTAGE REGULATOR FAILURE
V (EGENMAL3) SELECT PERCENT OF VOLTAGE (80/120 %)
F SELECT RAMP TIME (0/3600 SEC)
/
GEN4      DIESEL ENGINE TRIP
/
GEN4A     DIESEL ENGINE TRIP : DIESEL 1A
I SELECT CAUSE (1/2 1=TRIP ALL COND, 2=TRIP EXC DURING SI)
/
GEN4B     DIESEL ENGINE TRIP : DIESEL 1B
I SELECT CAUSE (1/2 1=TRIP ALL COND, 2=TRIP EXC DURING SI)
/
GEN5      DIESEL GENERATOR FAILURE TO LOAD
/
GEN5A     DIESEL GENERATOR FAILURE TO LOAD : DIESEL 1A
F SELECT LOAD (0.0/1950.0 KW)
F SELECT DROOP (0.1/10.0 RPM/KW)
```

```
/
GEN5B     DIESEL GENERATOR FAILURE TO LOAD : DIESEL 1B
F SELECT LOAD (0.0/1950.0 KW)
F SELECT DROOP (0.1/10.0 RPM/KW)
/
GEN6      DIESEL GENERATOR BREAKER TRIP
/
GEN6A     DIESEL GEN BREAKER TRIP : DIESEL 1A BUS 14
/
GEN6B     DIESEL GEN BREAKER TRIP : DIESEL 1A BUS 18
/
GEN6C     DIESEL GEN BREAKER TRIP : DIESEL 1B BUS 16
/
GEN6D     DIESEL GEN BREAKER TRIP : DIESEL 1B BUS 17
/
GEN7      FAILURE OF DIESEL GENERATOR LOAD SEQUENCING
/
GEN7A     FAIL OF DIESEL GEN LOAD SEQ : TRAIN A
/
GEN7B     FAIL OF DIESEL GEN LOAD SEQ : TRAIN B
/
HTR1      FEEDWATER HEATER TUBE LEAK
/
HTR1A     FEEDWATER HEATER TUBE LEAK : HTR 1A
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1B     FEEDWATER HEATER TUBE LEAK : HTR 1B
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1C     FEEDWATER HEATER TUBE LEAK : HTR 2A
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1D     FEEDWATER HEATER TUBE LEAK : HTR 2B
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1E     FEEDWATER HEATER TUBE LEAK : HTR 3A
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
HTR1F     FEEDWATER HEATER TUBE LEAK : HTR 3B
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1G     FEEDWATER HEATER TUBE LEAK : HTR 4A
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1H     FEEDWATER HEATER TUBE LEAK : HTR 4B
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1I     FEEDWATER HEATER TUBE LEAK : HTR 5A
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR1J     FEEDWATER HEATER TUBE LEAK : HTR 5B
N SELECT LEAK RATE (0/1000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR2      HEATER DRAIN TANK PUMP TRIP
/
HTR2A     HEATER DRAIN TANK PUMP TRIP : HDP-1A
/
HTR2B     HEATER DRAIN TANK PUMP TRIP : HDP-1B
/
HTR3      HEATER DRAIN TANK LEVEL CONTROL VALVE FAILURE
/
HTR3A     HEATER DRAIN TNK LEVEL CNTRL VLV FAILURE : CV-33 3343
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR3B     HEATER DRAIN TNK LEVEL CNTRL VLV FAILURE : CV-32 3345
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR4      FEEDWATER HEATER HIGH LEVEL DUMP ISOLATION FAILURE
/
HTR4A     FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-1A
/
HTR4B     FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-1B
```

/
HTR4C FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-2A
/
HTR4D FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-2B
/
HTR4E FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-3A
/
HTR4F FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-3B
/
HTR4G FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-4A
/
HTR4H FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-4B
/
HTR4I FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-5A
/
HTR4J FDWTR HTR HIGH LEVEL ISO FAILURE : HTR-5B
/
HTR5 FEEDWATER HEATER LEVEL CONTROL FAILURE
/
HTR5A FDWTR HTR LEVEL CONTRL FAILURE : LT-2013 HTR-1A
V (T:L2005B) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR5B FDWTR HTR LEVEL CONTRL FAILURE : LT-2019 HTR-1B
V (T:L2011) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR5C FDWTR HTR LEVEL CONTRL FAILURE : LT-2016 HTR-2A
V (T:L2008) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR5D FDWTR HTR LEVEL CONTRL FAILURE : LT-2017 HTR-2B
V (T:L2009) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR5E FDWTR HTR LEVEL CONTRL FAILURE : LT-2014 HTR-3A
V (T:L2006) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR5F FDWTR HTR LEVEL CONTRL FAILURE : LT-2015 HTR-3B
V (T:L2007) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)

```
/
HTR5G     FDWTR HTR LEVEL CONTRL FAILURE : LT-2011 HTR-5A
V (T:L2003) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
HTR5H     FDWTR HTR LEVEL CONTRL FAILURE : LT-2012 HTR-5B
V (T:L2004) SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1      LOSS OF INSTRUMENT AIR
/
MIS1A     LOSS OF INSTRUMENT AIR : RECEIVER 1A
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1B     LOSS OF INSTRUMENT AIR : RECEIVER 1B
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1C     LOSS OF INSTRUMENT AIR : RECEIVER 1C
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1D     LOSS OF INSTRUMENT AIR : COMBINED INST AIR HDR
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1E     LOSS OF INSTRUMENT AIR : TURBINE ROOM LOOP
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1F     LOSS OF INSTRUMENT AIR : AUX BLDG HDR
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS1G     LOSS OF INSTRUMENT AIR : REACTOR VESSEL HDR
N SELECT FAILED VALUE (0/1400 SCFM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS2      LOSS OF POWER TO PPCS
/
MIS3      LIQUID RAD WASTE LEAK
```

```
F SELECT LEAK RATE (0/150 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS4      GAS DECAY TANK RUPTURE
/
MIS4A     GAS DECAY TANK RUPTURE : NO FAILED FUEL
F SELECT TOTAL ACTIVITY (0/1E5 CURIES)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS4B     GAS DECAY TANK RUPTURE : FAILED FUEL
F SELECT TOTAL ACTIVITY (0/1E5 CURIES)
F SELECT RAMP TIME (0/3600 SEC)
/
MIS5      CONTAINMENT ISOLATION VALVE FAILURE
/
MIS5A     CNMT ISO VLV FAILURE : MOV-371 (LTDN ISOL VLV)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5B     CNMT ISO VLV FAILURE : MOV-814 (COMP COOL SUPPLY)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5C     CNMT ISO VLV FAILURE : AOV-5392 (INST AIR ISOL VLV)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5D     CNMT ISO VLV FAILURE : MOV-313 (SEAL WTR RTN VLV)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5E     CNMT ISO VLV FAILURE : AOV-508 (RMW TO PRT VLV)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5F     CNMT ISO VLV FAILURE : V-1003A (RCDT)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5G     CNMT ISO VLV FAILURE : RECOMBINER ISOL A VLVS
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5H     CNMT ISO VLV FAILURE : RECOMBINER ISOL B VLVS
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS5I     CNMT ISO VLV FAILURE : AOV-955 (B HOT LEG SAMPLE VL)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
```

```
MIS5J     CNMT ISO VLV FAILURE : AOV-539 (PRT TO GA VLV)
I SELECT FAILURE (1/2 1=ISOL SIGNAL ONLY, 2=VALVE FAILS AS IS)
/
MIS6      LOSS OF POWER TO SAS
/
MIS7      LOSS OF PLANT COMMUNICATIONS
/
MIS7A     LOSS OF PLANT COMM : PWR SPLY TO PLANT INTERCOMS FAILS
/
MIS7B     LOSS OF PLANT COMM : FAILURE OF GAITRONICS TONE SYSTEM
/
MIS8      FAIL SASS CPU'S
I SELECT CPU (1/3 1=CPU A, 2=CPU B, 3=BOTH)
/
MIS9      FAIL PPCSS CPU'S
I SELECT CPU (1/3 1=CPU A, 2=CPU B, 3=BOTH)
/
MIS10     FAIL PPCSS CRT'S
I SELECT CRT (1/999 ENTER CRT NUMBER IN EACH CHARACTER POSITION)
I SELECT FAILURE TYPE (0/2 0=FUNCTIONING, 1=FAILED, 2=LOCKUP)
/
MIS11     FAIL PPCSS CPU A DATA CONCENTRATOR
I SELECT DATA CONCENTRATOR LINK A0 (0/1 0=FUNCTIONING, 1=FAILED)
I SELECT DATA CONCENTRATOR LINK A1 (0/1 0=FUNCTIONING, 1=FAILED)
/
MIS12     FAIL PPCSS CPU B DATA CONCENTRATOR
I SELECT DATA CONCENTRATOR LINK A0 (0/1 0=FUNCTIONING, 1=FAILED)
I SELECT DATA CONCENTRATOR LINK A1 (0/1 0=FUNCTIONING, 1=FAILED)
/
MIS13     FAIL SASS CPU A DATA CONCENTRATOR
I SELECT DATA CONCENTRATOR LINK A0 (0/1 0=FUNCTIONING, 1=FAILED)
I SELECT DATA CONCENTRATOR LINK A1 (0/1 0=FUNCTIONING, 1=FAILED)
/
MIS14     FAIL SASS CPU B DATA CONCENTRATOR
I SELECT DATA CONCENTRATOR LINK A0 (0/1 0=FUNCTIONING, 1=FAILED)
I SELECT DATA CONCENTRATOR LINK A1 (0/1 0=FUNCTIONING, 1=FAILED)
/
MIS15     FAIL MUX CABINET
I SELECT MUX (1/999 ENTER MUX NUMBER IN EACH CHARACTER POSITION)
I SELECT FAILURE TYPE (0/1 0=FUNCTIONING, 1=FAILED)
/
NIS1      SOURCE RANGE CHANNEL FAILURE
```

```
/
NIS1A     S.R. CHANNEL FAILURE : CH-31
V (FNISPAD(1)) SELECT FAILED VALUE (1E0/1E6 CPS)
F SELECT RAMP TIME (0/60 SEC)
/
NIS1B     S.R. CHANNEL FAILURE : CH-32
V (FNISPAD(2)) SELECT FAILED VALUE (1E0/1E6 CPS)
F SELECT RAMP TIME (0/60 SEC)
/
NIS2      NOISY SOURCE RANGE CHANNEL
/
NIS2A     NOISY S.R. CHANNEL : CH-31
R SELECT MAX MAGNITUDE OF NOISE PEAK (1E0/1E6 CPS)
/
NIS2B     NOISY S.R. CHANNEL : CH-32
R SELECT MAX MAGNITUDE OF NOISE PEAK (1E0/1E6 CPS)
/
NIS3      FAILURE OF S.R. CHANNEL HIGH VOLTAGE TO DISCONNECT
/
NIS3A     FAILURE OF S.R. CH HIGH VOLT TO DISCONNECT : CH-N31
/
NIS3B     FAILURE OF S.R. CH HIGH VOLT TO DISCONNECT : CH-N32
/
NIS4      INTERMEDIATE RANGE CHANNEL FAILURE
/
NIS4A     I.R. CHANNEL FAILURE : CH-N35
V (FNISCSM(1)) SELECT FAILED VALUE (1E-11/1E-3 AMPS)
F SELECT RAMP TIME (0/60 SEC)
/
NIS4B     I.R. CHANNEL FAILURE : CH-N36
V (FNISCSM(2)) SELECT FAILED VALUE (1E-11/1E-3 AMPS)
F SELECT RAMP TIME (0/60 SEC)
/
NIS5      INTERMEDIATE RANGE GAMMA COMPENSATION FAILURE
/
NIS5A     I.R. GAMMA COMPENSATION FAILURE : CH-N35
V (ZNISIRCV(1)) SELECT CURRENT VALUE (-1E-8/1E-8 AMPS)
/
NIS5B     I.R. GAMMA COMPENSATION FAILURE : CH-N36
V (ZNISIRCV(2)) SELECT CURRENT VALUE (-1E-8/1E-8 AMPS)
/
NIS6      POWER RANGE CHANNEL DETECTOR FAILURE
```

```
/
NIS6A     P.R. CHANNEL DET FAILURE : CH-41A (UPPER)
V (FNISPUM(1))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6B     P.R. CHANNEL DET FAILURE : CH-41B (LOWER)
V (FNISPLM(1))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6C     P.R. CHANNEL DET FAILURE : CH-42A (UPPER)
V (FNISPUM(2))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6D     P.R. CHANNEL DET FAILURE : CH-42B (LOWER)
V (FNISPLM(2))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6E     P.R. CHANNEL DET FAILURE : CH-43A (UPPER)
V (FNISPUM(3))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6F     P.R. CHANNEL DET FAILURE : CH-43B (LOWER)
V (FNISPLM(3))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6G     P.R. CHANNEL DET FAILURE : CH-44A (UPPER)
V (FNISPUM(4))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS6H     P.R. CHANNEL DET FAILURE : CH-44B (LOWER)
V (FNISPLM(4))SELECT FINAL CURRENT (0/5 MAMP)
F SELECT RAMP TIME (0/3 SEC)
/
NIS7      POWER RANGE CHANNEL FAILURE
/
NIS7A     P.R. CHANNEL FAILURE : CH-N41
V (FNISPR(1)) SELECT FAILED VALUE (0/180 %)
F SELECT RAMP TIME (0/3 SEC)
/
NIS7B     P.R. CHANNEL FAILURE : CH-N42
V (FNISPR(2)) SELECT FAILED VALUE (0/180 %)
F SELECT RAMP TIME (0/3 SEC)
```

```
/
NIS7C     P.R. CHANNEL FAILURE : CH-N43
V (FNISPR(3)) SELECT FAILED VALUE (0/180 %)
F SELECT RAMP TIME (0/3 SEC)
/
NIS7D     P.R. CHANNEL FAILURE : CH-N44
V (FNISPR(4)) SELECT FAILED VALUE (0/180 %)
F SELECT RAMP TIME (0/3 SEC)
/
NIS8      INTERMEDIATE RANGE BLOWN FUSE
/
NIS8A     INTERMEDIATE RANGE BLOWN FUSE : CH-35
I SELECT FAILED FUSES (1/3 1=INSTRUMENT, 2=CONTROL, 3=BOTH)
/
NIS8B     INTERMEDIATE RANGE BLOWN FUSE : CH-36
I SELECT FAILED FUSES (1/3 1=INSTRUMENT, 2=CONTROL, 3=BOTH)
/
NIS9      SOURCE RANGE HIGH VOLTAGE FAILURE
/
NIS9A     S.R. HIGH VOLTAGE FAILURE : CH-31
V (ENISSR(1)) SELECT FINAL DETECTOR VOLTAGE (300/2500 VOLT)
/
NIS9B     S.R. HIGH VOLTAGE FAILURE : CH-32
V (ENISSR(2)) SELECT FINAL DETECTOR VOLTAGE (300/2500 VOLT)
/
NIS10     SOURCE RANGE BLOWN FUSE
/
NIS10A    S.R. BLOWN FUSE : CH-31
I SELECT FAILED FUSES (1/3 1=INSTRUMENT, 2=CONTROL, 3=BOTH)
/
NIS10B    S.R. BLOWN FUSE : CH-32
I SELECT FAILED FUSES (1/3 1=INSTRUMENT, 2=CONTROL, 3=BOTH)
/
PZR1      PRESSURIZER SPRAY VALVE FAILURE
/
PZR1A     PRESSURIZER SPRAY VLV FAILURE : PCV-431A (MANUAL)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR1B     PRESSURIZER SPRAY VLV FAILURE : PCV-431A (NO MANUAL)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
PZR1C     PRESSURIZER SPRAY VLV FAILURE : PCV-431B (MANUAL)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR1D     PRESSURIZER SPRAY VLV FAILURE : PCV-431B (NO MANUAL)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR2      PRESSURIZER PRESSURE CHANNEL FAILURE
/
PZR2A     PZR PRESSURE CHANNEL FAILURE : CH-429 (I)
V (T:P429) SELECT FAILED VALUE (1700/2500 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
PZR2B     PZR PRESSURE CHANNEL FAILURE : CH-430 (II)
V (T:P430) SELECT FAILED VALUE (1700/2500 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
PZR2C     PZR PRESSURE CHANNEL FAILURE : CH-431 (III)
V (T:P431) SELECT FAILED VALUE (1700/2500 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
PZR2D     PZR PRESSURE CHANNEL FAILURE : CH-449 (IV)
V (T:P449) SELECT FAILED VALUE (1700/2500 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
PZR3      PRESSURIZER LEVEL CHANNEL FAILURE
/
PZR3A     PZR LEVEL CHANNEL FAILURE : CH-426 (I)
V (T:L426) SELECT FAILED VALUE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR3B     PZR LEVEL CHANNEL FAILURE : CH-427 (II)
V (T:L427) SELECT FAILED VALUE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR3C     PZR LEVEL CHANNEL FAILURE : CH-428 (III)
V (T:L428) SELECT FAILED VALUE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR3D     PZR LEVEL CHANNEL FAILURE : CH-433 (COLD CAL)
```

```
V (T:L433) SELECT FAILED VALUE (0/235 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR4      PRESSURIZER MASTER PRESSURE CONTROLLER FAILURE
S SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR5      PRESSURIZER RELIEF VALVE FAILURE
/
PZR5A     PZR RELIEF VLV FAILURE : PCV-430
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR5B     PZR RELIEF VLV FAILURE : PCV-431C
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR6      PRESSURIZER SAFETY VALVE FAILURE
/
PZR6A     PZR SAFETY VLV FAILURE : PCV-434
N SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR6B     PZR SAFETY VLV FAILURE : PCV-435
N SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR7      PRESSURIZER STEAM SPACE LEAK                    (UNRECO)
N SELECT LEAK RATE (0/89000 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
PZR8      PRESSURIZER LEVEL MASTER CONTROLLER FAILURE
S SELECT FAILED LEVEL (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS1      RCP THERMAL BARRIER LEAK
/
RCS1A     RCP THERMAL BARRIER LEAK : RCP 1A
N SELECT LEAK RATE (0/200 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS1B     RCP THERMAL BARRIER LEAK : RCP 1B
```

```
N SELECT LEAK RATE (0/200 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS2      RCS LEAK INTO CONTAINMENT (LOCA)                    (UNRECO)
/
RCS2A     RCS LEAK INTO CNMT : LOOP A HOT LEG                 (UNRECO)
N SELECT LEAK RATE (0/400000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS2B     RCS LEAK INTO CNMT : LOOP A COLD LEG                (UNRECO)
N SELECT LEAK RATE (0/400000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS2C     RCS LEAK INTO CNMT : LOOP B HOT LEG                 (UNRECO)
N SELECT LEAK RATE (0/400000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS2D     RCS LEAK INTO CNMT : LOOP B COLD LEG                (UNRECO)
N SELECT LEAK RATE (0/400000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS3      VARIABLE RCS BORON CONCENTRATION
V (XRCS) SELECT FINAL RCS BORON CONCENTRATION (0/3000 PPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS4      REACTOR VESSEL FLANGE LEAK
N SELECT LEAK RATE (0/30 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS5      RCP TRIP
/
RCS5A     RCP TRIP : RCP-1A
/
RCS5B     RCP TRIP : RCP-1B
/
RCS6      RCP SHAFT SHEAR                                     (UNRECO)
/
RCS6A     RCP SHAFT SHEAR : RCP-1A                            (UNRECO)
/
RCS6B     RCP SHAFT SHEAR : RCP-1B                            (UNRECO)
/
RCS7      RCP LOCKED ROTOR                                    (UNRECO)
```

```
/
RCS7A     RCP LOCKED ROTOR : RCP-1A                                (UNRECO)
/
RCS7B     RCP LOCKED ROTOR : RCP-1B                                (UNRECO)
/
RCS8      RCP OIL RESERVOIR FAILURE
/
RCS8A     RCP OIL RESERVOIR FAILURE : RCP-1A UPPER BRG
V(BRCPUR(1)) SELECT FINAL VALUE (-3.0/3.0 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS8B     RCP OIL RESERVOIR FAILURE : RCP-1A LOWER BRG
V(BRCPLR(1)) SELECT FINAL VALUE (-3.0/3.0 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS8C     RCP OIL RESERVOIR FAILURE : RCP-1B UPPER BRG
V(BRCPUR(2)) SELECT FINAL VALUE (-3.0/3.0 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS8D     RCP OIL RESERVOIR FAILURE : RCP-1B LOWER BRG
V(BRCPLR(2)) SELECT FINAL VALUE (-3.0/3.0 IN)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS9      WIDE RANGE RCS PRESSURE CHANNEL FAILURE
/
RCS9A     WIDE RANGE RCS LOOP PR CH FAILURE : PT420
V (T:P420) SELECT FINAL PRESSURE (0/3000 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
RCS9B     WIDE RANGE RCS LOOP PR CH FAILURE : PT450
V (T:P450) SELECT FINAL PRESSURE (0/3000 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
RCS9C     WIDE RANGE RCS LOOP PR CH FAILURE : PT451
V (T:P451) SELECT FINAL PRESSURE (0/3000 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
RCS9D     WIDE RANGE RCS LOOP PR CH FAILURE : PT452
V (T:P452) SELECT FINAL PRESSURE (0/3000 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
RCS10     RCS LOOP FLOW TRANSMITTER FAILURE
```

```
/
RCS10A   RCS LOOP FLOW TRANSMITTER FAILURE : FT 411 (LP 1)
V (T:F411) SELECT FINAL FLOW (0/120 %)
F SELECT RAMP TIME (0/3600 SEC)
95.10/
RCS10B   RCS LOOP FLOW TRANSMITTER FAILURE : FT 412 (LP 1)
V (T:F412) SELECT FINAL FLOW (0/120 %)
F SELECT RAMP TIME (0/3600 SEC)
95.10/
RCS10C   RCS LOOP FLOW TRANSMITTER FAILURE : FT 413 (LP 1)
V (T:F413) SELECT FINAL FLOW (0/120 %)
F SELECT RAMP TIME (0/3600 SEC)
95.10/
RCS10D   RCS LOOP FLOW TRANSMITTER FAILURE : FT 414 (LP 2)
V (T:F414) SELECT FINAL FLOW (0/120 %)
F SELECT RAMP TIME (0/3600 SEC)
95.10/
RCS10E   RCS LOOP FLOW TRANSMITTER FAILURE : FT 415 (LP 2)
V (T:F415) SELECT FINAL FLOW (0/120 %)
F SELECT RAMP TIME (0/3600 SEC)
95.10/
RCS10F   RCS LOOP FLOW TRANSMITTER FAILURE : FT 416 (LP 2)
V (T:F416) SELECT FINAL FLOW (0/120 %)
F SELECT RAMP TIME (0/3600 SEC)
95.10/
RCS11    RTD FAILURE
/
RCS11A   RTD FAILURE : LP A HOT TE-401A (TT-401)I
V (T:T401A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11B   RTD FAILURE : LP A HOT TE-405A (TT-401)I
V (T:T405A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11C   RTD FAILURE : LP A HOT TE-402A (TT-402)II
V (T:T402A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11D   RTD FAILURE : LP A HOT TE-406A (TT-402)II
V (T:T406A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
RCS11E   RTD FAILURE : LP A COLD TE-401B (TT-401)I
V (T:T401B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11F   RTD FAILURE : LP A COLD TE-405B (TT-401)I
V (T:T405B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11G   RTD FAILURE : LP A COLD TE-402B (TT-402)II
V (T:T402B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11H   RTD FAILURE : LP A COLD TE-406B (TT-402)II
V (T:T406B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11I   RTD FAILURE : LP B HOT TE-403A (TT-403)III
V (T:T403A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11J   RTD FAILURE : LP B HOT TE-407A (TT-403)III
V (T:T407A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11K   RTD FAILURE : LP B HOT TE-404A (TT-404)IV
V (T:T404A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11L   RTD FAILURE : LP B HOT TE-408A (TT-404)IV
V (T:T408A) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11M   RTD FAILURE : LP B COLD TE-403B (TT-403)III
V (T:T403B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11N   RTD FAILURE : LP-B COLD TE-407B (TT-403)III
V (T:T407B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11O   RTD FAILURE : LP-B COLD TE-404B (TT-404)IV
```

```
V (T:T404B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11P   RTD FAILURE : LP-B COLD TE-408B (TT-404)IV
V (T:T408B) SELECT FINAL FAILED VALUE (475/675 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11Q   RTD FAILURE : LP-A HOT TE-409A1 TSAT/ZIRC
V (T:T409A1) SELECT FINAL FAILED VALUE (0/700 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11R   RTD FAILURE : LP-B HOT TE-410A1 TSAT/ZIRC
V (T:T410A1) SELECT FINAL FAILED VALUE (0/700 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11S   RTD FAILURE : LP-A COLD TE-409B1
V (T:T409B1) SELECT FINAL FAILED VALUE (0/700 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS11T   RTD FAILURE : LP-B COLD TE-410B1
V (T:T410B1) SELECT FINAL FAILED VALUE (0/700 F)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS12    RCP NO. 1 SEAL FAILURE                          (UNRECO)
/
RCS12A   RCP NO. 1 SEAL FAILURE : RCP-1A                 (UNRECO)
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS12B   RCP NO. 1 SEAL FAILURE : RCP-1B                 (UNRECO)
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS13    RCP NO. 2 SEAL FAILURE
/
RCS13A   RCP NO. 2 SEAL FAILURE : RCP-1A
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS13B   RCP NO. 2 SEAL FAILURE : RCP-1B
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
RCS14     RCP NO. 3 SEAL FAILURE
/
RCS14A    RCP NO. 3 SEAL FAILURE : RCP-1A
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS14B    RCP NO. 3 SEAL FAILURE : RCP-1B
N SELECT LEAK RATE (0/300 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS15     RCP HIGH VIBRATION
/
RCS15A    RCP HIGH VIBRATION : RCP-1A SHAFT
V(VVBNSHV(1)) SELECT FINAL VIBRATION (0/25 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS15B    RCP HIGH VIBRATION : RCP-1B SHAFT
V(VVBNSHV(2)) SELECT FINAL VIBRATION (0/25 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS15C    RCP HIGH VIBRATION : RCP-1A SEISMIC
V(VVBNFHV(1)) SELECT FINAL VIBRATION (0/10 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS15D    RCP HIGH VIBRATION : RCP-1B SEISMIC
V(VVBNFHV(2)) SELECT FINAL VIBRATION (0/10 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS16     FUEL CLADDING FAILURE
R SELECT RCS ACTIVITY LEVEL (1E-1/1E4 UC/ML)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS17     RVLIS TRANSMITTER FAILURE
/
RCS17A    TRANSMITTER FAILURE RVLIS1 LT-490A
V (T:L490A) SELECT FINAL FAILED VALUE (0/108 %)
F SELECT RAMP TIME (0/3600 SEC)
/
RCS17B    TRANSMITTER FAILURE RVLIS2 LT-490B
V (T:L490B) SELECT FINAL FAILED VALUE (0/108 %)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
RHR1      RHR PUMP TRIP
/
RHR1A     RHR PUMP TRIP : PUMP 1A
/
RHR1B     RHR PUMP TRIP : PUMP 1B
/
RHR2      RHR HEAT EXCHANGER FLOW CONTROL VALVE FAILURE
/
RHR2A     RHR HEAT EXCHANGER FLOW CNTRL VALVE FAILURE : HCV-624
S SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR2B     RHR HEAT EXCHANGER FLOW CNTRL VALVE FAILURE : HCV-625
S SELECT FAILED POSITION (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR3      RHR HEAT EXCHANGER TUBE LEAK
/
RHR3A     RHR HEAT EXCHANGER TUBE LEAK : A
N SELECT LEAK RATE (0/500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR3B     RHR HEAT EXCHANGER TUBE LEAK : B
N SELECT LEAK RATE (0/500 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR4      RHR HEAT EXCHANGER BYPASS VALVE CONTROL FAILURE
N SELECT CONTROLLER OUTPUT (0/100 %) (0=CLOSED, 100=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR5      RHR BYPASS LINE LEAK
N SELECT LEAK RATE (0/2000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR6      CONTAINMENT SUMP TO RHR PUMP SCREENS FOUL
/
RHR6A     CNMT SUMP TO RHR PUMP SCREENS FOUL : MOV-851A
N SELECT FINAL BLOCKAGE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR6B     CNMT SUMP TO RHR PUMP SCREENS FOUL : MOV-851B
```

```
N SELECT FINAL BLOCKAGE (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
RHR7      RHR PUMP SUCTION LINE RUPTURE
N SELECT LEAK RATE (0/3000 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS1      AREA MONITOR FAILURE
/
RMS1A     AREA MON FAILURE : R-2 (CNTMT)
V (T:R2) SELECT FAILED VALUE (1E-1/1E4 MR/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS1B     AREA MON FAILURE : R-4 (CHG PUMP RM)
V (T:R4) SELECT FAILED VALUE (1E-1/1E4 MR/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS1C     AREA MON FAILURE : R-5 (SP FUEL PIT)
V (T:R5) SELECT FAILED VALUE (1E-1/1E4 MR/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS1D     AREA MON FAILURE : R-7 (INC INSTR)
V (T:R7) SELECT FAILED VALUE (1E-1/1E4 MR/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS1E     AREA MON FAILURE : R-9 (LTDN LINE)
V (T:R9) SELECT FAILED VALUE (1E-1/1E4 MR/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2      PROCESS RADIATION MONITOR FAILURE
/
RMS2A     PROCESS RAD MON FAIL: R-11 (CNTMT PART)
V (T:R11) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2B     PROCESS RAD MON FAIL: R-12 (CNTMT GAS)
V (T:R12) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2C     PROCESS RAD MON FAIL: R-13 (AUX BLDG PART)
V (T:R13) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
RMS2D     PROCESS RAD MON FAIL: R-14 (AUX BLDG GAS)
V (T:R14) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2E     PROCESS RAD MON FAIL: R-15 (COND AIR EJ)
V (T:R15) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2F     PROCESS RAD MON FAIL: R-17 (CCW PUMP SUCT)
V (T:R17) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2G     PROCESS RAD MON FAIL: R-18 (LIQ WASTE DIS)
V (T:R18) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS2H     PROCESS RAD MON FAIL: R-19 (S/G BD)
V (T:R19) SELECT FAILED VALUE (1.0/1E6 CPM)
F SELECT RAMP TIME (0/3600 SEC)
/
RMS3      NUCLEAR SAMPLE ROOM RADIATION LEVEL
V (RRMSNSS) SELECT LEVEL (.01/1E4 MR/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
ROD1      UNCONTROLLED ROD MOTION
/
ROD1A     UNCONTROLLED ROD MOTION : AUTO
F SELECT ROD SPEED (8/66 SPM)
/
ROD1B     UNCONTROLLED ROD MOTION : MANUAL
/
ROD2      DROPPED ROD
/
ROD2A     DROPPED ROD : #1
I SELECT FAULT TYPE (1/2 1=MOVEABLE, 2=STATIONARY)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD2B     DROPPED ROD : #2
I SELECT FAULT TYPE (1/2 1=MOVEABLE, 2=STATIONARY)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
```

```
ROD2C     DROPPED ROD : #3
I SELECT FAULT TYPE (1/2 1=MOVEABLE, 2=STATIONARY)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD2D     DROPPED ROD : #4
I SELECT FAULT TYPE (1/2 1=MOVEABLE, 2=STATIONARY)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD2E     DROPPED ROD : #5
I SELECT FAULT TYPE (1/2 1=MOVEABLE, 2=STATIONARY)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD2F     DROPPED ROD : #6
I SELECT FAULT TYPE (1/2 1=MOVEABLE, 2=STATIONARY)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD3      STUCK ROD
/
ROD3A     STUCK ROD : #1
I SELECT FAULT TYPE (1/2 1=TRIPPABLE, 2=UNTRIPPABLE)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD3B     STUCK ROD : #2
I SELECT FAULT TYPE (1/2 1=TRIPPABLE, 2=UNTRIPPABLE)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD3C     STUCK ROD : #3
I SELECT FAULT TYPE (1/2 1=TRIPPABLE, 2=UNTRIPPABLE)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD3D     STUCK ROD : #4
I SELECT FAULT TYPE (1,2 1=TRIPPABLE, 2=UNTRIPPABLE)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD4      CONTROL BANKS FAIL TO MOVE
/
ROD4A     CONTROL BANKS FAIL TO MOVE : POWER CABINET 1AC
/
ROD4B     CONTROL BANKS FAIL TO MOVE : POWER CABINET 2AC
/
ROD4C     CONTROL BANKS FAIL TO MOVE : POWER CABINET 1BD
/
```

```
ROD4D     CONTROL BANKS FAIL TO MOVE : POWER CABINET 2BD
/
ROD5      ROD EJECTION                                        (UNRECO)
T SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
S SELECT LEAK RATE (0/2000 GPM)
/
ROD6      ROD DRIVE MG SET TRIP
/
ROD6A     ROD DRIVE MG SET TRIP : 1A
/
ROD6B     ROD DRIVE MG SET TRIP : 1B
/
ROD7      T-REF FAILURE IN ROD CONTROL
V (TPCSRF) SELECT FAILED VALUE (500/600 F)
F SELECT RAMP TIME (0/3 SEC)
/
ROD8      ROD SPEED CONTROLLER FAILURE
F SELECT ROD SPEED (1/66 SPM)
/
ROD9      IMPROPER BANK OVERLAP
I SELECT BANK OVERLAP (1/3 1=A&B, 2=B&C, 3=C&D)
I SELECT OVERLAP THUMBWHEEL SETTING (0/999 STEPS)
/
ROD10     STEP COUNTER FAILURE
T SELECT GROUP (GRPNAME) CA1,CA2,CB1,CB2,CC1,ETC...
/
ROD11     RPI FAILURE
/
ROD11A    RPI FAILURE : #1
I SELECT FAILED POSITION (0/230 STEPS)
T SELECT FAILED INDICATOR (RODNAME) F2,K7,F12,L6,ETC...
/
ROD11B    RPI FAILURE : #2
I SELECT FAILED POSITION (0/230 STEPS)
T SELECT FAILED INDICATOR (RODNAME) F2,K7,F12,L6,ETC...
/
ROD11C    RPI FAILURE : #3
I SELECT FAILED POSITION (0/230 STEPS)
T SELECT FAILED INDICATOR (RODNAME) F2,K7,F12,L6,ETC...
/
ROD11D    RPI FAILURE : #4
I SELECT FAILED POSITION (0/230 STEPS)
```

```
I SELECT FAILED INDICATOR (RODNAME) F2,K7,F12,L6,ETC...
/
ROD12     ROD STOP FAILURE
I SELECT FAILURE MODE (0/1 0=AUTO ONLY, 1=AUTO & MANUAL)
/
ROD13     MRPI SYSTEM FAILURES
/
ROD13A    CHANNEL A/B GRAY CODE MISMATCH
I SELECT ROD FOR MISMATCH (RODNAME) F2,K7,F12,L6,ETC...
/
ROD13B    DETECTOR INTERFACE CARD FAILURE
I SELECT FAILED CARD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD13C    DETECTOR COIL STACK FAULT
I SELECT FAULTED STACK (RODNAME) F2,K7,F12,L6,ETC...
/
ROD14     INADVERTANT ACTIVATION OF MRPI ALARMS
S
SEFXLB    SEF EO CERRE. BMBS.
I SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD14B    ROD DEVIATION ALARM
I SELECT ROD (RODNAME) F2,K7,F12,L6,ETC...
/
ROD14C    MRPI SYSTEM ALARM
/
RPS1      INADVERTENT CONTAINMENT ISOLATION
/
RPS2      INADVERTANT CONTROL ROOM ENVIRONMENTAL ISOLATION
/
RPS3      CONTAINMENT SPRAY PUMP TRIP
/
RPS3A     CONTAINMENT SPRAY PUMP TRIP : PUMP 1A
/
RPS3B     CONTAINMENT SPRAY PUMP TRIP : PUMP 1B
/
RPS4      SPRAY ADDITIVE TANK LEAK
R SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
0.1347
RPS5      REACTOR TRIP FAILURE
I SELECT FAULTY BREAKER (1/3 1=BKR A, 2=BKR B, 3=BOTH BKRS)
```

```
I SELECT MODE (1/2 1=MAN AVAIL, 2=NO MAN)
/
RPS6     CONTAINMENT FAILS TO ISOLATE
/
RPS7     FAILURE OF ESF COMPONENTS TO ACTIVATE
C
/
RPS7A    AUTO FAIL: A SI PUMP
/
RPS7B    AUTO FAIL: B SI PUMP
/
RPS7C    AUTO FAIL: C SI PUMP ON BUS 14
/
RPS7D    AUTO FAIL: C SI PUMP ON BUS 16
/
RPS7E    AUTO FAIL: A RHR PUMP
/
RPS7F    AUTO FAIL: B RHR PUMP
/
RPS7G    AUTO FAIL: A CNMT RECIRC FAN
/
RPS7H    AUTO FAIL: B CNMT RECIRC FAN
/
RPS7I    AUTO FAIL: C CNMT RECIRC FAN
/
RPS7J    AUTO FAIL: D CNMT RECIRC FAN
/
RPS7K    AUTO FAIL: A MDAFW PUMP
/
RPS7L    AUTO FAIL: B MDAFW PUMP
/
RPS7M    AUTO FAIL: TDAFW STM SUP MOV-3504A
/
RPS7N    AUTO FAIL: TDAFW STM SUP MOV-3505A
/
RPS7O    AUTO FAIL: A SW PUMP
/
RPS7P    AUTO FAIL: B SW PUMP
/
RPS7Q    AUTO FAIL: C SW PUMP
/
RPS7R    AUTO FAIL: D SW PUMP
```

```
/
RPS7S     AUTO FAIL: A MSIV
/
RPS7T     AUTO FAIL: B MSIV
/
RPS7U     AUTO FAIL: A MAIN FW REG VALVE
/
RPS7V     AUTO FAIL: B MAIN FW REG VALVE
/
RPS7W     AUTO FAIL: A FW BYPASS VALVE
/
RPS7X     AUTO FAIL: B FW BYPASS VALVE
/
RPS7Y     AUTO FAIL: MOV-871A
/
RPS7Z     AUTO FAIL: MOV-871B
/
RPS8      CONTAINMENT SPRAY FAILURE TO ACTIVATE
I SELECT MODE (1/2 1=MAN AVAIL 2=NO MAN)
I SELECT TRAIN (1/3 1=TRAIN A, 2=TRAIN B, 3=BOTH)
/
SGN1      STEAM GENERATOR LEVEL CHANNEL FAILURE
/
SGN1A     S/G LEVEL CHANNEL FAILURE : LT-460
V (T:L460) SELECT FAILED VALUE (0/518 INCHES)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN1B     S/G LEVEL CHANNEL FAILURE : LT-461 (I)
V (T:L461) SELECT FAILED VALUE (0/100 %LEVEL)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN1C     S/G LEVEL CHANNEL FAILURE : LT-462 (III)
V (T:L462) SELECT FAILED VALUE (0/100 %LEVEL)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN1D     S/G LEVEL CHANNEL FAILURE : LT-463 (IV)
V (T:L463) SELECT FAILED VALUE (0/100 %LEVEL)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN1E     S/G LEVEL CHANNEL FAILURE : LT-470
V (T:L470) SELECT FAILED VALUE (0/518 INCHES)
F SELECT RAMP TIME (0/3600 SEC)
```

```
/
SGN1F     S/G LEVEL CHANNEL FAILURE : LT-471 (IV)
V (T:L471) SELECT FAILED VALUE (0/100 %LEVEL)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN1G     S/G LEVEL CHANNEL FAILURE : LT-472 (I)
V (T:L472) SELECT FAILED VALUE (0/100 %LEVEL)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN1H     S/G LEVEL CHANNEL FAILURE : LT-473 (II)
V (T:L473) SELECT FAILED VALUE (0/100 %LEVEL)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN2      S/G LEVEL CONTROLLER OSCILLATES
/
SGN2A     S/G LEVEL CONTROLLER OSCILLATES : S/G 1A
F SELECT MAGNITUDE (0/50 %LEVEL)
F SELECT FREQUENCY (0/600 SEC)
0.01/
SGN2B     S/G LEVEL CONTROLLER OSCILLATES : S/G 1B
F SELECT MAGNITUDE (0/50 %LEVEL)
F SELECT FREQUENCY (0/600 SEC)
0.01/
SGN3      STEAM GENERATOR PRESSURE CHANNEL FAILURE
/
SGN3A     S/G PRESSURE CHANNEL FAILURE : PT-468 (I)
V (T:P468) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
SGN3B     S/G PRESSURE CHANNEL FAILURE : PT-469 (II)
V (T:P469) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
SGN3C     S/G PRESSURE CHANNEL FAILURE : PT-478 (III)
V (T:P478) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
SGN3D     S/G PRESSURE CHANNEL FAILURE : PT-479 (IV)
V (T:P479) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
SGN3E     S/G PRESSURE CHANNEL FAILURE : PT-482 (III)
```

```
V (T:P482) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
SGN3F     S/G PRESSURE CHANNEL FAILURE : PT-483 (II)
V (T:P483) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
SGN4      STEAM GENERATOR TUBE RUPTURE
/
SGN4A     S/G TUBE LEAK : S/G 1A
N SELECT LEAK RATE (0/2400 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
SGN4B     S/G TUBE LEAK : S/G 1B
N SELECT LEAK RATE (0/2400 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
SIS1      INADVERTANT SIS ACTUATION
I SELECT TRAIN (1/2 1=TRAIN A, 2=TRAIN B)
/
SIS2      SIS FAILURE TO ACTUATE
I SELECT MODE (1/2 1=MANUAL AVAIL, 2=NO MANUAL)
I SELECT TRAIN (1/3 1=TRAIN A, 2=TRAIN B, 3=BOTH)
/
SIS3      SI PUMP TRIP
/
SIS3A     SI PUMP TRIP : PUMP 1A
/
SIS3B     SI PUMP TRIP : PUMP 1B
/
SIS3C     SI PUMP TRIP : PUMP 1C
/
SIS4      RWST LEAK
N SELECT LEAK RATE (0/5E4 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
SIS5      ACCUMULATOR LEAK
/
SIS5A     ACCUMULATOR LEAK : ACCUM 1A
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
```

```
SIS5B     ACCUMULATOR LEAK : ACCUM 1B
N SELECT LEAK RATE (0/100 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
SIS6      SAFETY INJECTION HEADER LEAK
/
SIS6A     SI HEADER LEAK : RCS LOOP 1A (SIP 1B)
F SELECT LEAK RATE (0/600 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
SIS6B     SI HEADER LEAK : RCS LOOP 1B (SIP 1A)
F SELECT LEAK RATE (0/600 GPM)
F SELECT RAMP TIME (0/3600 SEC)
/
STM1      STEAM FLOW CHANNEL FAILURE
/
STM1A     STEAM FLOW CHANNEL FAILURE : FT-464 (1A-1)
V (T:F464) SELECT FAILED VALUE (0/4E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
STM1B     STEAM FLOW CHANNEL FAILURE : FT-465 (1A-2)
V (T:F465) SELECT FAILED VALUE (0/4E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
STM1C     STEAM FLOW CHANNEL FAILURE : FT-474 (1B-1)
V (T:F474) SELECT FAILED VALUE (0/4E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
STM1D     STEAM FLOW CHANNEL FAILURE : FT-475 (1B-2)
V (T:F475) SELECT FAILED VALUE (0/4E6 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
2.777E-4/
STM2      STEAMLINE BREAK OUTSIDE CNMT UPSTREAM OF MSIV'S          (UNRECO)
/
STM2A     STMLN BREAK OUTSIDE CNMT UPSTREAM OF MSIV'S : S/G 1A     (UNRECO)
N SELECT LEAK RATE (0/1.2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM2B     STMLN BREAK OUTSIDE CNMT UPSTREAM OF MSIV'S : S/G 1B     (UNRECO)
N SELECT LEAK RATE (0/1.2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
```

```
STM3      STEAMLINE BREAK OUTSIDE CNMT DOWNSTREAM OF MSIV'S
N SELECT LEAK RATE (0/1.2E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM4      ATMOSPHERIC RELIEF VALVE FAILURE                        (UNRECO)
/
STM4A     ATMOSPHERIC RELIEF VALVE FAILURE : VLV 3411 (MAN)       (UNRECO)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM4B     ATMOSPHERIC RELIEF VALVE FAILURE : VLV 3411(NO MAN)     (UNRECO)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM4C     ATMOSPHERIC RELIEF VALVE FAILURE : VLV 3410 (MAN)       (UNRECO)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM4D     ATMOSPHERIC RELIEF VALVE FAILURE : VLV 3410(NO MAN)     (UNRECO)
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM5      MAIN STEAM ISOLATION VALVE FAILURE
/
STM5A     MAIN STEAM ISOLATION VALVE FAILURE : VLV 3517
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM5B     MAIN STEAM ISOLATION VALVE FAILURE : VLV 3516
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM6      MAIN STEAM HEADER PRESSURE TRANSMITTER FAILURE
V (1:P484) SELECT FAILED PRESSURE (0/1200 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.77
STM7      EXTRACTION STEAM NON-RETURN VALVE FAILURE
/
STM7A     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 5514
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
```

```
STM7B     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 5515
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7C     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 5516
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7D     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 5517
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7E     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1900
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7F     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1901
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7G     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1902
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7H     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1903
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7I     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1904
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7J     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1905
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7K     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1906
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
STM7L     EXTRACTION STEAM NON-RETURN VALVE FAILURE : VLV 1907
I SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
```

```
F SELECT RAMP TIME (0/3600 SEC)
/
STM8      GLAND SEAL STEAM REGULATOR FAILURE
F SELECT FAILED VALUE (10/140 PSIA)
F SELECT RAMP TIME (0/3600 SEC)
/
STM9      MAIN STEAM SAFETY VALVE FAILURE
/
STM9A     MAIN STEAM SAFETY FAILURE : VLV 3508
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9B     MAIN STEAM SAFETY FAILURE : VLV 3509
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9C     MAIN STEAM SAFETY FAILURE : VLV 3510
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9D     MAIN STEAM SAFETY FAILURE : VLV 3511
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9E     MAIN STEAM SAFETY FAILURE : VLV 3512
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9F     MAIN STEAM SAFETY FAILURE : VLV 3513
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9G     MAIN STEAM SAFETY FAILURE : VLV 3514
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM9H     MAIN STEAM SAFETY FAILURE : VLV 3515
N SELECT FAILED POSITION (0/100 %OPEN)
/
STM10     STEAM DUMP FAILURE
/
STM10A    STEAM DUMP FAILURE : A1(3350)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM10B    STEAM DUMP FAILURE : A2(3349)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM10C    STEAM DUMP FAILURE : B1(3352)
S SELECT FAILED POSITION (0/100 %OPEN)
```

```
/
STM10D   STEAM DUMP FAILURE : B2(3351)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM10E   STEAM DUMP FAILURE : C1(3354)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM10F   STEAM DUMP FAILURE : C2(3353)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM10G   STEAM DUMP FAILURE : D1(3356)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM10H   STEAM DUMP FAILURE : D2(3355)
S SELECT FAILED POSITION (0/100 %OPEN)
/
STM11    STMLNLINE BREAK UPSTREAM OF FLOW ELEMENT (INSIDE CNMT) (UNRECO)
/
STM11A   STLN BREAK UPSTREAM OF FLOW ELEMENT (INS CNMT) : S/G 1A(UNRECO)
N SELECT LEAK RATE (0/1.9E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM11B   STLN BREAK UPSTREAM OF FLOW ELEMENT (INS CNMT) : S/G 1B(UNRECO)
N SELECT LEAK RATE (0/1.9E7 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM12    MSR TUBE RUPTURE
/
STM12A   MSR TUBE RUPTURE : MSR-1A
N SELECT LEAK RATE (0/1E5 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM12B   MSR TUBE RUPTURE : MSR-1B
N SELECT LEAK RATE (0/1E5 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM12C   MSR TUBE RUPTURE : MSR-2A
N SELECT LEAK RATE (0/1E5 LB/HR)
F SELECT RAMP TIME (0/3600 SEC)
/
STM12D   MSR TUBE RUPTURE : MSR-2B
N SELECT LEAK RATE (0/1E5 LB/HR)
```

```
F SELECT RAMP TIME (0/3600 SEC)
/
TUR1      INADVERTENT TURBINE TRIP
/
TUR2      TURBINE FAILURE TO AUTO TRIP
/
TUR3      TURBINE LUBE OIL FAILURE
V (PTLOLPML) SELECT FINAL PRESSURE (0/15 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR4      TURBINE HIGH ECCENTRICITY
N SELECT FINAL ECCENTRICITY (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5      TURBINE HIGH VIBRATION
/
TUR5A     TURBINE HIGH VIBRATION : BRG 1
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5B     TURBINE HIGH VIBRATION : BRG 2
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5C     TURBINE HIGH VIBRATION : BRG 3
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5D     TURBINE HIGH VIBRATION : BRG 4
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5E     TURBINE HIGH VIBRATION : BRG 5
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5F     TURBINE HIGH VIBRATION : BRG 6
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5G     TURBINE HIGH VIBRATION : BRG 7
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
```

```
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5H     TURBINE HIGH VIBRATION : BRG 8
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR5I     TURBINE HIGH VIBRATION : BRG 9
N SELECT VIBRATION AMPLITUDE (0/15 MILS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR6      TURBINE LUBE OIL TEMP CONTROL VALVE FAILURE
S SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR7      TURBINE THRUST BEARING HIGH WEAR
N SELECT AMOUNT OF WEAR (0/100 LBS)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR8      TSI FAILURE
/
TUR8A     TSI FAILURE (TURB GEN TEMP RECORDER)
/
TUR8B     TSI FAILURE (RECORDER,DRAWER, & INDICATOR)
/
TUR9      TURBINE EHC FAILURE
/
TUR9A     TURBINE EHC FAILURE (EHC SYSTEM LEAK ON PUMP DISCH HEADER)
N SELECT % OF NORMAL OUTPUT (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR9B     TURBINE EHC FAILURE (ELECTRONIC REF CNTR OUTPT FAIL)
S SELECT % OF NORMAL OUTPUT (0/200 %)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR9C     TURBINE EHC FAILURE (FAULTY OUTPUT FROM SPEED ERROR SUMMER)
S SELECT % OF NORMAL OUTPUT (0/200 %)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR9D     TURBINE EHC FAILURE (FAILURE IN CONTROL UNIT)
S SELECT % OF NORMAL OUTPUT (0/100 %)
F SELECT RAMP TIME (0/3600 SEC)
/
```

```
TUR10     AMSAC FAILURES
/
TUR10A    AMSAC FAILURE TO ACTIVATE
/
TUR10B    AMSAC FAILURE TO RESET
/
TUR11     TURBINE CONTROL VALVE FAILURE
/
TUR11A    TURBINE CNTRL VLV FAILURE: CVL-2 (V3462)
V (REHGV(2)) SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
0.01/
TUR11B    TURBINE CNTRL VLV FAILURE: CVL-4 (V3463)
V (REHGV(4)) SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
0.01/
TUR11C    TURBINE CNTRL VLV FAILURE: CVR-1 (V3464)
V (REHGV(1)) SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
0.01/
TUR11D    TURBINE CNTRL VLV FAILURE: CVR-3 (V3465)
V (REHGV(3)) SELECT FAILED POSITION (0/100 %OPEN)
F SELECT RAMP TIME (0/3600 SEC)
0.01/
TUR12     REHEAT STOP/INTERRUPT VALVE FAILURE
/
TUR12A    REHEAT STOP/INTERRUPT VLV FAILURE: IV-1B (V3558)
V (REHIVML(2)) SELECT FAILED POSITION (0/1, 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR12B    REHEAT STOP/INTERRUPT VLV FAILURE: IV-1A (V3559)
V (REHIVML(1)) SELECT FAILED POSITION (0/1, 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR12C    REHEAT STOP/INTERRUPT VLV FAILURE: IV-2B (V3560)
V (REHIVML(4)) SELECT FAILED POSITION (0/1, 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR12D    REHEAT STOP/INTERRUPT VLV FAILURE: IV-2A (V3561)
V (REHIVML(3)) SELECT FAILED POSITION (0/1, 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
```

```
TUR12E   REHEAT STOP/INTERRUPT VLV FAILURE: 1B-RV (V3554)
V (REHRVML(2)) SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR12F   REHEAT STOP/INTERRUPT VLV FAILURE: 1A-RV (V3555)
V (REHRVML(1)) SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR12G   REHEAT STOP/INTERRUPT VLV FAILURE: 2B-RV (V3556)
V (REHRVML(4)) SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR12H   REHEAT STOP/INTERRUPT VLV FAILURE: 2A-RV (V3557)
V (REHRVML(3)) SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR13    TURBINE AUXILIARY GOVERNOR FAILURE
F SELECT FAILED POSITION (0/1 0=OFF, 1=ON)
/
TUR14    L. P. TURBINE RELIEF VALVE FAILURE
/
TUR14A   L. P. TURBINE RELIEF VALVE FAILURE : VLV 3562
/
TUR14B   L. P. TURBINE RELIEF VALVE FAILURE : VLV 3563
/
TUR14C   L. P. TURBINE RELIEF VALVE FAILURE : VLV 3564
/
TUR14D   L. P. TURBINE RELIEF VALVE FAILURE : VLV 3565
/
TUR14E   L. P. TURBINE RELIEF VALVE FAILURE : VLV 3566
/
TUR14F   L. P. TURBINE RELIEF VALVE FAILURE : VLV 3567
/
TUR15    REHEATER CONTROL VALVE FAILURE
/
TUR15A   REHEATER CONTROL VALVE FAILURE : VLV 3425
/
TUR15B   REHEATER CONTROL VALVE FAILURE : VLV 3426
/
TUR15C   REHEATER CONTROL VALVE FAILURE : VLV 3427
/
TUR15D   REHEATER CONTROL VALVE FAILURE : VLV 3428
```

```
/
TUR16     FIRST STAGE PRESSURE TRANSMITTER FAILURE
/
TUR16A    FIRST STAGE PRESSURE TRANSMITTER FAILURE : PT-485
V (T:P485) SELECT FAILED VALUE (0/575 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
TUR16B    FIRST STAGE PRESSURE TRANSMITTER FAILURE : PT-486
V (T:P486) SELECT FAILED VALUE (0/575 PSIG)
F SELECT RAMP TIME (0/3600 SEC)
1,14.7/
TUR17     TURBINE STOP VALVE FAILURE
/
TUR17A    TURBINE STOP VALVE FAILURE : VLV 3545
F SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
TUR17B    TURBINE STOP VALVE FAILURE : VLV 3544
F SELECT FAILED POSITION (0/1 0=CLOSED, 1=OPEN)
F SELECT RAMP TIME (0/3600 SEC)
/
```

ROCHESTER GAS & ELECTRIC CORPORATION
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LIST OF CONTROL FEATURES

ROCHESTER GAS & ELECTRIC CORPORATION
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FORM GSS-2.13-4

LIST OF CONTROL FEATURES

CONTROL FUNCTION	FUNCTION DESCRIPTION
Plant Parameters	Plant parameters controlled by instructor
Environmental Parameters	Environmental parameters controlled by instructor
Backtrack	Backtrack into initial conditions 92
Replay	Replay IC to show actions taken
Snap Shot	Take snap of existing plant conditions, store in IC-91
Store IC	Establish and store IC 1-90
Sim Speed	Used to change sim speed
Inst Noise Disable	Disables/enables instrument noise
Sound System Off	Disables/enables audio noise simulation
Annunciator Override	Overrides any annunciator to on or off
Indicator Override	Overrides any indicator to any position on scale
Switch/Controller Override	Overrides any switch or controller to any applicable positions
CAEP	Computer aided exercise program
Instructor Data Book	Call up instructor data book index
Remote Control Assign	Allows use of remote control unit
Team	Enables trainee evaluation package
Note Pad	Provides instructors with note pad
Parameter Data Book	Provides access to computer data by system
Compose Parameter Monitor	Allows computer room to be monitored
Daily Test	Allow diagnostic testing of control board
OTL	Outside the limits of simulation acknowledge

RCS1 REACTOR COOLANT PUMP 1A EFFICIENCY
(YPARCS1) SELECTABLE RANGE 1.0 - 0.70
RCS2 REACTOR COOLANT PUMP 1B EFFICIENCY
(YPARCS2) SELECTABLE RANGE 1.0 - 0.70
RCS3 NORMAL RCS ACTIVITY
(YPARCS3) SELECT MULTIPLIER RANGE (1.0 = NORMAL)
SIS1 SI PUMP 1A EFFICIENCY
(YPASIS1) SELECTABLE RANGE 1.0 - 0.70
SIS2 SI PUMP 1B EFFICIENCY
(YPASIS2) SELECTABLE RANGE 1.0 - 0.70
SIS3 SI PUMP 1C EFFICIENCY
(YPASIS3) SELECTABLE RANGE 1.0 - 0.70
RPS1 CONTAINMENT SPRAY PUMP 1A EFFICIENCY
(YPARPS1) SELECTABLE RANGE 1.0 - 0.70
RPS2 CONTAINMENT SPRAY PUMP 1B EFFICIENCY
(YPARPS2) SELECTABLE RANGE 1.0 - 0.70
CVC1 CHARGING PUMP 1A EFFICIENCY
(YPACVC1) SELECTABLE RANGE 1.0 - 0.70
CVC2 CHARGING PUMP 1B EFFICIENCY
(YPACVC2) SELECTABLE RANGE 1.0 - 0.70
CVC3 CHARGING PUMP 1C EFFICIENCY
(YPACVC3) SELECTABLE RANGE 1.0 - 0.70
CVC4 BORIC ACID TRANSFER PUMP 1A EFFICIECNY
(YPACVC4) SELECTABLE RANGE 1.0 - 0.70
CVC5 BORIC ACID TRANSFER PUMP 1B EFFICIENCY
(YPACVC5) SELECTABLE RANGE 1.0 - 0.70
CVC6 RMW PUMP 1A EFFICIENCY
(YPACVC6) SELECTABLE RANGE 1.0 - 0.70
CVC7 RMW PUMP 1B EFFICIENCY
(YPACVC7) SELECTABLE RANGE 1.0 - 0.70
CVC8 NON-REGENERATIVE HX TUBE EFFICIENCY
(YPACVC8) SELECTABLE RANGE 1.0 - 0.70
CVC9 REGENERATIVE HX TUBE EFFICIENCY
(YPACVC9) SELECTABLE RANGE 1.0 - 0.70
CVC10 EXCESS LETDOWN HX TUBE EFFICIENCY
(YPACVC10) SELECTABLE RANGE 1.0 - 0.70
CVC11 SEAL WATER HX TUBE EFFICIENCY
(YPACVC11) SELECTABLE RANGE 1.0 - 0.70
MIS1 RCDT PUMP 1A EFFICIENCY
(YPAMIS1) SELECTABLE RANGE 1.0 - 0.70
MIS2 RCDT PUMP 1B EFFICIENCY
(YPAMIS2) SELECTABLE RANGE 1.0 - 0.70

```
MIS3      SFP LEAKAGE RATE
(YPAMIS3)    SELECTABLE RANGE 0.0 - 100.0 GPM
MIS4      NUMBER OF CORE IN SFP
(YPAMIS4)    SELECTABLE RANGE 0.0 - 1.0
NIS1      CORE LOADING ERROR
(YPANIS1)    SELECTABLE TYPE  1 - 4    NORMAL=0
RHR1      RHR PUMP 1A EFFICIENCY
(YPARHR1)    SELECTABLE RANGE 1.0 - 0.70
RHR2      RHR PUMP 1B EFFICIENCY
(YPARHR2)    SELECTABLE RANGE 1.0 - 0.70
RHR3      RHR HEAT EXCHANGER 1A TUBE EFFICIENCY
(YPARHR3)    SELECTABLE RANGE 1.0 - 0.70
RHR4      RHR HEAT EXCHANGER 1B TUBE EFFICIENCY
(YPARHR4)    SELECTABLE RANGE 1.0 - 0.70
CLG1      CCW PUMP 1A EFFICIENCY
(YPACLG1)    SELECTABLE RANGE 1.0 - 0.70
CLG2      CCW PUMP 1B EFFICIENCY
(YPACLG2)    SELECTABLE RANGE 1.0 - 0.70
CLG3      SERVICE WATER PUMP 1A EFFICIENCY
(YPACLG3)    SELECTABLE RANGE 1.0 - 0.70
CLG4      SERVICE WATER PUMP 1B EFFICIENCY
(YPACLG4)    SELECTABLE RANGE 1.0 - 0.70
CLG5      SERVICE WATER PUMP 1C EFFICIENCY
(YPACLG5)    SELECTABLE RANGE 1.0 - 0.70
CLG6      SERVICE WATER PUMP 1D EFFICIENCY
(YPACLG6)    SELECTABLE RANGE 1.0 - 0.70
CLG7      CCW HEAT EXCHANGER 1A TUBE EFFICIENCY
(YPACLG7)    SELECTABLE RANGE 1.0 - 0.70
CLG8      CCW HEAT EXCHANGER 1B TUBE EFFICIENCY
(YPACLG8)    SELECTABLE RANGE 1.0 - 0.70
CRC1      CIRC WATER PUMP 1A EFFCIENCY
(YPACRC1)    SELECTABLE RANGE 1.0 - 0.70
CRC2      CIRC WATER PUMP 1B EFFICIENCY
(YPACRC2)    SELECTABLE RANGE 1.0 - 0.70
CND1      CONDENSATE PUMP 1A EFFICIENCY
(YPACND1)    SELECTABLE RANGE 1.0 - 0.70
CND2      CONDENSATE PUMP 1B EFFICIENCY
(YPACND2)    SELECTABLE RANGE 1.0 - 0.70
CND3      CONDENSATE PUMP 1C EFFICIENCY
(YPACND3)    SELECTABLE RANGE 1.0 - 0.70
CND4      CONDENSATE BOOSTER PUMP 1A EFFICIENCY
(YPACND4)    SELECTABLE RANGE 1.0 - 0.70
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CND5      CONDENSATE BOOSTER PUMP 1B EFFICIENCY
(YPACND5)    SELECTABLE RANGE 1.0 - 0.70
CND6      CONDENSATE BOOSTER PUMP 1C EFFICIENCY
(YPACND6)    SELECTABLE RANGE 1.0 - 0.70
CND7      MAIN CONDENSER EAST TUBE EFFICIENCY
(YPACND7)    SELECTABLE RANGE 1.0 - 0.70
CND8      MAIN CONDENSER WEST TUBE EFFICIENCY
(YPACND8)    SELECTABLE RANGE 1.0 - 0.70
CND9      CONDENSATE SYSTEM LEAKAGE
(YPACND9)    SELECTABLE RANGE 0.0 - 2000.0 GPM
FDW1      MAIN FEED PUMP 1A EFFICIENCY
(YPAFDW1)    SELECTABLE RANGE 1.0 - 0.70
FDW2      MAIN FEED PUMP 1B EFFICIENCY
(YPAFDW2)    SELECTABLE RANGE 1.0 - 0.70
FDW3      MOTOR DRIVEN AUX FEED PUMP 1A EFFICIENCY
(YPAFDW3)    SELECTABLE RANGE 1.0 - 0.70
FDW4      MOTOR DRIVEN AUX FEED PUMP 1B EFFICIENCY
(YPAFDW4)    SELECTABLE RANGE 1.0 - 0.70
FDW5      STANDBY AFW PUMP 1C EFFICIENCY
(YPAFDW5)    SELECTABLE RANGE 1.0 - 0.70
FDW6      STANDBY AFW PUMP 1D EFFICIENCY
(YPAFDW6)    SELECTABLE RANGE 1.0 - 0.70
FDW7      TURBINE DRIVEN AFW PUMP EFFICIENCY
(YPAFDW7)    SELECTABLE RANGE 1.0 - 0.70
FDW8      A MAIN FEED WATER REG VALVE SEAT LEAKAGE
(YPAFDW8)    SELECTABLE RANGE 0.0 - 0.30
FDW9      B MAIN FEED WATER REG VALVE SEAT LEAKAGE
(YPAFDW9)    SELECTABLE RANGE 0.0 - 0.30
FDW10     A FEED FLOW TRANSMITTER ROLL-OFF
(YPAFDW10)   SELECTABLE RANGE 0.0 - 30.0
FDW11     B FEED FLOW TRANSMITTER ROLL-OFF
(YPAFDW11)   SELECTABLE RANGE 0.0 - 30.0
SGN1      SGN 1A TUBE EFFICIENCY
(YPASGN1)    SELECTABLE RANGE 1.0 - 0.70
SGN2      SGN 1B TUBE EFFICIENCY
(YPASGN2)    SELECTABLE RANGE 1.0 - 0.70
SGN3      SGN 1A TUBES PLUGGED
(YPASGN3)    SELECTABLE RANGE 0 - 3260
SGN4      SGN 1B TUBES PLUGGED
(YPASGN4)    SELECTABLE RANGE 0 - 3260
SGN5      STEAM GENERATOR SHRINK/SWELL FACTOR
(YPASGN5)    SELECTABLE RANGE 0 - 1.0  (NORMAL=1.0)
```

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STM1      MSR STEAM SUP VALVE LEAKAGE
(YPASTM1)    SELECTABLE RANGE 0 - 1.0
HTR1      HEATER DRAIN PUMP 1A EFFICIENCY
(YPAHTR1)    SELECTABLE RANGE 1.0 - 0.70
HTR2      HEATER DRAIN PUMP 1B EFFICIENCY
(YPAHTR2)    SELECTABLE RANGE 1.0 - 0.70
HTR3      LP HEATER 1A TUBE EFFICIENCY
(YPAHTR3)    SELECTABLE RANGE 1.0 - 0.70
HTR4      LP HEATER 1B TUBE EFFICIENCY
(YPAHTR4)    SELECTABLE RANGE 1.0 - 0.70
HTR5      LP HEATER 2A TUBE EFFICIENCY
(YPAHTR5)    SELECTABLE RANGE 1.0 - 0.70
HTR6      LP HEATER 2B TUBE EFFICIENCY
(YPAHTR6)    SELECTABLE RANGE 1.0 - 0.70
HTR7      LP HEATER 3A TUBE EFFICIENCY
(YPAHTR7)    SELECTABLE RANGE 1.0 - 0.70
HTR8      LP HEATER 3B TUBE EFFICIENCY
(YPAHTR8)    SELECTABLE RANGE 1.0 - 0.70
HTR9      LP HEATER 4A TUBE EFFICIENCY
(YPAHTR9)    SELECTABLE RANGE 1.0 - 0.70
HTR10     LP HEATER 4B TUBE EFFICIENCY
(YPAHTR10)   SELECTABLE RANGE 1.0 - 0.70
HTR11     LP HEATER 5A TUBE EFFICIENCY
(YPAHTR11)   SELECTABLE RANGE 1.0 - 0.70
HTR12     LP HEATER 5B TUBE EFFICIENCY
(YPAHTR12)   SELECTABLE RANGE 1.0 - 0.70
PZR1      PZR VARIABLE HEATER OPERABILITY
(YPAPZR1)    NO. OPERABLE HTRS  0 - 39
PZR2      PZR BACK-UP HEATER OPERABILITY
(YPAPZR2)    NO. OPERABLE HTRS  0 - 39
ROD1      RPI DRIFT
(YPAROD1)    SELECTABLE RANGE -10.0 - +10.0 %
GEN1      DSG A AIR LEAKAGE
(YPAGEN1)    SELECTABLE RANGE  0.0 - 13.0 SCFM
GEN2      DSG B AIR LEAKAGE
(YPAGEN2)    SELECTABLE RANGE  0.0 - 13.0 SCFM
```

ENVIRONMENTAL PARAMETERS


```
MIS1      LAKE LEVEL (FEET OF ELEVATION)
(BLAKE)      SELECT RANGE 220.0 - 300.0 (NORMAL=245.0)
MIS2      WIND DIRECTION (DEGREES)
(DWIND)      SELECT RANGE  5.0 - 360.0
MIS3      ATMOSPHERIC PRESSURE (PSIA)
(PATM)       SELECT RANGE  14.2 - 15.2
MIS4      WIND SPEED (MPH)
(SWIND)      SELECT RANGE  5.0 - 90.0
MIS5      OUTSIDE AIR TEMPERATURE (DEG F)
(TATM)       SELECT RANGE  0.0 - 90.0
MIS6      LAKE WATER TEMPERATURE (DEG F)
(TLAKE)      SELECT RANGE  30. - 90.0
MIS7      TURBINE BUILDING AIR TEMPERATURE (DEG F)
(TTBLDG)     SELECT RANGE  30.0 - 100.0
MIS8      AUXILIARY BUILDING AIR TEMPERATURE (DEG F)
(TABLDG)     SELECT RANGE  30.0 - 100.0
MIS9      ATMOSPHERIC RELATIVE HUMIDITY (%)
(XATM)       SELECT RANGE
MIS10     GRID NORMALIZED VOLTAGE
(ESWDGRID)   SELECT RANGE  0.8 - 1.20
MIS11     NORMALIZED GRID FREQUENCY
(OSWDGRID)   SELECT RANGE  0.9 - 1.10
```

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT

ATTACHMENT 4

PERFORMANCE TESTS

TESTS DUE ANNUALLY

TEST NUMBER	TITLE
Normal Operations	
14.4.1	Operating Limits Monitoring
14.4.2	Normal Operations Acceptance Test
14.4.3.1	100% BOL Steady State Accuracy Test
14.4.3.2	100% Power Steady State Drift Check
14.4.3.3	Instrument Error Certification
14.4.3.4	Initial Conditions Stability Check
14.4.4.1	NSSS - BOP Energy Balance
14.4.5.1	NSSS Mass Balance Test
14.4.5.2	BOP Mass Balance Test
14.4.6.1	Startup Test - Initial Criticality and Low Power Physics
Transient Tests	
14.4.8 BE 1	Manual Reactor Trip
14.4.8 BE 2	Simultaneous Trip of All Feedwater Pumps
14.4.8 BE 3	Simultaneous Closure of Both MSIV's
14.4.8 BE 4	Simultaneous Trip of Both RCP's
14.4.8 BE 5	Single RCP Trip
14.4.8 BE 6	Main Turbine Trip
14.4.8 BE 7	Maximum Rate Power Ramp
14.4.8 BE 8	Maximum Size RCS Rupture With Loss of all Offsite Power
14.4.8 BE 9	Maximum Size Unisolable Main Steam Line Rupture
14.4.8 BE 10	Slow RCS Depressurization Using PORV or Safety (Activation of ECCS Inhibited)
Systems	
14.3.1	Instructor System Test
14.3.2	Computer Real Time Test

TESTS DUE IN 1991

TEST NUMBER	TITLE
Systems	
14.3.3.4	Bistable Handler Test
14.3.3.5	Alarm Handler Test
14.3.4.4	Reactor Coolant System Test
14.3.4.7	RHR System Test
14.3.4.12	EHC, TGA, and Main Generator System Test
14.3.4.16	Circulating Water System Test
14.3.4.20	Service Water System Test
14.3.6.1	Electrical Distribution Test
Malfunctions	
14.4.7.1.2	CRC-2 - Loss of Circulating Water
14.4.7.2.3	CLG-3 - Non-Regenerative Letdown Hx Tube Leak
14.4.7.2.7	CLG-7 - CCW Hx Tube Leak
14.4.7.3.4	CND-4 - Condensate Pump Failure
14.4.7.3.8	CND-8 - Condensate Pipe Break
14.4.7.4.4	CVC-4 - Make-up Control Failure in all Modes
14.4.7.4.8	CVC-8 - RCS Filter Plugged
14.4.7.4.12	CVC-12 - Charging Pump Trip
14.4.7.4.19	CVC-19 - Plugged Seal Injection Filter
14.4.7.4.24	CVC-24 - Charging Backpressure Control Valve Failure
14.4.7.5.1	EDS-1 - Loss of Off-Site Power
14.4.7.5.5	EDS-5 - LOSS OF DC BUS
14.4.7.6.4	FDW-4 - Feedwater Pump Lube Oil System Failure
14.4.7.6.5	FDW-5 - Feedline Leak Between Flow Element Check Valve
14.4.7.6.9	FDW-9 - Feedline Break Inside of Containment
14.4.7.6.13	FDW-13 - AFW Pump Suction Line Break
14.4.7.6.17	FDW-17 - MFW Pump Failure to Trip
14.4.7.7.4	GEN-4 - Diesel Engine Trip

TESTS DUE IN 1991
(CONT'D)

TEST NUMBER	TITLE
14.4.7.10.3	NIS-3 - Failure of Source Range Channel Failure to Disconnect
14.4.7.10.6	NIS-6 - Power Range Channel Detector Failure
14.4.7.10.9	NIS-9 - Source Range High Voltage Failure
14.4.7.11.3	PZR-3 - Pressurizer Level Channel Failure
14.4.7.12.1	RCS-1 - RCP Thermal Barrier Leak
14.4.7.12.5	RCS-5 - RCP Trip
14.4.7.12.9	RCS-9 - Wide Range RCS Pressure Channel Failure
14.4.7.12.13	RCS-13 - RCSP #2 Seal Failure
14.4.7.12.16	RCS-16 - Fuel Cladding Failure
14.4.7.13.1	RHR-1 - RHR Pump Trip
14.4.7.13.5	RHR-5 - RHR Bypass Line Leak
14.4.7.15.4	ROD-4 - Control Bank Rods Fail to Move
14.4.7.15.8	ROD-8 - Rod Speed Controller Failure
14.4.7.15.12	ROD-12 - Rod Stop Failure
14.4.7.16.2	RPS-2 - Inadvertent Control Room Environmental Isolation
14.4.7.16.6	RPS-6 - Containment Isolation Failure
14.4.7.17.3	SGN-3 - Steam Generator Pressure Channel Failure
14.4.7.17.4	SGN-4 - Steam Generator Tube Rupture
14.4.7.18.4	SIS-4 - RWST Leak
14.4.7.19.2	STM-2 - Steamline Break Outside Containment Downstream of MSIV's
14.4.7.19.6	STM-6 - Main Steam Header Pressure Transmitter Failure
14.4.7.20.1	TUR-1 - Inadvertent Turbine Trip
14.4.7.20.5	TUR-5 - Turbine High Vibration
14.4.7.20.9.1	TUR-9 - Turbine EHC Failure EHC Leak
14.4.7.20.17	TUR-17 - Turbine Stop Valve Failure

TESTS DUE IN 1992

TEST NUMBER	TITLE
Systems	
14.3.3.1	Valve Handler Test
14.3.4.1	Nuclear Instrumentation System Test
14.3.4.9	Component Cooling Water System Test
14.3.4.13	Condensate and Main Feedwater System Test
14.3.4.17	Compressed Air System Test
14.3.4.21	Plant Protection System Test
14.3.6.2	Electrical Interlocks
Malfunctions	
14.4.7.1.3	CRC-3 - CWS Leaks
14.4.7.2.4	CLG-4 - Loss of CCW to RHR Heat Exchanger
14.4.7.3.1	CND-1 - Condensate Booster Pump Trip
14.4.7.3.7	CND-7 - Loss of Condenser Vacuum
14.4.7.4.1	CVC-1 - Letdwon Line Leak Inside Containment
14.4.7.4.5	CVC-5 - Loss of CCW to Non-Regenerative Letdown Hx
14.4.7.4.9	CVC-9 - VCT Divert Control Valve Failure
14.4.7.4.13	CVC-13 - BAT Pump Trip
14.4.7.4.17	CVC-17 - RMW to Blender Flow Transmitter Failure
14.4.7.4.21	CVC-21 - Boric Acid Storage Tank Leak
14.4.7.4.25	CVC-25 - VCT H2 Pressure Control Valve Failure
14.4.7.5.2	EDS-2 - Loss of Station Service Transformer
14.4.7.5.6	EDS-6 - Loss of Switchyard (Station Blackout)
14.4.7.6.2	FDW-2 - Feedwater Pump Trip
14.4.7.6.6	FDW-6 - Feed Flow Transmitter Failure
14.4.7.6.10	FDW-10 - Feed Regulating Valve Failure
14.4.7.6.14	FDW-14 - AFW Feed Control Valve Failure
14.4.7.7.1	GEN-1 - Main Generator Trip
14.4.7.7.5	GEN-5 - Diesel Generator Failure to Load
14.4.7.9.5	MIS-5 - Containment Isolation Valve Failure

TESTS DUE IN 1992
(CONT'D)

TEST NUMBER	TITLE
14.4.7.10.7.1	NIS-7 - Power Range Channel Fails High
14.4.7.10.10	NIS-10 - Source Range Blown Fuse
14.4.7.11.4	PZR-4 - Pressurizer Master Pressure Controller Failure
14.4.7.11.7	PZR-7 - Pressurizer Steam Space Leak
14.4.7.12.2	RCS-2 - RCS Leak into Containment (LOCA)
14.4.7.12.6	RCS-6 - RCP Shaft Shear
14.4.7.12.10	RCS-10 - RCS Loop Flow Transmitter Failure
14.4.7.12.14	RCS-14 - RCP #3 Seal Failure
14.4.7.13.2	RHR-2 - RHR Heat Exchanger Flow Control Valve Failure
14.4.7.13.6	RHR-6 - Containment Sump to RHR Pump Screens - Foul
14.4.7.15.1	ROD-1 - Uncontrolled Rod Motion
14.4.7.15.5	ROD-5 - Rod Ejection
14.4.7.15.9	ROD-9 - Improper Bank Overlap
14.4.7.16.3	RPS-3 - Containment Spray Pump Trip
14.4.7.17.1.1	SGN-1 - S/G Level Channel Failure - High
14.4.7.18.1	SIS-1 - Inadvertent SIS Actuation
14.4.7.18.5	SIS-5 - Accumulator Leak
14.4.7.19.3	STM-3 - Steamline Break Outside Containment Downstream of MSIV's
14.4.7.19.10	STM-10 - Steam Dump Failure
14.4.7.20.2	TUR-2 - Turbine Failure to Trip
14.4.7.20.6	TUR-6 - Turbine Lube Oil Temperature Control Valve Failure
14.4.7.20.9.2	TUR-9 - Turbine EHC Failure - Load Reference Failure
14.4.7.20.10	TUR-10 - AMSAC Failure

TESTS DUE IN 1993

TEST NUMBER	TITLE
Systems	
14.3.3.2	Pump Handler Test
14.3.4.5	Pressurizer Relief Tank System Test
14.3.4.8	Safety Injection System Test
14.3.4.10	Containment and Containment Spray Systems Test
14.3.4.14	Feedwater Heaters, Vents, and Drains System Test
14.3.4.18	Diesel Generator System Test
14.3.4.22	Steam Dump Control System Test
14.3.6.3	Electrical Loading Test
Malfunctions	
14.4.7.2.1	CLG-1 - SERVICE WATER PUMP TRIP
14.4.7.2.6	CLG-6 - Seal Water Heat Exchanger Tube Leak
14.4.7.3.2	CND-2 - Main Condenser Tube Leak
14.4.7.3.6	CND-6 - Condensate Trim Valve FAilure
14.4.7.4.2	CVC-2 - Letdown Line Leak Outside Containment
14.4.7.4.6	CVC-6 - Letdown Orifice Isolation Valve Failure
14.4.7.4.10	CVC-10 - VCT Level Transmitter Failure
14.4.7.4.14	CVC-14 - RMWT Pump Trip
14.4.7.4.18	CVC-18 - Charging Pump Speed Controller Failure
14.4.7.4.22	CVC-22 - Regenerative Letdown Heat Exchanger Tube Leak
14.4.7.5.3	EDS-3 - Loss of No. 11 Aux Transformer
14.4.7.5.7	EDS-7 - Loss of Instrument Bus Supplies
14.4.7.6.1	FDW-1 - Feedpump Suction Header Break
14.4.7.6.7	FDW-7 - Feed Regulating Valve Control Failure
14.4.7.6.11	FDW-11 - Auxiliary Feedwater Pump Failure
14.4.7.6.15	FDW-15 - Standby Auxiliary Feed Pump Failure
14.4.7.7.6	GEN-6 - Diesel Generator Breaker Trip
14.4.7.10.1	NIS-1 - Source Range Channel Failure
14.4.7.10.4	NIS-4 - Intermediate Range Channel Failure
14.4.7.10.7.2	NIS-7 - Power Range Channel FAilure - Low

TESTS DUE IN 1993
(CONT'D)

TEST NUMBER	TITLE
14.4.7.11.1	PZR-1 - Pressurizer Spray Valve Failure
14.4.7.11.5	PZR-5 - Pressurizer Relief Valve Failure
14.4.7.11.8	PZR-8 - Pressurizer Level Master Controller Failure
14.4.7.12.3	RCS-3 - Variable RCS Boron Concentration
14.4.7.12.7	RCS-7 - RCP Locked Rotor
14.4.7.12.11	RCS-11 - RTD Failure
14.4.7.12.15	RCS-15 - RCP High Vibration
14.4.7.13.3	RHR-3 - RHR Heat Exchanger Tube Leak
14.4.7.13.7	RHR-7 - RHR Pump Suction Line Rupture
14.4.7.14.1	RMS-1 - Area Monitor Failure
14.4.7.15.2	ROD-2 - Dropped Rod
14.4.7.15.6	ROD-6 - Rod Drive MG Set Trip
14.4.7.15.10	ROD-10 - Step Counter Failure
14.4.7.15.13	ROD-13 - MRPI System Failures
14.4.7.16.1	RPS-1 - Inadvertent Containment Isolation
14.4.7.17.1.2	SGN-1 - S/G Level Channel Failure - Low
14.4.7.18.2	SIS-2 - SIS Failure to Actuate
14.4.7.18.6	SIS-6 - Safety Injection Header Leak
14.4.7.19.4	STM-4 - Atmospheric Relief Valve Failure
14.4.7.19.11	STM-11 - Steamline Break Upstream of Flow Element (Inside Containment)
14.4.7.20.3	TUR-3 - Turbine Lube Oil Failure
14.4.7.20.7	TUR-7 - Turbine Thrust Bearing High Wear
14.4.7.20.11	TUR-11 - Turbine Control Valve Failure

TESTS DUE IN 1994

TEST NUMBER	TITLE
Systems	
14.3.3.3	Controller Handler Test
14.3.4.2	Incore Instrumentation System Test
14.3.4.3	Control Rod Drive and RPI System Test
14.3.4.6	Chemical and Volume Control System Test
14.3.4.11	Main Steam Supply System Test
14.3.4.15	Auxiliary Feedwater System Test
14.3.4.19	Standby Auxiliary Feedwater System Test
14.3.4.23	Process and Area Radiation Monitoring System
14.3.4.24	PPCS Fidelity Test
Malfunctions	
14.4.7.1.1	CRC-1 - Circulating Water Pump Trip
14.4.7.2.2	CLG-2 - CCW Pump Trip
14.4.7.2.5	CLG-5 - CCW Supply Line Break
14.4.7.3.3	CND-3 - Hotwell Level Transmitter Failure
14.4.7.4.3	CVC-3 - Charging Line Leak Inside Containment
14.4.7.4.7	CVC-7 - Letdown Pressure Control Valve Failure
14.4.7.4.11	CVC-11 - Charging Line Leak Outside Containment
14.4.7.4.15	CVC-15 - Boric Acid Flow Transmitter Failure
14.4.7.4.23	CVC-23 - Letdown Line Safety Valve Fails Open
14.4.7.4.27	CVC-27 - Charging Pump Suction Line Rupture
14.4.7.5.4	EDS-4 - Loss of Emergency Bus
14.4.7.6.8	FDW-8 - Feedline Break Outside Containment Downstream of Check Valve
14.4.7.6.12	FDW-2 - AFW Turbine Driven Pump Speed Control Failure
14.4.7.6.16	FDW-16 - AFW Pump Discharge Rupture
14.4.7.7.3	GEN-3 - Main Generator Voltage Regulator Failure
14.4.7.7.7	GEN-7 - Failure of DG Load Sequencing
14.4.7.8.2	HTR-2 - Heater Drain Tank Pump Trip
14.4.7.9.1	MIS-1 - Loss of Instrument Air
14.4.7.10.2	NIS-2 - Noisy Source Range Channel
14.4.7.10.5	NIS-5 - Intermediate Range Gamma Compensation Failure
14.4.7.10.8	NIS-8 - Intermediate Range Blown Fuse
14.4.7.11.2	PZR-2 - Pressurizer Pressure Channel Failure
14.4.7.11.6	PZR-6 - Pressurizer Safety Valve Failure
14.4.7.12.8	RCS-8 - RCP Oil Reservoir Failure
14.4.7.12.12	RCS-12 - RCS #1 Seal Failure

TESTS DUE IN 1994
(CONT'D)

TEST NUMBER	TITLE
Malfunctions	
14.4.7.12.17	RCS-17 - RVLIS Transmitter Fails
14.4.7.13.4	RHR-4 - Heat Exchanger Bypass Valve Controller Failure
14.4.7.14.2	RMS-2 - Process Radiation Monitor Failure
14.4.7.15.3	ROD-3 - Stuck Rod
14.4.7.15.7	ROD-7 - T-REF Failure in Rod Control
14.4.7.15.11	ROD-11 - RPI Failure
14.4.7.16.5	RPS-5 - Reactor Trip Failure
14.4.7.16.7	RPS-7 - Failure of ESF Components to Actuate
14.4.7.16.8	RPS-8 - Containment Spray Failure to Actuate
14.4.7.17.2	SIS-3 - SI Pump Trip
14.4.7.18.3	SGN-2 - Steam Generator Level Controller Oscillates
14.4.7.19.1	STM-1 - Steam Flow Channel Failure
14.4.7.19.5	STM-5 - Main Steam Isolation Valve Failure
14.4.7.19.9	STM-9 - Main Steam Safety Valve Failure
14.4.7.20.4	TUR-4 - Turbine High Eccentricity
14.4.7.20.8	TUR-8 - TSI Failure
14.4.7.20.12	TUR-12 - Reheat Stop/Intercept Valve Failure
14.4.7.20.16	TUR-16 - First Stage Pressure Transmitter Failure

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

NORMAL AND STEADY STATE PERFORMANCE TESTS
SYSTEMS PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.3.1	Instructor System Test
14.3.2	Computer Real Time Test
14.3.3.1	Valve Handler Test
14.3.3.2	Pump Handler Test
14.3.3.3	Controller Handler Test
14.3.3.4	Bistable Handler Test
14.3.3.5	Alarm Handler Test
14.3.4.1	Nuclear Instrumentation System Test
14.3.4.2	Incore Instrumentation System Test
14.3.4.3	Control Rod Drive and RPI System Test
14.3.4.4	Reactor Coolant System Test
14.3.4.5	Pressurizer Relief Tank System Test
14.3.4.6	Chemical and Volume Control System Test
14.3.4.7	RHR System Test
14.3.4.8	Safety Injection System Test
14.3.4.9	Component Cooling Water System Test
14.3.4.10	Containment and Containment Spray Systems Test
14.3.4.11	Main Steam Supply System Test
14.3.4.12	EHC, TGA, and Main Generator System Test
14.3.4.13	Condensate and Main Feedwater System Test
14.3.4.14	Feedwater Heaters, Vents, and Drains System Test
14.3.4.15	Auxiliary Feedwater System Test
14.3.4.16	Circulating Water System Test
14.3.4.17	Compressed Air System Test
14.3.4.18	Diesel Generator System Test
14.3.4.19	Standby Auxiliary Feedwater System Test
14.3.4.20	Service Water System Test
14.3.4.21	Plant Protection System Test
14.3.4.22	Steam Dump Control System Test
14.3.4.23	Process and Area Radiation Monitoring System
14.3.4.24	Plant Process Computer System (PPCS) Fidelity Test
14.3.6.1	Electrical Distribution Test
14.3.6.2	Electrical Interlocks
14.3.6.3	Electrical Loading Test

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Ian Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.1 Test Title: Instructor System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.2; systems operated outside the control room shall be simulated and the trainee is able to interface with the remote activity in a similar manner as in the reference plant. Section 3.4.1; The simulator shall possess a minimum capability for storage of 20 initialization conditions. Section 3.4.2; It shall be possible to conveniently insert and terminate plant malfunctions. Section 3.4.3; The simulator shall have the capability of freezing simulation fast time, slow time, backtrack and snapshot capabilities. Section 3.4.4.; Capability of instructor to act in capacity of auxiliary or other operators. Section 4.4; It shall be possible to obtain hardcopy transient data in the form of either plots or printouts and provide sufficient parameter and time resolution.

DESCRIPTION OF TEST: This test is to verify the proper operation of the Instructor System. This test includes the following Instructor System Controls tests; Simulator Startup Test, Initial Condition Select Test (Default selected IC, keyboard selected IC, Preview selected IC, and switch check bypass), Simulator Operation Test (Run and Freeze conditions), Simulator Shutdown Test, Daily Test Verification, Snapshot Test, Store IC Test (Protected IC's and password check),.Backtrack Test, Replay Test (including inability for control board interaction), Malfunction Control Test (Direct input of malfunction mnemonic through the keyboard, inability to input variable ranges beyond the allowable range, Activation Time Delay, Clear Active Malfunction, Clear All Malfunctions, and Non-recoverable Malfunctions), Malfunction Status Test, Override Control Test (Settings beyond the allowable range of the parameters and Override Control Clearing), Override Status Test, Local Operator Action (LOA) Test (LOA Implementation and LOA identifier through manual keyboard entry), Remote Control Unit Assignment, Instructor Data Book Test (Master index, and notepad features), Parameter Monitor Test (Composing and deleting parameters to/from the monitor), Printer Test (Monitor CRT Print and Control CRT Print), Multipen Recorder Test, Simulator Speed Test (Fast Speed, Slow Speed, and Step Time), Computer Assisted Exercise Program Test, Team Monitoring Test, and Miscellaneous Tests (Step Counter Inhibit, Acknowledge Alarm, Horn Disable, Instrument Noise Disable, Sound System Off, Multipen Time Mark, Recorder Time Mark, Repeat Command, Console Lamp Test, Control Board Monitor Function, and Monitor CRT multi-page tableaus Paging function).

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step cannot be performed, or if an alarm annunciates but should not or does not annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the data established in the R. E. Ginna Simulator Instructor System Description.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/4/90

DURATION OF TEST: 10 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-66 Simulator Initiation From Remote Works Sporadically

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulbert Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.2 Test Title: Computer Real Time Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.1, The simulator shall be capable of simulating continuously and in real time, plant operations of the reference plant. Section 3.1.2, The simulator shall be capable of simulating in real time, abnormal and emergency event.

DESCRIPTION OF TEST: The Ginna Simulator is initialized in IC-12, 100% power, BOL. The simulator is run for 10 seconds initially. Simulator time counter MTIME is set to zero to establish test start point. File RTTEST is run for 900 seconds with NO OPERATOR ACTION. A manual stopwatch is started simultaneously. Printouts are sent to the line printer at 30 second intervals. At 900 seconds, the reactor is manually tripped, "B" RCP is tripped and Malfunction EDS-7A is entered to simulate a loss of Instrument Bus A power which in combination significantly loads the computer with model calculations. At time equal to 1800 seconds, the simulator and stopwatch are stopped. The simulator time shall be within ± 1% of the stopwatch time and line printer output shall show that all variables are within ± 1% of SIMTIME at each point. Variables show model execution frequency and shall count a total of 1800 ± 1%.

If the simulator time does not meet the acceptance criteria, or a step cannot be performed, then a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: EDS-7A Loss of Instrument Bus A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Annually

DATE CONDUCTED: 10/22/90

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.3.1 Test Title: Valve Handler Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems Controlled From the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-1, Cold Shutdown. This test is to verify the proper manipulation of valves by the valve handler routine, and to verify that the valve stroke times entered in the simulator's database are properly used for valve positioning. In order to test the response of the valve handler alone, all other programs are frozen. Five valves are randomly selected from the three valve datapool arrays (MOV, AOV, & MISC). Each valve selected is tested for proper stroke movement and stroke time. Each valve selected is tested from fully open to fully closed, and from fully closed to fully open.

If a step is performed and the response of the valve does not meet the acceptance criteria, or if a step can not be performed, then a Simulator Discrepancy Report is written.

Each valve response is evaluated to correctly stroke as directed, the stroke time shall correspond to the established data in the R. E. Ginna simulator database.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 05/25/88

DURATION OF TEST: 1.0 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hurst Title: Supervisor Simulator Training Date: 2/13/91

Test Number 14.3.3.2 Test Title Pump Handler Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3; Systems to be simulated and the degree of completeness.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-1, Cold Shutdown. This test is to verify the pump handler routine properly computes pump speed and normalized pump current. In order to test the response of the pump handler alone, all other programs are frozen. Five pumps are randomly selected from the pump datapool file. Each pump selected is tested for proper pump speed and normalized current. Each pump selected is tested from stopped condition to a started condition whereas the starting current and starting current decay are verified, and the speed ramp is verified. The pump current is tested during varying buss voltage and frequency changes. The pump normalized current and pump speed decreases are tested for the securing of each pump.

If a step is performed and the response of the pump does not meet the acceptance criteria, or if a step can not be performed, then a Simulator Discrepancy Report is written.

Each pump response is evaluated to correctly respond to all starts, stops, buss voltage and frequency changes against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/31/90

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.3.3 Test Title: Controller Handler Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% Power, BOL. To verify the discrete response of the controllers to the test signals, all other models are frozen. One controller of each type, with the exception of the internal controllers having no interface with the control boards, are tested. Each type of controller is tested for proper output and deviation response to setpoint and input signals and signal changes during automatic and manual controller operations. Each type of controller is tested for proper automatic and manual (if equipped) balance control operations and bumpless transfer. Those controllers having the capability of two speed manual control are tested for proper ramp speeds. Those controllers with auto bias pot adjustments are test for proper output response to auto bias pot setting.

If a step is performed and the response of the controller does not meet the acceptance criteria, or if a step can not be performed, then a Simulator Discrepancy Report is written.

Each controller response is evaluated to correctly respond to all inputs, and generate the corresponding correct outputs, according to its type of controller. The dynamic response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, 100% Power, BOL

FINAL CONDITIONS: IC-12, 100% Power, BOL

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/08/90

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-92 Hotwell Level Controller Dev Meter Incorrect Response

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.3.4 Test Title: Bistable Handler Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3, Systems to be simulated and the degree of completeness.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. This test is to verify the bistable handler properly sets and clears bistables in response to plant process inputs. In order to test the response of the bistable handler alone, all other programs are frozen. Five bistables that trip high and five bistables that trip low are randomly selected from the bistable datapool file. Each trip high (trip low) bistable selected is tested to trip as the process parameter increases above (decreases below) the trip setpoint and does not clear as the process parameter decreases below (increase above) the trip setpoint but less than the reset point. Each trip high (trip low) bistable selected is tested to reset as the process parameter decreases below (increases above) the reset point.

If a step is performed and the response of the bistable does not meet the acceptance criteria, or if a step can not be performed, then a Simulator Discrepancy Report is written.

Each bistable response is evaluated to correctly respond to all trip and reset setpoints against the R. E. Ginna Simulator Design Basis Documentation.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/04/85

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.3.5 Test Title: Alarm Handler Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3, Systems to be simulated to the degree of completeness.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. This test is to verify the alarm handler properly processes inputs to single-input, multiple-input, and first-out alarm windows. In order to test the response of the alarm handler alone, all other programs are frozen. Three single-input, three multiple-input, and two first-out alarm windows are randomly selected from the annunciator file. Each alarm window selected is tested to function properly (horn on and off, window light(s) flash, on, and steady) during the processing of all the types of inputs (associated bistable tripped and clear, second bistable tripped and clear, Silence, Acknowledge, First-out Reset) for the applicable types of window.

If a step is performed and the response of the alarm window does not meet the acceptance criteria, or if a step can not be performed, then a Simulator Discrepancy Report is written.

Each alarm window response is evaluated to correctly respond for the associated window type against the R. E. Ginna Simulator Design Basis Documentation.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/02/85

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR 1380
TR 1382 First Out Sequence

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.1 Test Title: Nuclear Instrumentation System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to initial conditions for the performance of each section of the system operability test. The initial conditions used during the performance of this test are IC-1, Cold Shutdown and IC-12, 100% Power, BOL. A Nuclear Instrumentation System operability test is performed to verify the interlocks, setpoints, bistable functions, automatic actions, and switch operations. This operability test is divided into individual sections. These sections are; Source Range Channels, Intermediate Range Channels, and Power Range Channels. Each section is tested using controlled copies of the R. E. Ginna Station Periodic Test Procedures. Comparator and rate channel deviation (upper and lower) performance checks, scaler timer automatic and manual count and timer checks, and startup rate checks are performed to ensure proper response to all specified inputs.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the acceptance criteria specified in the plant periodic test procedures, and/or best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: Malfunction NIS-6 (Power Range Channel Detector Failure) - using a final detector current of 3 ma for verification of comparator and rate channel deviation status lights and defeat switch functions. Conducted for each power range channel (41A - upper, 41B - lower, 42A, 42B, 43A, 43B, 44A, and 44B).

MALFUNCTION RANGES: Select final current - 0-5 ma, Select ramp time - 0-3 seconds

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 05/20/88

DURATION OF TEST: 7.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:
SM 88-27 PT-6.3.1 Corrections
SM 88-25 N31 Hi Level Trip Setpoint Incorrect
SM 88-26 PT-6.2 Corrections
SM 88-28 PT-6.3.2 Corrections
SM 88-29 PT-6.2 Corrections
SM 88-30 PT-6.3.3 Corrections
SM 88-31 PT-6.3.4 Corrections
TR 2265 NIS 100% Offset Not Valid

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.2 Test Title: Incore Instrumentation System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled form the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A system operability test is performed to verify flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This test includes MANUAL and AUTOMATIC operations for INSERT and WITHDRAW, and SCAN and RECORD, during NORMAL, CALIBRATE, EMERGENCY, and STORAGE operations for each individual detector using all paths and thimbles. Top and bottom core limits selections, fast and slow speed operations are verified for each detector. All detector operations are selected for verifying proper operations and pathing configurations. Detector Readout Meters, Detector Voltage Plateau tests, and Thermocouple Operations tests are performed to ensure proper response to all specified inputs. Dropped rod and stuck rod core response verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: Malfunctions ROD-2A for dropped rod and malfunction ROD-3A for stuck rod.

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, Full power, BOL

FINAL CONDITIONS: IC-12, Full power, BOL

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/07 & 10/09 1990

DURATION OF TEST: 11.5 hours

CRITICAL PARAMETERS MONITORED: Incore Flux Traces

TEST DEFICIENCIES: SM 90-80 Green Normal Cal Lites Off

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.3 Test Title: Control Rod Drive and RPI System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the control. Section 3.3.2; Systems operation or functions controlled outside the control room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to initial conditions for the performance of each section of the system operability test. A Control Rod Drive and RPI System operability test is performed through a series of systematic and operational checks, to verify the interlocks, setpoints, bistable functions, automatic actions, and switch operations. This operability test is divided into individual sections. These sections are; Rod Speed/MRPI Verification, Manual Mode and Bank Overlap, Manual Sequencing, Rod Stops, Rod Insertion Limits, Urgent Failure Alarm and Lift Coil Disconnect Tests, LOA Functions, and Rod on Bottom and Rod Deviation Alarms. Rod speed and step counter, Rod automatic and manual withdrawal and insertion, Rod stop, and alarm checks are performed to ensure proper response to all specified inputs and to ensure associated interlocks and bistables function correctly at the specified setpoints. Plant Surveillance procedure PT-1, Rod Control System, is performed to verify operability.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: LOA ROD-7, LOA ROD-8

TESTED OPTIONS: LOA ROD-7 - Turbine Runback Defeat
LOA ROD-8 - Verifies MRPI shows correct controlling channel

MALFUNCTION RANGES: The following is a list of malfunctions and malfunction ranges used during the performance of this test:

NIS-7, Power Range Channel Failure at a severity of 103% - used to verify manual and auto rod stops.

PZR-2, Pressurizer Pressure Channel Failure at severities of 2300 psig and reduced from initial pressure - used to verify rod blocks.

RCS-3, Boron concentration-vary as necessary.

RCS-11, RTD Failure - used to verify rod blocks.

ROD-2, Dropped Rod - used to verify auto rod withdrawal does not work.

ROD-4, Control Rods Fail to Move - used to verify auto rod withdrawal block.

ROD-11, RPI Failure - used to verify LOA ROD-7 "Turbine Runback Defeat"

INITIAL CONDITIONS: As required during the performance of the system test. Those initial conditions used are IC-5, Hot Shutdown one hour after trip; IC-6, Reactor at 10^{-8} amps; IC-8, 25% Power, BOL; and IC-12, 100% Power, BOL.

Test Number: 14.3.4.3

Test Title: Control Rod Drive and RPI System Test

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 06/09/88

DURATION OF TEST: 4.0 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:

SDR 88-26	Bank C Group 1 step counter won't step out
SM 88-26	PT-6.2 Corrections
SM 88-27	PT-6.3.1 Corrections
SM 88-28	PT-6.3.2 Corrections
SM 88-29	PT-6.2 Corrections
SM 88-30	PT-6.3.3 Corrections
SM 88-31	PT-6.3.4 Corrections
SM 88-33	MRPI rod on bottom message not received

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.4 Test Title: Reactor Coolant System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room. Section 3.3.2; Systems operation or functions controlled outside of the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to initial conditions for the performance of each section of the system operability test. A Reactor Coolant System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Pzr Low Pressure Functional Check, Pzr High Pressure Functional Check, Pzr Safety Valve Check, Pzr Pressure Recovery, Surge Line Low Temperature, Pzr Level Functional Check, Pzr Level Program Check, Nitrogen Supply to Pzr PORVs, Reactor Coolant Pumps, Reactor Coolant Loops, Reactor Vessel Flange Leakoff, and Natural Circulation. Each section tests for proper temperature, pressure, and flow control and response, flow diversion and restoration, the actuation and clearing of associated alarms, interlocks and bistables, flowpath isolations, pump flows, temperatures and vibration associated with that system section. Each section also tests for proper response of interrelated systems and/or sections and ensure associated interlocks and bistables function correctly at the specified setpoints.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve V-517 - Open, Close PZR1	Valve V-518 - Open, Close PZR2
Valve V-503 - Open, Close RCS2	Valve V-507 - Open, Close RCS3
Valve V-500 - Open, Close RCS1	Valve V-519 - Open, Close RCS4
Valve V-520 - Open, Close RCS5	

MALFUNCTION RANGES: The following is a list of malfunctions and malfunction ranges used during the performance of this test:

PZR-7, Pressurizer Steam Space Leak at a varying severities - used during the Pzr Low and High Pressure Functional Checks.

PZR-2, Pressurizer Pressure Channel Failure at varying severities - used during the Pzr High Pressure Functional Checks.

RPS-5, Reactor Trip Failure - used during the Pzr Safety Valve Checks.

INITIAL CONDITIONS: As required during the performance of the system test. Those initial conditions used are IC-1, Cold Shutdown; IC-2, Heatup in progress; IC-3, Cooldown in progress; IC-5, Hot Shutdown one hour after trip; IC-6, Reactor at 10^{-8} amps; IC-7, 5% Power, BOL; IC-8, 25% Power, BOL; and IC-12, 100% Power, BOL.

Test Number: 14.3.4.4

Test Title: Reactor Coolant System Test

FINAL CONDITIONS:

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 3/27/87

DURATION OF TEST: 4 hours

CRITICAL PARAMETERS MONITORED:

REACTOR POWER	RCS LOOP A TH	RCS LOOP B TH
RCS LOOP A TC	RCS LOOP B TC	S/G A STEAM FLOW
S/G B STEAM FLOW	S/G A FEED FLOW	S/G B FEED FLOW
S/G A LEVEL	S/G B LEVEL	

TEST DEFICIENCIES:

TR 2065	RCP Oil Levels
TR 1408	B/U Htr Setpoint
TR 1410	Slow Response of 431K
TR 1411	PORV Opening Setpoint
TR 1412	F-26 Alarm
TR 1413	F-20 Alarm
TR 1414	F-5/F-13 Alarm
TR 1415	PORV LVDT'S
TR 1417	Dead Bus Transfer
TR 1720	B-27 Alarm Setpoint
TR 1724	LOA-503 No Effect
TR 1725	LOA-507 No Effect
TR 1726	Alarm AA-8 Setpoint Off
TR 1727	S/G Levels Increasing With No Pumps On
TR 1728	AA-6/AA-7 Alarm

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.5 Test Title: Pressurizer Relief Tank System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.3.2; Systems operations or functions controlled outside of the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to initial conditions for the performance of each section of the system operability test. A Pressurizer Relief Tank System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Low Level Alarm Setpoint Check, System Valve Lineup Check, PRT Control Valve (PCV-441) Pressure Setpoint and Adjustability Check, PRT Filling, AOV-527 Pressure Interlock Test, Level Alarm Test, and Rupture Disc Test. Each section tests for proper temperature, pressure, and flow control and response, flow diversion and restoration, the actuation and clearing of associated alarms, interlock and alarm setpoints, flowpath isolations, pump flows, and temperatures associated with that system section.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: As required during the performance of the system test. Those initial conditions used are IC-1, Cold Shutdown; and IC-12, 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/10/90

DURATION OF TEST: 1.5 hrs.

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-018 with PCV-441 set as high as 50, and two RMW pumps filling the PRT, PRT pressure was decreasing below vaccum

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.6 Test Title: Chemical and Volume Control System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the control Room. Section 3.1.1; (10) Operator conducted surviellance testing on safety related systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. A Chemical and Volume Control Tank system operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Letdown Section, Demineralizer Divert, Volume Control Tank, Charging Pump Suction, Charging Line, Excess Letdown, RCP Seals, Makeup, Holdup Tanks, and Demineralizers and LP Letdown Flowpath. Each section tests for proper temperature, pressure, and flow control and response, flow diversion and restoration, and the actuation and clearing of associated alarms during various valve manipulations, flowpath isolations, pump combinations and speed variations associated with that system section. Each section also tests for proper response of interrelated systems and/or sections. The section on low pressure letdown uses a Ginna Station system procedure to verify the operability of the flowpath.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve V-543 - Open, Close CVC-61	Valve V-2040 - Open, Close CVC-4
Valve V-253 - Open, Close CVC-14	Valve V-204A - Open, Close CVC-2
Valve V-808 - Open, Close SIS-4	Valve V-204C - Open, Close CVC-3
Valve V-268 - Open, Close CVC-17	Valve V-810 - Open, Close SIS-5
Valve V-358 - Open, Close CVC-32	Valve V-267 - Open, Close CVC-16

TESTED OPTIONS: (Continued) The following is a listing of the Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve V-399 - Open, Close CVC-39	Valve V-269 - Open, Close CVC-18
Valve V-384C - Open, Close CVC-35	Valve V-384B - Open, Close CVC-34
Valve V-821 - Open, Close CVC-41	Valve V-321 - Open, Close CVC-21
Valve V-323 - Open, Close CVC-66	Valve V-820 - Open, Close CVC-40
Valve V-348A - Open, Close CVC-27	Valve V-353 - Open, Close CVC-29
Valve V-394 - Open, Close CVC-36	Valve V-265 - Open, Close CVC-15
Valve V-300A - Open, Close CVC-19	Valve V-300B - Open, Close CVC-20

Test Number: 14.3.4.6

Test Title: Chemical and Volume Control System Test

	LOA#		LOA#
Valve V-827A - Open, Close	CVC-42	Valve V-331 - Open, Close	CVC-22
Valve V-335 - Open, Close	CVC-24	Valve V-334 - Open, Close	CVC-23
Valve V-336 - Open, Close	CVC-62	Valve V-398B - Open, Close	CVC-37
Valve V-827B - Open, Close	CVC-43	Valve V-345 - Open, Close	CVC-26
Valve V-338 - Open, Close	CVC-25	Valve V-337 - Open, Close	CVC-63
Valve V-398A - Open, Close	CVC-38	Valve V-348B - Open, Close	CVC-28
Valve V-360 - Open, Close	CVC-33	Valve V-354 - Open, Close	CVC-30
Valve V-356 - Open, Close	CVC-31	Valve V-1801 - Open, Close	SIS-2
Valve V-1104 - Open, Close	CVC-44	Valve V-1119 - Open, Close	CVC-46
Valve V-1120 - Open, Close	CVC-47	Valve V-1129 - Open, Close	CVC-49
Valve V-1125 - Open, Close	CVC-48	Valve V-1114 - Open, Close	CVC-45
Valve V-223 - Open, Close	CVC-7	Valve V-212 - Open, Close	CVC-6
Valve V-246 - Open, Close	CVC-11	Valve V-211 - Open, Close	CVC-5
Valve V-247 - Open, Close	CVC-12	Valve V-245 - Open, Close	CVC-10
Valve V-226A - Open, Close	CVC-8	Valve V-227A - Open, Close	CVC-9

	LOA#
Valve PCV-113 - Set to adjust and control pressure	CVC-59
Valve PCV-141 - Set to adjust and control pressure	CVC-51
Valve SOV-1275D - Set to adjust and control pressure	CVC-50
Boric Acid Tank A temperature control - Increase, Decrease	CVC-64
Boric Acid Tank B temperature control - Increase, Decrease	CVC-65
Boric Acid Tank A level control - Increase, Decrease	CVC-53
Boric Acid Tank B level control - Increase, Decrease	CVC-54
Gas Stripper Feed Pump - Start, Stop	CVC-1
Valve PCV 193A - Set to adjust and control pressure	CVC-52
Valve PCV 114 - Set to adjust and control pressure	CVC-60

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: As required during the setup of each portion of the system test. Those initial conditions used are IC-12 full power, IC-5 hot shutdown, and IC-19 full power.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/06 - 10/08 1990

DURATION OF TEST: 16 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulbert Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.7 Test Title: RHR System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room. Section 3.3.2; Systems operations or functions controlled from outside the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. An RHR System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Normal operations, and RHR Recirc operations. Each section tests for proper temperature, pressure, and flow control and response, interlock set and reset points, automatic action set and reset points, and the actuation and clearing of associated alarms during various valve manipulations, flow path isolations (local operator action and control board), and control switch operations associated with that system section.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

LOA#

Valve 822B - Open, Close RHR 12
Valve 709C - Open, Close RHR 3
Valve 714 - Open, Close RHR 7
Valve 712A - Open, Close RHR 5
Valve 715 - Open, Close RHR 9
Valve 717 - Open, Close RHR 10
Valve 252 - Open, Close RHR 13
Valve 1816A - Open, Close RHR 13

TESTED OPTIONS: (CONTINUED) The following is a listing of the Local Operator Actions tested during the performance of this test:

LOA#

Valve 709B - Open, Close RHR 2
Valve 709D - Open, Close RHR 4
Valve 709A - Open, Close RHR 1
Valve 712B - Open, Close RHR 6
Valve 716 - Open, Close RHR 8
Valve 822A - Open, Close RHR 11
Valve 879 - Open, Close SIS 1
Valve 253 - Open, Close CVC 14

RHR System LO FLOW ALARM setpoint - Increase and decrease
LOA RHR-14

Test Number: 14.3.4.7 Test Title: RHR System Test

MALFUNCTION RANGES: The following malfunctions were used during this performance test to provide the setpoint/interlock conditions tested;

RCS-9A "Wide Range RCS Pressure Channel Failure", activated at greater than 410 psig to test RHR MOV's 700 and 721 pressure open permissive.

RCS-2 "RCS leak into the Containment" activated to test the setpoint/interlock condition and response during RHR Recirc Operations.

INITIAL CONDITIONS: As required during the setup of each portion of the system test. Those initial conditions used are IC-1, Cold Shutdown; IC-3, Cooldown in Progress; and IC-12 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/19/85

DURATION OF TEST: NOT AVAILABLE

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR 1481 857 Interlocks
TR 1482 Flowpath
TR 1483 RHR System H/U
TR 1484 RHR Flow During LOCA

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.8 Test Title: Safety Injection System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room. Section 3.3.2; Systems Operations controlled outside of the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. A Safety Injection System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into two individual sections. These sections are; Valve Operation and Interlock Verification and System Operations - Accident Conditions. The Valve Operation and Interlock Verification section tests for proper level, pressure and flow control and response, interlock set and reset points, automatic action set and reset points, and the actuation and clearing of associated alarms during various valve manipulations, flow path isolations (local operator action and control board), and control switch operations associated with that system during conditions other than accident conditions. The System Operations - Accident Conditions section tests the system initiation and operation during a large break LOCA.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following Local Operator Actions were used during the performance of this test: Valve LOA-SIS-1 Open, Close; Set N2 pressure LOA-SIS-6 to the Accumulators - Incr. and Decr.

MALFUNCTION RANGES: RCS-2 "RCS leak into the Containment" activated to test the System Operations -- Accident Conditions.

INITIAL CONDITIONS: The initial conditions used are IC-4, Hot Shutdown; and IC-12 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/11/90

DURATION OF TEST: 2.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 89-63 Starting B SI pump should not cause PI-922 to increase and stabilize at 1000# pressure decrease takes 5.5-8.5 minutes after suction secured

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.9 Test Title: Component Cooling Water System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; System controlled from the Control Room; Section 3.3.2; Systems Operations or functions controlled outside the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions required during the performance of the system operability test. A Component Cooling Water System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test tests for proper temperature, pressure, flow, and pump control and response, flow diversion and restoration, the actuation and clearing of associated alarms, interlock and bistable actuation, flowpath isolations, pump flows, component flows and temperatures associated with the system. Each section also tests for proper response of interrelated systems, and ensure associated interlocks and bistables function correctly at the specified setpoints.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: The initial conditions used during the performance of this test are IC-1, Cold Shutdown and IC-12, 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 09/19/89

DURATION OF TEST: 6 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 88-38 RCP Thermal Barrier Flow incorrect
SM 88-46 LOA CLG 8/9 versus V-738A/B
TR 2155 MOV-738B does not work from MCB

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hull Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.10 Test Title: Containment and Containment Spray System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.3.2; Systems operation or functions controlled outside the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Containment and Containment Spray System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into sections. These sections are; Containment Fan and Valve Test, Containment Alarm Test, Radiation Monitor Tests, Containment Spray Tests, and Recirculation Flowpath Test. Each section tests for proper level, temperature, pressure, flow, flow diversion and restoration, the actuation and clearing of associated alarms, interlocks and bistables, flowpath isolations, pump flows, component flows and temperatures, and component control and indication associated with each section. Each section also tests for proper response of interrelated systems, and ensure associated interlocks and bistables function correctly at the specified setpoints.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve V-1588 - Open, Close RMS-1	
Valve V-1590 - Open, Close RMS-3	Valve V-1592 - Open, Close RMS-4
Valve V-868A - Open, Close RPS-3	Valve V-868B - Open, Close RPS-4
Valve V-1726 - Open, Close MIS-5	Valve V-1727 - Open, Close MIS-6
Valve V-716 - Open, Close RHR-8	Valve V-1811B - Open, Close MIS-10
Valve V-864A - Open, Close RPS-1	Valve V-864B - Open, Close RPS-2
Reset Charcoal Damper 1A MIS-69	
Reset Charcoal Damper 1C MIS-70	

MALFUNCTION RANGES: RCS-2 "RCS leak into the Containment" activated at a rate of 6000 gpm for Loop A Hot Leg during the performance of this test.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/11/90

DURATION OF TEST: 3.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-18 Flowpath exists but system response is too slow and does not appear quantitatively correct

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.11 Test Title: Main Steam Supply System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. A Main Steam Supply System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Atmospheric Steam Dump Flow, Condenser Steam Dump Flow, Steam Generator Blowdown Flow - Hot, Turbine Driven AFW Pumps Flow, Gland Seal Steam Flow, Condenser Air Removal Steam Flow, Main Steam Header Flow, Steam Generator Blowdown Flow - Cold, and Blowdown Interlock Defeat Switch. Each section tests for proper temperature, pressure, and flow control and response (including mass flow rates), interlock set and reset points, and the actuation and clearing of associated alarms during various valve manipulations, flow path isolations (local operator action and control board), load changes, and a reactor trip condition associated with that system section. Each section also tests for proper response of interrelated systems and/or sections (activity migration).

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve V-3506 - Open, Close STM-1	Valve V-3507 - Open, Close STM-2
Valve V-4171 - Open, Close STM-7	Valve V-4172 - Open, Close STM-8
Valve V-4173 - Open, Close STM-9	Valve V-4174 - Open, Close STM-10
Valve V-4175 - Open, Close STM-11	Valve V-4176 - Open, Close STM-12
Valve V-4177 - Open, Close STM-13	Valve V-4178 - Open, Close STM-14

TESTED OPTIONS: (Continued) The following is a listing of the Local Operator Actions tested during the performance of this test:

Test Number: 14.3.4.11 Test Title: Main Steam Supply System Test

LOA#	LOA#
Valve V-3532 - Open,Close STM-5	Valve V-3533 - Open,Close STM-6
Valve V-5771 - Open,Close SGN-1	Valve V-5772 - Open,Close SGN-2
Valve V-9512B - Open,Close CND-51	Valve V-9518C - Open,Close SGN-4
Valve V-9522G - Open,Close SGN-3	Valve CV-77 - Open,Auto SGN-9
Valve V-3873 - Open,Close STM-24	Valve V-3871 - Open,Close STM-23
Valve V-3580 - Open,Close STM-20	Valve V-3581 - Open,Close STM-21
Valve V-3583 - Open,Close STM-22	Valve V-3615 - Open,Close STM-4
Valve V-3614 - Open,Close STM-3	
Valve V-6799 - Open,Close RMS-7	
Valve V-CV76 - Open,Auto SGN-8	
Valve V-3652 - Open,Close FDW-32	
Valve V-3540 - Open,Close STM-19	
Valve V-5709 - Open,Close SGN-12	
Valve V-5710 - Open,Close SGN-13	

Blowdown Hi-Hi Temperature Reset - Reset SGN-5
Gland Steam Exhauster - Start, Stop TUR-1

MALFUNCTION RANGES: The following is a list of the malfunctions and the malfunction ranges used during the performance of this test:

Malf SGN-4A, Steam Generator Tube Rupture at a severity of 40 gpm - used to verify activity migration.

Malf STM-9A through 9H, Main Steam Safety Valve Failure - used during verification of steam flow through individual Safety Valves.

INITIAL CONDITIONS: As required during the setup of each portion of the system test. Those initial conditions used are IC-8 25% Power BOL, IC-9 Hot Shutdown, and IC-7 5% Power.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/7-10/8, 1990

DURATION OF TEST: 10.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-82 Blowdown Hi Hi Temp Alarm
SM 90-83 Gland Seal Pressure Too Low
SM 90-89 Mass Bal of S/G Blowdown does not work

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.12 Test Title: EHC, TGA, and Main Generator System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.3.2; Systems Operations or functions controlled outside the Control Room

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions required during the performance of the system operability test. An EHC, TGA, and Main Generator System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and control operations. This operability test is divided into sections. These sections are; Turbine Generator Auxiliaries, Turbine Control, and Miscellaneous. The Turbine Generator Auxiliaries and Miscellaneous sections test for proper temperature, pressure, flow control, regulation and response, the actuation and clearing of associated alarms and interlocks associated with the various turbine auxiliaries (H2, bearing oil, seal oil, exciter field breaker). The Turbine Control section tests the operation of the turbine and main generator during startup, normal operations and testing using controlled copies of the R. E. Ginna procedures.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, R. E. Ginna Operating and Test Procedures, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve V-5 - Open, Close TUR-9	Valve V-6 - Open, Close TUR-10
Valve V-7 - Open, Close TUR-11	Valve V-8 - Open, Close TUR-12

Valve PCV-1 - Regulate Supply Pressure TUR-8

Air Side Seal Oil Pump - Start, Stop TUR-5

H_2 Side Seal Oil Pump - Start, Stop TUR-7

Reset Turbine Bearing Oil Lockout

MALFUNCTION RANGES: The following is a list of malfunctions and malfunction ranges used during the performance of this test:

TUR-3, "Turbine Lube Oil Failure" is used to verify turbine bearing pressure, alarms, and standby pump starts.

CND-7, "Loss of Condenser Vacuum" is used to EHC alarms and turbine trips.

INITIAL CONDITIONS: The initial conditions used during the performance of this test are IC-7, 5% Power, BOL and IC-12, 100% Power, BOL.

FINAL CONDITIONS: N/A

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Test Number: 14.3.4.12 Test Title: EHC, TGA, and Main Generator System Test

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/11/85

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:
TR 1487 Base Adjust Output
TR 1488 Htr Drain Tank Level
TR 1489 EHC Maintenance Test
TR 1491 Exciter Field Breaker
TR 1492 Turning Gear
TR 1493 9X13A72 & 1G13A72 Interlocks

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.13 Test Title: Condensate and Main Feedwater System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.3.2; Systems Operation or functions controlled outside the Control Room

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions required during the performance of the system operability test. A Condensate and Main Feedwater System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and control operations associated with the various sections of the test. The test sections are; Condensate Storage Tanks, Hotwell Level Control, Condensate Booster Pump Bypass Valve, Condensate Pumps, Pump Logic, Recirc Valve Controller, Condensate System Valves, Feedpump Interlocks, Feed System Valves, Feedwater Recirculation, Feedwater Control Valve Position Indication, and Miscellaneous Components. Each section tests for proper control, regulation and response (temperature, pressure, level, and flow), the actuation and clearing of associated alarms, interlocks, and bistables. Each section also tests for proper response of interrelated systems and/or sections.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:
VALVES: Open/Close/Throttle (as applicable)

LOA#	LOA#	LOA#	LOA#
V-3248 CND-8	V-3249 CND-9	V-3580 STM-20	V-3581 STM-21
V-3583 STM-22	V-3900 CND-10	V-3901 CND-11	V-3902 CND-12
V-3920 CND-13	V-3921 CND-14	V-3922 CND-15	V-3926 CND-16
V-3928 CND-17	V-3951 CND-18	V-3952 CND-19	V-3954 CND-20
V-3960 CND-21	V-3961 CND-22	V-3962 CND-23	V-3963 CND-24

Test Number: 14.3.4.13 Test Title: Condensate and Main Feedwater System Test

TESTED OPTIONS: (Continued) The following is a listing Local Operator Actions tested during the performance of this test:
VALVES: Open/Close/Throttle (as applicable)

LOA#	LOA#	LOA#	LOA#
V-3964 CND-25	V-3965 CND-26	V-3966 CND-27	V-3967 CND-28
V-3970 FDW-1	V-3971 FDW-2	V-3978 FDW-3	V-3979 FDW-4
V-3982 FDW-5	V-3982 FDW-6	V-3983 FDW-7	V-3983 FDW-8
V-3984 FDW-9	V-3985 FDW-10	V-3994 FDW-11	V-3995 FDW-12
V-4051 CND-29	V-4064 CND-30	V-4067 CND-31	V-4070 FDW-13
V-4071 FDW-14	V-4074 FDW-15	V-4075 FDW-16	V-4070A CND-32
V-4071A CND-33	V-4084 FDW-17	V-4147A FDW-37	V-4148A FDW-38
AOV-4262 FDW-40	AOV-4263 FDW-41	V-4361 CND-34	V-4365 FDW-18
V-4496 FDW-39	V-4497 FDW-42	V-4498 FDW-43	V-5709 SGN-12
V-5710 SGN-13	V-5771 SGN-1	V-5772 SGN-2	V-9503A CND-35
V-9504A CND-36	V-9505A CND-37	V-9506F CND-41	V-9506A CND-38
V-9506C CND-39	V-9506E CND-40	V-9507D CND-42	
V-9512B CND-51	V-9522G SGN-3		

Condensate Transfer Pump - Start, Stop CND-7
S/G B/D Hx Normal/Bypass Switch - Normal, Bypass CND-52
Blowdown Temperature Reset - Reset SGN-5
Place Demineralizers in or out of service CND-1,2,3,4
1B AVT - On, Off CND-2
1C AVT - On, Off CND-3

MALFUNCTION RANGES: MIS-1D, "Loss of Instrument Air - Combined Instrument Air Header" is used during the performance of this test to verify MFP recirc and cleanup recirc valves fail on loss of air.

INITIAL CONDITIONS: The initial conditions used during the performance of this test are IC-1, Cold Shutdown; IC-5, Hot Shutdown one hour after trip; IC-7, 5% Power, BOL; IC-8, 25% Power, BOL; IC-9, Hot Shutdown; and IC-12, 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 09/15/88

DURATION OF TEST: 13 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 87-11 Condensate Booster Pump starting problem
SM 88-68 SBAFP pressure locked on V-4884 closure
TR-2225 Trim valve indicator shows snapopen

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.14 Test Title: Feedwater Heaters, Vents and Drains System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.3.2; Systems operation or functions controlled outside of the Control Room

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% Power, BOL, as necessary, with various valve lineups performed as required during the performance of the system operability test. A Feedwater Heaters, Vents and Drains System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and control operations associated with the various sections of the test. The test sections are; Extraction Steam, L.P. Feedwater Heaters #1, 2, and 3 Drains, Feedwater Heaters #4 and 5 Drains, and Heater Drain Tank and Pumps. Each section tests for proper control, regulation and response (temperature, pressure, level, and flow), the actuation and clearing of associated alarms, interlocks, and bistables. Each section also tests for proper response of interrelated systems and/or sections.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:
VALVES: Open/Close/Throttle (as applicable)

LOA#	LOA#	LOA#	LOA#
V-4103 HTR-1	V-4104 HTR-2	V-4105 HTR-3	V-4109 HTR-5
V-4110 HTR-6	V-4122 HTR-7	V-4123 HTR-8	V-4128 HTR-9
V-4129 HTR-10	V-4132 HTR-11	V-4133 HTR-12	V-4137 HTR-13
V-4138 HTR-14	V-4141 HTR-15	V-4142 HTR-16	V-5601 HTR-17
V-5602 HTR-18	V-5603 HTR-19	V-5604 HTR-20	V-5608 HTR-21
V-5609 HTR-22	V-5612 HTR-23	V-5613 HTR-24	V-5617 HTR-25
V-5618 HTR-26			

MALFUNCTION RANGES: The following is a list of malfunctions and malfunction ranges used during the performance of this test:

STM-7F & G, "Extraction Steam Non-Return Valve Failure" for valves V-1901 and V-1902 activated closed.

STM-7J & K, "Extraction Steam Non-Return Valve Failure" for valves V-1905 and V-1906 activated closed.

HTR-5, "Feedwater Heater Level Control Failure - Selected level transmitter failure" is activated with a final value of 100% and a ramp time of 60 seconds during heater level indication, status light indication and alarm verification.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/13/90

DURATION OF TEST: 6.7 hours

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Test Number: 14.3.4.14 Test Title: Feedwater Heaters, Vents and Drains System Test

CRITICAL PARAMETERS MONITORED:

Feedwater Heater Extraction Steam Temperatures 5A/B,4A/B
Feedwater Heater Feedwater Outlet Temperatures
Fourth Pass Reheater 1A/1B, 2A/2B Level Alarm
Second Pass Reheater 1A/1B, 2A/2B Level Alarm
Feedwater Heater 4A/4B Drain Line Temperatures
MSR Drain Line Temperatures
Preseparator Tanks A/B High Alarm

TEST DEFICIENCIES:

SM 89-125 Test 14.4.3.1 Feedwater Heater Levels indicate OOS low

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.15 Test Title: Auxiliary Feedwater System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.1.1; Operator conducted surviellance testing on safety related systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. An Auxiliary Feedwater System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Low-Low Level Signal in Steam Generator A Only, Low-Low Level Signal in Steam Generators A and B, Low-Low Level Signal in Steam Generator B Only, Opening of Both Main Feed Pump Breakers and Defeat Switch in NORM, Opening of Both Main Feed Pump Breakers and Defeat Switch in DEFEAT, Turbine Driven Auxiliary Feed Pump Test on Loss of Busses 11A and 11B, Motor Driven Auxiliary Feedwater Pump A Flows, Motor Driven Auxiliary Feedwater Pump B Flows, Suction Pressures, Turbine Driven Auxiliary Feed Pump Steam Supply, and Auxiliary Feedwater Pump Suction Reliefs. Each section tests for proper temperature, pressure, and flow control and response, interlock set and reset points, automatic action set and reset points (recirculation flow control, automatic pump start), and the actuation and clearing of associated alarms during various valve manipulations, flow path isolations (local operator action and control board), and loss of power associated with that system section. Plant procedures are referrenced corresponding to applicable sections of the procedure which verify pump performance.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

LOA#	LOA#
Valve 4345 - Open, Close CLG-12	Valve 4344 - Open, Close CLG-11
Valve 4098 - Open, Close CLG-10	Valve 4360 - Open, Close FDW-19
Valve 4015 - Open, Close FDW-27	Valve 4019 - Open, Close FDW-29
Valve 4018 - Open, Close FDW-28	Valve 4075 - Open, Close FDW-16
Valve 4070A - Open, CloseCND-32	Valve 4070 - Open, Close FDW-13
Valve 4024 - Open, Close FDW-24	Valve 4623 - Open, Close CLG-18
Valve 4026 - Open, Close FDW-26	Valve 4756 - Open, Close CLG-21
Valve 4625 - Open, Close FDW-25	Valve 3652 - Open, Close FDW-32
Valve 4074 - Open, Close FDW-15	

Turbine Driven Auxiliary Feed Pump auxiliary governor speed setting. FDW-31

Service Water Spool Piece - remove, install CLG-24?

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: As required during the setup of each portion of the system test. Those initial conditions used are IC-9 Hot Shutdown, IC-12 100% Power, and IC-1 Cold Shutdown.

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Test Number: 14.3.4.15 Test Title: Auxiliary Feedwater System Test

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/8-10/11, 1990

DURATION OF TEST: 8 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-84 Test 14.3.4.15 problems (SDR's 177 and 178)
SM 90-86 Alarm H-28 problems (SDR's 90-196 and 197)
SM 90-87 Test 14.3.4.15 problems (SDR's 90-201 and 200)

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.16 Test Title: Circulating Water System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1; Systems controlled from the Control Room; Section 3.3.2; Systems operation of functions controlled outside the Control Room

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. A Circulating Water System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and control operations associated with the various sections of the test. The test sections are; Valve Operations, Circ Water Pump Interlocks, Travelling Screens, Condenser, Coolers, and Screenhouse Level alarms. Each section tests for proper control, regulation and response (temperature, pressure, level, and flow), the actuation and clearing of associated alarms, interlocks, and bistables during various valve manipulations, flow path isolations (local operator action and control board), and control switch operations. Each section also tests for proper response of interrelated systems and/or sections.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:
VALVES: Open/Close/Throttle (as applicable)

V-3926 CND-16 V-3928 CND-17 V-3160 CRC-1 V-3161 CRC-2

1A, 1B, 1C, & 1D Travelling Screen - OFF, LO, HIGH, AUTO, CRC-3, CRC-4, CRC-5, CRC-6, CRC-7, CRC-8, CRC-9, CRC-10

MALFUNCTION RANGES: CRC-2 "Loss of Lake Water - Frazzle ice blocks intake structure is used during this performance test to test the Screenhouse level indication and alarm verification.

INITIAL CONDITIONS: As required during the setup of each portion of the system test. Those initial conditions used are IC-1, Cold Shutdown; IC-12 100% Power, BOL; and IC-12 100% Power, BOL with simulator winter conditions set (lake water temperature 32°F).

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/85

DURATION OF TEST: 4 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR VARIOUS

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.17 Test Title: Compressed Air System Test

ANSI/ANS 3.5 RELATIONSHIP:

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-1, Cold Shutdown. A Compressed Air System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and control operations associated with the various sections of the test. The test sections are; Compressor Autostart, Compressor High Pressure Trip, Backup Supply test, and Flow Network Verification. Each section tests for proper control, regulation and response (temperature, pressure, and flow), the actuation and clearing of associated alarms, interlocks, and bistables during various valve manipulations, flow path isolations (local operator action and control board), and control switch operations. Each section also tests for proper response of interrelated systems and/or sections.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions used during the performance of this test:
VALVES: Open/Close/Throttle (as applicable)

LOA #

V-5303 MIS-15	V-5312 MIS-18
V-5315 MIS-20	V-5313 MIS-19
V-5311 MIS-17	
V-5365 MIS-24	

Set Air Compressor Operating Mode - Continuous Run, Off, Auto - MIS-43, MIS-44, MIS-45, MIS-46
Compressor High Temperature Reset - MIS-47, MIS-48, MIS-49, MIS-50

MALFUNCTION RANGES: MIS-1 "Loss of Instrument Air" activated at 1000 scfm, used to decrease pressure to the low pressure alarm setpoint during the Flow Network Verification.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 04/25/90

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.18 Test Title: Diesel Generator System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the control room; Section 3.3.2, Systems operated or functions controlled outside the control room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. A Diesel Generator System operability test is performed through a series of systematic checks to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections; Unit Operations, Parallel Operations, and Diesel Generator Auxiliaries. The unit and parallel operations sections are tested using controlled copies of the R. E. Ginna Station Periodic Test Procedures. Each section tests for proper automatic and manual voltage control and response, engine speed (frequency) control and response, interlock set and reset points (inability to local stop after SI start), trip set and reset points (reverse power, loss of fuel, loss of starting air), automatic action (SI start but not load), and the actuation and clearing of associated alarms during various control switch manipulations, and flow path isolations (local operator action and control board) associated with that system section.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the acceptance criteria specified in the plant periodic test procedures, R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

Valve-5975 - Open, Close GEN-17
Valve-5948 - Open, Close GEN-16
D/G LOCAL STOP pushbutton GEN-3, GEN-4
Local alarm reset GEN-11, GEN-8
Fuel Oil Transfer GEN-13, GEN-14
Valve-5947 - Open, Close GEN-15
Valve-5976 - Open, Close GEN-18

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: As required during the setup of each portion of the system test. Those initial conditions used are IC-1, Cold Shutdown and IC-12 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/10/90

DURATION OF TEST: 3 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.19 Test Title: Standby Auxiliary Feedwater System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the control room; Section 3.1.1(10) Operator conducted surveillance testing on safety related systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to a hot shutdown one hour after trip condition. A Standby Auxiliary Feedwater System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections. These sections are; Standby Auxiliary Feed Water Pumps and Valves, and Condensate Supply Tank Level Alarms. Each section tests for proper pressure and flow control and response, interlock set and reset points, automatic action set and reset points (recirculation flow control, automatic pump start, safety injection), and the actuation and clearing of associated alarms during various valve manipulations, flow path isolations (local operator action and control board), loss of suction (cavitation), and loss of power associated with that system section. Plant procedures are referenced corresponding to applicable sections of the procedure which verify pump performance.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

Valve 9707A - Open, Close FDW-20
Valve 9707B - Open, Close FDW-21
Valve 4084 - Open, Close FDW-17
Valve 4610 - Open, Close CLG-17
Valve 9666 - Open, Close CND-44

Standby AFW Pump C Normal/Test Switch - Normal, Test FDW-35
Standby AFW Pump D Normal/Test Switch - Normal, Test FDW-36

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-5 Hot Shutdown, one hour after trip

FINAL CONDITIONS: IC-5 Hot Shutdown, one hour after trip

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/09/90

DURATION OF TEST: 7 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-59 SBAFW problems (Test 14.3.4.19, SDR's 90-180 through 90-184)
SM 90-90 Test 14.3.4.19, Step 5.2.2 Could not fill CST per Step 5.2.2

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.20 Test Title: Service Water System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room; Section 3.3.2, System operation or functions controlled outside of the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions required during the performance of the system operability test. A Service Water System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test tests for proper temperature, pressure, flow, and pump control and response, flow diversion and restoration, the actuation and clearing of associated alarms, interlock and bistable actuation, flowpath isolations, pump flows, component flows and temperatures associated with the system. Each section also tests for proper response of interrelated systems, and ensure associated interlocks and bistables function correctly at the specified setpoints.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing Local Operator Actions tested during the performance of this test:
VALVES: Open/Close/Throttle (as applicable)

AOV-4562 CLG-32	V-4605 CLG-13	V-4610 CLG-17	V-4619C CLG-33
V-4620B CLG-34	V-4623 CLG-18	V-4625 CLG-19	V-4626 CLG-20
V-4640 CLG-30	V-4680 CLG-27	V-4686 CLG-27	V-4691 CLG-22
V-4692 CLG-23	V-4693 CLG-27	V-4756 CLG-21	V-4795B CLG-29
V-4795E CLG-28	V-9707A FDW-20	V-9707B FDW-21	

MV-5451, lube oil cooler 3-way valve - 1A Hx, 1B Hx TUR-4
1A and 1C (1B and 1D) Safeguards Selector - 1A, 1C (1B, 1D) CLG-25, CLG-26
Service Water Spool Piece - Installed, Not Installed CLG-24

MALFUNCTION RANGES: EDS-1B "Loss of Off Site Power - Ckt 767" with manual safety injection is used during this performance test to test safeguards pumps and re-energization sequencing.

RCS-2 "RCS Leak into Containment (LOCA)" is used during this performance test for automatic SI activation and verification.

INITIAL CONDITIONS: The initial conditions used during the performance of this test are IC-1, Cold Shutdown; and IC-12 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Test Number: 14.3.4.20 Test Title: Service Water System Test

DATE CONDUCTED: 01/12/86

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR VARIOUS

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.21 Test Title: Plant Protection System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to initial conditions for the performance of each section of the system operability test. A Plant Protection System operability test is performed through a series of systematic checks, to verify the trips, resets, blocks, interlocks, setpoints, bistable functions, automatic actions, and switch operations. This operability test is divided into individual sections associated with the trip, reset, block, etc. being verified. These sections are: Source Range Trip; P-6 Verification; P-7 and P-10 Verification; Intermediate Range Trip; Power Range (Low) Trip; P-8 and P-9 Verification; Reactor Trip From RCP Trip, RC Low Flow Verification; P-7 Interlock for the Pressurizer Low Pressure Trip; OTdT, OPdT, TAVG Verification (including manual bypass); Turbine Runback and Dropped Rod Protection Verification; Steam Line Isolation Due to High Flow and Low TAVG With SI; Steam Line Isolation Due to Hi-Hi Steam Flow (3.6x10E6) with SI; Steam Line Low Pressure SI Verification; S/G Level, Steam Flow - Feed Flow Mismatch Trips; Main Steam Isolation (Manual); Containment High Pressure Trips; SI Reset; Containment Spray Reset; Containment Isolation Reset; Reactor High Power (108%) Trip; Reactor Manual Trip; Zirconium Guide Tube Trip; Control Room Area High Activity; R-11/R-12 Containment Ventilation Isolation; SI Block Permissive Bistable Check; Bistable Trip Switch and Coincidence Logic Verification; and Miscellaneous Bistable Trip Verification. Each section is verified to ensure proper response to all specified inputs and to ensure associated interlocks and bistables function correctly at the specified setpoints. The following trip, reset, block, etc. logic checks are verified during the performance of the associated system test and will not be tested here: Rod Blocks; Source and Intermediate Trip Bypasses; All of the Pressurizer logic checks with the exception of the P7 interlock for the pressurizer low pressure trip; Reactor Coolant Pump Undervoltage, Underfrequency (verified during the electrical system test); and Auxiliary Feedwater Logic.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation (Logic Diagrams).

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: The following is a list of malfunctions and malfunction ranges used during the performance of this test:

CND-7, Loss of Condenser Vacuum at maximum severity - used during P-8 and P-9 Verification.

RCS-11, RTD Failure at various severities - used during OTdT, OPdT, TAVG Verification, Turbine Runback and Dropped Rod Protection Verification, and Zirconium Guide Tube Trip.

PZR-2, Pressurizer Pressure Channel Failure at various severities - used during OTdT, OPdT, TAVG Verification.

ROD-2, Dropped Rod - used during Turbine Runback and Dropped Rod Protection Verification.
STM-1, Steam Flow Channel Failure at maximum severity - used during Steam Line Isolation Due to Hi-Hi Steam Flow with SI.

Test Number: 14.3.4.21 Test Title: Plant Protection System Test

STM-3, Steamline Break Outside Containment Downstream of MSIVs at a severity of 2x10E6 lbm/hr - used during Steam Line Isolation Due to High Flow and Low TAVG with SI.

SGN-3, Steam Generator Pressure Channel Failure at a severity of 0 psig - used during Steam Line Low Pressure SI Verification.

RCS-2, RCS Leak into Containment (LOCA) at maximum severity - used during Containment High Pressure Trips Verification.

RMS-2, Process Radiation Monitor Failure at various severities - used during R-11/R-12 Containment Ventilation Isolation Verification.

INITIAL CONDITIONS: As required during the performance of the system test. Those initial conditions used are IC-1, Cold Shutdown; IC-5, Hot Shutdown one hour after trip; IC-6, Reactor at 10^{-8} amps; IC-7, 5% Power; IC-8, 25% Power, BOL; IC-10, 75% Power; and IC-12, 100% Power, BOL.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 06/09/88

DURATION OF TEST: 23 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:
SM 86-02 RMS R-11 Setpoint
SM 87-13 SI Block Permissive and Unblock Setoints wrong
SM 88-26 PT-6.2 Corrections
SM 88-29 PT-6.2 Corrections
SM 88-34 D-15 Alarm not actuating correctly
SM 88-57 CV Spray Logic Relays

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.22 Test Title: Steam Dump Control System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room; Section 3.3.2, System operation or functions controlled outside the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% Power, with power adjusted to various initial power conditions (60%, 40%) required during the performance of the system operability test. A Steam Dump Control System operability test is performed through a series of systematic checks, to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations associated with the various sections of the test. The test sections are; Atmospheric PORV Test, Steam Pressure Mode Control Test, T_{avg} Mode/Loss of Load Test, T_{avg} Mode/Turbine Trip Test, Condenser Vacuum Interlock Test, and Circulating Water Pump Interlock Test. Each section tests for proper temperature, pressure, and flow control and response, flow diversion and sequencing, the actuation and clearing of associated alarms, interlocks, and bistables. Each section also tests for proper response of interrelated sections and/or systems, and ensure associated interlocks and bistables function correctly at the specified setpoints.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/31/90

DURATION OF TEST: 5.5 hours

CRITICAL PARAMETERS MONITORED:

Steam Header Pressure	S/G A Steam Flow
S/G B Steam Flow	Avg TAVG
Reference TAVG	Dump Valve A1 Position
Dump Valve B1 Position	PCV-484 Position

TEST DEFICIENCIES: SM 88-013 Vacuum does not decrease

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulbert Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.23 Test Title: Process and Area Radiation Monitor System Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room; Section 3.1.1, Operator conducted surveillance testing on safety related equipment or systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized, as necessary, to various initial conditions for the performance of each section of the system operability test. A Process and Area Radiation Monitoring System operability test is performed to verify the flow paths, interlocks, setpoints, automatic actions, and valve and switch operations. This operability test is divided into individual sections that test each of the simulated area radiation monitors, high range radiation monitors, process radiation monitors, and iodine monitors. Each section tests for proper CHECK SOURCE/CHANNEL TEST control and response; alarm (ALERT and HIGH) setpoint, acknowledge, and clear; meter, digital display, bargraph, and recorder response; high voltage display and response; automatic action set and reset points (isolation valve closure, fan trip, reset and restart); purge control and response; and the actuation and clearing of associated alarms associated with that system section. This test was generated using plant procedure test procedures for the RMS.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: The following is a listing of the Local Operator Actions tested during the performance of this test:

	LOA #
- Containment Iodine Monitor high alarm setpoint adjust - Increase setpoint, Decrease setpoint	RMS-5
- Containment Air Particulate Monitor high alarm setpoint adjust - Increase setpoint, Decrease setpoint	RMS-6
- 1A, 1B, 1C & 1F Auxiliary Building Exhaust Fans - Start, Stop	MIS-25, 26 27, 28
- 1A Auxiliary Building Supply Air Handling Unit - Start, Stop	MIS-35
- 1B Auxiliary Building Supply Fan - Start, Stop	MIS-34
- 1A, 1B & 1C Intermediate Building Exhaust Fans - Start, Stop	MIS-36 37, 38
- 1A & 1B Controlled Access Exhaust Fan - Start, Stop	MIS-32, 33
- 1A & 1B Auxiliary Building Charcoal Filter Fan - Start, Stop	MIS-30, 31

Test Number: 14.3.4.23 Test Title: Process and Area Radiation Monitor System Test

MALFUNCTION RANGES: The following is a list of the malfunctions and the malfunction ranges used during the performance of this test:

Malf SGN-4A(B), Steam Generator A (B) Tube Rupture at a severity of 300 gpm - used to verify activity migration, recorder start and level increase.

Malf RHR-7, RHR Pump Suction Line Rupture at a severity of 3000 gpm - used to verify activity migration and increase on the Containment Spray Pump Wide Range Area Monitor.

Malf CVC-2, Letdown Line Leak Outside the Containment at a severity sufficient to cause the Plant Iodine Monitor to increase and alarm.

Malf RMS-2B, Process Radiation Monitor Failure (contaniment gas) at a severity of 1E5 cpm - used to verify Containment Gas Monitor activity increase and containment ventilation isolation.

Malf RMS-2C, Process Radiation Monitor Failure (aux. bldg. part.) at a severity of 4E4 cpm - used to verify Plant Particulate Monitor activity increase and containment ventilation isolation.

Malf RMS-2D, Process Radiation Monitor Failure (aux. bldg. gas) at a severity sufficient to verify Plant Gas Monitor activity increase and containment ventilation isolation.

INITIAL CONDITIONS: The simulator is operating normally in any IC with no protective signals generated.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/09 - 10/10/90

DURATION OF TEST: 7.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:

SM 90-85 Test 14.3.4.23 problems (SDR's 90-199, 198, 187, 189, 195, 190 and 193)
SM 91-001 Test 14.3.4.23

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.4.24 Test Title: Plant Process Computer System (PPCS) Fidelity Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room

DESCRIPTION OF TEST: The Ginna Simulator can be initialized in any Initial Condition. With the PPCS operating, color copies are made of various function displays. Function keys are actuated to check for correct response. Color printouts are made at the plant PPCS and are compared to the simulator function copies. The acceptance criteria is that all simulator PPCS display and function keys are identical to plant PPCS displays.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step cannot be performed, or if an alarm annunciates but should not or does not annunciate but should, then a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per 4 years

DATE CONDUCTED: 12/04/90

DURATION OF TEST: 5.0 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:

SDR 90-331 Sping function not available on Simulator PPCS
SDR 90-332 Function keys on keyboards not in agreement between Control Room and Simulator
SDR 90-333 Labels on keyboards not in agreement between Control Room and Simulator

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.6.1 Test Title: Electrical Distribution Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, Systems controlled from the Control Room.

DESCRIPTION OF TEST: The Ginna simulator is initialized to a low power (nominally 25%), normal electric plant lineup. An Electric Distribution test is performed to verify the proper interconnection of electrical busses, and to verify that electrical loads are properly connected to the correct power source. This test consists of de-energizing the bus being tested, verifying the affected loads are de-energized or if applicable, an auto transfer has occurred; re-energizing the bus via its emergency supply or bus-tie if applicable and verifying the affected loads re-energize; de-energizing the emergency supply, re-energizing the normal supply and verifying the affected loads are re-energized.

The following busses are verified:
120 VAC Power (non-vital) - Xfmr 13, and Xfmr 15
120 VAC Power (vital) - Instrument busses 1A, 1B, 1C, and 1D
125 VDC Power - DC Buss A, DC Buss B, and Both Buss A and B
480 VAC MCC Loads - MCC 1A, 1B, 1C, 1D, 1E, 1F, and 1G
480 VAC Bus Loads - Buss 13, 14, 15, 16, 17, and 18
4160 VAC Bus Loads - Buss 11A, 11B, 12A, and 12B,
Auxiliary Transformer Loads - Xfmr 12
Bus Tie Breakers
Diesel Generator Loads - D/G 1A, and D/G 1B

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the acceptance criteria specified in the R. E. Ginna Simulator Design Basis Documentation and RG&E Electrical Distribution Drawing Series.

AVAILABLE OPTIONS: EDS-5A (Loss of DC Bus 1A); EDS-5B (Loss of DC Bus 1B)

TESTED OPTIONS: EDS-5A, EDS-5B, EDS-5A and EDS-5B

MALFUNCTION RANGES: Breaker supplying the selected 125 VDC Bus trips due to bus fault.

INITIAL CONDITIONS: As this procedure requires the frequent de-energization of components and shifting of loads, plant stability is not a major concern. The plant is initialized as required during the performance of each portion of the test to a low power, normal electrical lineup condition.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/03/85

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

Test Number: 14.3.6.1 Test Title: Electrical Distribution Test

TEST DEFICIENCIES:

TR 2122 Plant Evacuation Alarm Power
TR 2175 Protection Rack Proving Lights Containment Spray Logic
TR 2113 E-H Power
TR 2176 CBP Pushbutton
TR 2177 DC "A" Safeguard Status Lights
TR 2178 "A" CWP Discharge Valve
TR 2179 V-526 PRT Drain
TR 2180 DC "B" Safeguard Status Lights
TR 2181 MCC "1C" Misc. Pumps
TR 2228 1A1 and 1B1 Battery Chargers
TR 2183 MCC "1E" Misc. Pumps
TR 2184 #11 & #12 XFMR Watt Meters

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/14/91

Test Number: 14.3.6.2 Test Title: Electrical Interlocks Test

ANSI/ANS 3.5 RELATIONSHIP: Section 3.3.1, System controlled from the Control Room.

DESCRIPTION OF TEST: This test requires the frequent de-energization of busses and shifting of loads, plant stability is not a major concern. The plant is initialized to the condition that provides for the optimum conditions for the interlock being tested. The initial conditions used during the performance of this test are IC-1, Cold Shutdown and IC-12, 100% Power, BOL with various required components operating (ie, 1A condensate booster pump running during the Bus 12A lockout relay operation check). Transformer and Bus lockout relays are tested by: tripping the lockout relay; verifying the lockout tripped (breakers tripped and cannot be closed); resetting the lockout trip condition; verifying the lockout not reset (breakers cannot be closed); resetting the lockout relay; and verifying the lockout reset (breakers can be closed). The vital bus overcurrent reset interlocks are verified by: activating a bus overcurrent malfunction (EDS-4); verifying the trip and D/G breaker does not close; clearing the malfunction, depressing the reset and verifying the D/G breaker does not close; positioning the control switch to trip; depressing the reset and verifying the D/G breaker closes. The breaker permissives are verified by: satisfying all permissives except the one being tested; verifying the breaker cannot be closed; satisfying the permissive being tested; verifying the breaker can be closed. The breaker trips are verified by: Closing (or verifying closed) the breaker being tested; initiating the trip condition; verifying that the breaker trips.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the acceptance criteria specified in the R. E. Ginna Simulator Design Basis Documentation, Inplant Electrical Distribution and Switchyard.

AVAILABLE OPTIONS: EDS-4A (Loss of Emergency Bus 14); EDS-4B (Loss of Emergency Bus 16); EDS-4C (Loss of Emergency Bus 17); EDS-4D (Loss of Emergency Bus 18)

TESTED OPTIONS: EDS-4A, EDS-4B, EDS-4C, EDS-4D

MALFUNCTION RANGES: Selected bus feeder breaker trips on overcurrent

INITIAL CONDITIONS: The initial conditions used during the performance of this test are IC-1, Cold Shutdown and IC-12, 100% Power, BOL with various required components operating (ie, 1A condensate booster pump running during the Bus 12A lockout relay operation check).

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/18/89

DURATION OF TEST: 9.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SDR 88-31 Cannot close 11B-12B
SM 88-44 11A & 11B tie breaker closing with exciter field breaker open
SM 88-54 Simulator blowup with 11A normal supply closed
SM 89-73 Electrical Interlocks not correct
SDR 89-150 11A-12A won't close with 11A open

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.3.6.3 Test Title: Electrical Loading Test

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: This test requires the frequent loading and unloading of electrical loads, plant stability is not a major concern. The simulator is initialized, as necessary, to a low power (nominally 25%), normal electric plant lineup. Verification of electrical loading for major plant loads is accomplished by systematically loading and unloading the bus and monitoring the bus current and power. The electrical busses shall respond properly to the starting and stopping of the major loads (i.e., loads which can be verified by control board indication alone). Major Electrical Loads are tested by: monitoring the initial bus current and power; starting or stopping the equipment; monitoring the change in bus current and power; stopping or starting the equipment; and monitoring the final bus current and power.

If a step is performed and the response of the simulator does not meet the acceptance criteria, a Simulator Discrepancy Report is written.

The simulator response is evaluated against the acceptance criteria specified in the R. E. Ginna Simulator Design Basis Documentation, Inplant Electrical Distribution.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: The plant is initialized as required during the performance of each portion of the test to a low power, normal electrical lineup condition.

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 08/10/90

DURATION OF TEST: 3 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 89-116 Test 14.3.6.3 Electrical Loading Test

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

NORMAL AND STEADY STATE PERFORMANCE TEST
NORMAL OPERATIONS TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.1	Operating Limits Monitoring
14.4.2	Normal Operations Acceptance Test
14.4.3.1	100% BOL Steady State Accuracy Test
14.4.3.2	100 Percent Power Steady State Drift Check
14.4.3.3	Instrument Error Certification
14.4.3.4	Initial Conditions Stability Check
14.4.4.1	NSSS - BOP Energy Balance
14.4.5.1	NSSS Mass Balance Test
14.4.5.2	BOP Mass Balance Test
14.4.6.1	Startup Test - Initial Criticality and Low Power Physics

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.1 Test Title: Operating Limits Monitoring

ANSI/ANS 3.5 RELATIONSHIP: Section 4.3, Administrative controls or other means shall be provided to alert the instructor when certain parameters approach values indicative of events beyond the implemented model or known plant behavior.

DESCRIPTION OF TEST: The Ginna Simulator is initialized in IC-12, 100% BOL condition. Parameters monitored for out of limits are monitored. Malfunctions are selected at random by the test engineer as necssary to drive monitored variables outside the operating limits. Each time a limit is exceeded, the following instructor alerts are verified: Control CRT Message, NRC Phone Trouble Light illuminates, Console Alarm Light illuminates and that a Simulator Tracking file is updated with the Operating Limit Alarm.

The values for operator limits were chosen from R.E. Ginna Design Basis Documentation where R.E. Ginna plant data is not available.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step cannot be performed or if an alarm annunciates but should not or does not annunciate but should, then a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Simulator file LOGGER.D indicates all exceeded limits reflecting monitored parameters.

TEST FREQUENCY: Annually

DATE CONDUCTED: 08/15/90

DURATION OF TEST: 1.0 hours

CRITICAL PARAMETERS MONITORED:

Containment Pressure
Containment Radiation
Containment Temperature
Reactor Coolant Pressure
Reactor Coolant Boron Concentration
Reactor Total Thermal Power
Steam Generator Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.2 Test Title: Normal Operations Acceptance Test

ANSI/ANS 3.5 RELATIONSHIP: Sections 3.1.1 (6) - Load Changes; 3.1.1 (8a) - Plant shutdown from rated power to hot standby; 3.1.1 (5) - Operations in hot standby; 3.1.1 (8b) - Cooldown to cold shutdown conditions; 3.1.1 (9b) - Core performance testing - Shutdown margin demonstration; 3.1.1 (1) - Plant startup, cold to hot standby; 3.1.1 (2) - Nuclear startup from hot standby to rated power; 3.1.1 (3) - Turbine startup and generator synchronization; 3.1.1 (4) - Reactor trip followed by recovery to rated power; 3.1.1 (7) - Shutdown and Power Operations with less than full reactor coolant flow.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A plant shutdown is performed from rated power to hot standby. This section includes reduction of power to 75%, 50% and 2% with a 30 minute stabilization between reductions, inserting control rods, and tripping the main turbine. The test is continued from hot standby to cold shutdown. This section includes verifying an adequate shutdown margin exists, borating the RCS, placing the steam generators in wet layup, securing the reactor coolant pumps, going on shutdown cooling, and collapsing the pressurizer bubble. The test is continued from cold shutdown to hot standby. This section includes coming off shutdown cooling, forming a bubble in the pressurizer, taking the steam generators out of wet layup, and starting the reactor coolant pumps. The test is continued with a nuclear startup from hot standby to 2% power. This section includes conducting a 1/M plot during rod withdrawal and performing boron dilution. The test is continued with a power ascent to 100% power. This section includes control rod withdrawal, boron dilution, main turbine warmup and testing, and generator synchronization to the grid. A reactor trip with recovery to rated power is performed. This section includes stabilizing the plant at hot standby and power ascension to 100% rated power. There is an option to snap protected IC's during this procedure. Reference plant procedures are used by plant Operations personnel and acceptance is based on their evaluation of Simulator performance.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available, and/or the acceptance criteria specified in the plant procedures.

R. E. Ginna takes an exception to ANSI/ANS 3.5 Section 3.1.1 (7) Startup Operations with less than full reactor coolant flow since this operation is not allowed by plant procedures. With the reactor subcritical and sufficient shutdown margin, less than full reactor coolant flow is allowed and is performed by this procedure per R. E. Ginna O-2.2. Since a possibility of single loop flow exists at < P-9, procedure AP-RCS.2, Loss of Reactor Coolant Flow, is performed after RCP trip.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, 100% Power, Steady State, Xenon Equilibrium, BOL

FINAL CONDITIONS: 100% Power, Steady State

TEST FREQUENCY: Once per year

DATE CONDUCTED: 11/09/90

DURATION OF TEST: 90 hours

Test Number: 14.4.2

Test Title: Normal Operations Acceptance Test

CRITICAL PARAMETERS MONITORED:

Reactor Power	RCS Tavg	S/G 1A Pressure
PZR Level	S/G 1A Level	S/G 1A Steam Flow
Gen MW Electric	RCS Delta T	RCS Pressure
T Hot	T Cold	S/G 1A Feed Flow
Interm Range Lvl	Source Range Lvl	PZR Liq Temp
RHR Flow	RHR Hx Outlet Temp	CVCS HUT #1 Lvl
RCS Loop Lvl	Charging Flow	Letdown Flow

NOTE: THESE ARE MONITORED IN DIFFERENT GROUPS AS ASSIGNED PER THE PROCEDURE.

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.3.1 Test Title: 100% BOL Steady State Accuracy Test

ANSI/ANS 3.5 RELATIONSHIP: Section 4.1 (3) - computed values of critical parameters shall agree within ±2% of the reference plant parameters and shall not detract from training; Section 4.1 (4) - computed values of noncritical parameters pertinent to plant operation, that are included on the simulator control room panels, shall agree within ±10% of the reference plant parameters and shall not detract from training. Appendix B2.1 (c) Steady state performance at 100% rated thermal power and verify stability for 60 minutes

DESCRIPTION OF TEST: The simulator is initialized to 100% Power, steady state, BOL. The simulator panel lineup is verified to correspond to the plant lineup that existed during the taking of reference data photographs taken during BOL, with Xenon and Samarium equilibrium, and the plant operating as close to 100% as plant conditions permit. If any lineup changes are required, the simulator must stabilize for at least 30 minutes. After allowing the simulator to stabilize, the simulator analog data is recorded. Certain plant parameters are gathered specifically per 4.1(3) and B.2.1(1)(2) as well as oscillating parameters to validate those parameters which indicate out of tolerance due to normal oscillation.

The computed values of simulator critical parameters are evaluated against the R. E. Ginna plant data to be within the requirements of ANSI/ANS-3.5-1985 Section 4.1, paragraph (3).

The computed values of simulator non-critical parameters are evaluated against the R. E. Ginna plant data to be within the requirements of ANSI/ANS-3.5-1985 Section 4.1, paragraph (4).

If the simulator response does not meet the plant data, or if a step cannot be performed, or if an alarm annunciates but shouldn't or doesn't but should, then a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, 100% Power, BOL, Steady State, Automatic Control Condition

FINAL CONDITIONS: IC-12, 100% Power, BOL, Steady State, Automatic Control Condition

TEST FREQUENCY: Annually

DATE CONDUCTED: 09/28/90

DURATION OF TEST: 13 hours

CRITICAL PARAMETER MONITORED: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Test Number: 14.4.3.1 Test Title: 100% BOL Steady State Accuracy Test

TEST DEFICIENCIES:

SM 90-67 Trim Vlvs not open far enough
SM 90-68 Magastat/Trinistat/Excit Field/Gen Vars Bus 13/15
SM 90-69 Gen gross MW low
SM 90-70 SF Hi in A S/G
SM 90-71 FW Htr Lvl is low
SM 90-73 LC/LI 2013A controller problem
SM 90-74 431 A/B deviation is wrong
SM 90-75 TA/TC boil low lube oil cooler
SM 90-76 Flow controller 480 OOS
SM 90-77 NRHX CCW TC 130 OOS
SM 90-78 FC-626 OOS HI
SM 90-79 RCP Vibrations/Lube Oil levels
SM 90-72 S/G L460 WR low

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.3.2 Test Title: 100% Power Steady State Drift Check

ANSI/ANS 3.5 RELATIONSHIP: Section 4.1 (2) - Principal mass and energy balances shall be satisfied. The computed values for steady state, full power operation with the reference plant control system configuration shall be stable and not vary more than ±2% of the initial values over a 60-minute period; App. B2.1 (c) - Steady state performance at 100% rated thermal power and verify stability for 60 minutes.

DESCRIPTION OF TEST: The simulator is initialized to 100% power, steady state, BOL. The simulator panel lineup is verified to correspond to the plant lineup that existed during the taking of reference data photographs taken during BOL, with Xenon and Samarium equilibrium, and the plant operating as close to 100% as plant conditions permit. If any lineup changes are required, the simulator must stabilize for at least 30 minutes. After allowing the simulator to stabilize, the Steady State Drift Check program is used to monitor and record critical parameters for one hour.

A Simulator Discrepancy Report is written if the computed values of any of the simulator critical parameters have drifted by ± 2 percent of range over the one hour period.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, 100% Power, BOL, Steady State, Automatic Control Condition

FINAL CONDITIONS: IC-12, 100% Power, BOL, Steady State, Automatic Control Condition

TEST FREQUENCY: Annually

DATE CONDUCTED: 10/11/90

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED:

Gen Elect Load	PZR Water Temp
TAVG Channels	PZR Vapor Temp
Steam Header Press	Reactor Power Ranges
A/B S/G Feed Flow	A/B S/G Steam Flow
A/B S/G Pressure	PZR Pressure
PZR NR Level	S/G NR Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.3.3 Test Title: Instrument Error Certification

ANSI/ANS 3.5 RELATIONSHIP: Section 4.1 (1) - The simulator instrument error shall be no greater than that of the comparable meter, transducer and related instrument system of the reference plant.

DESCRIPTION OF TEST: The simulator is initialized to 100% Power, Steady State. All simulator control board indications that cannot be tested using the Daily Test function are compared to the simulator calculated values. A Simulator Discrepancy Report is written if the simulator instrument error is greater than the comparable meter, transducer, and related instrument system of the reference plant. A 3% error is allowed which is equal to 1% error for the instrument loop and 2% error for the meter.

The simulator is placed in FREEZE performing the DAILY TEST. All analog outputs are verified at 50%, minimum, and maximum scale deflection. A Simulator Discrepancy Report is written if the simulator instrument accuracy is greater than 3% of full scale, or sweep movement is not smooth.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: 100% Power, Steady State, and FREEZE

FINAL CONDITIONS: 100% Power, Steady State, and FREEZE

TEST FREQUENCY: Annually

DATE CONDUCTED: 10/10/90

DURATION OF TEST: 4 Hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-35 Cannot perform steps on MWHR Meters
SM 90-88 Test 14.4.3.3 problems (SDR's 90-205, 204 & 202)

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.3.4 Test Title: Initial Conditions Stability Check

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The simulator is initialized to each of the applicable protected initial condition sets (IC's 1-25). Once initialized, the simulator is place in RUN while observing panel indication. The simulator is allowed to run for approximately 15 minutes while observing the panel indications for transient responses.

If during the transition from FREEZE to RUN, the simulator does not proceed smoothly and naturally to and from each initialization condition, with no unrealistic transients; or during the 15 minute continuous run, if any unrealistic transients are evident, a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-1 through 25 in FREEZE

FINAL CONDITIONS: IC-1 through 25 steady state in RUN

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/02/90

DURATION OF TEST: 15 hours

CRITICAL PARAMETERS MONITORED:

Source Range Power
Intermediate Range Power
Power Range Power
Generator Power
Thot
Average TAVG
Tcold
RCS Pressure
Pressurizer Pressure
Pressurizer Level (Cold)
Pressurizer Level
Rod Bank Position
RHR Flow
Feed Flow
S/G Level (WR)
S/G Level (NR)
Steam Flow
Boron Concentration

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.4.1 Test Title: NSSS - BOP ENERGY BALANCE

ANSI/ANS 3.5 RELATIONSHIP: Section 4.1 (2) a,b,c - Principal mass and energy balances shall be satisfied; Section 3.1.1 (9a) - Core performance testing - Plant heat balance; Appendix B Section 2.1 (a) - Steady state performance at 25% rated thermal power; Appendix B Section 2.1 (b) - Steady state performance at 75% rated thermal power.

DESCRIPTION OF TEST: The simulator is initialized to 100% power, steady state, BOL, with Xenon and Samarium equilibrium. A calorimetric is conducted 10 minutes after the simulator is placed in run. The calorimetric is conducted using controlled copies of the R. E. Ginna plant procedures. Plant data is collected per ANSI 3.5 Section 4.1(3) and B.2.1(1)(2)

The simulator is initialized to approximately 80% power, steady state. A calorimetric is conducted 10 minutes after the simulator has stabilized. The calorimetric is conducted using controlled copies of the R. E. Ginna plant procedures.

The simulator is initialized to approximately 25% power, BOL, with parameters corresponding to known plant values. After the simulator has stabilized for 30 minutes, simulator data is recorded and compared with plant data. A calorimetric is conducted using controlled copies of the R.E. Ginna plant procedures and compared to plant data if available.

The simulator is initialized to 75% power, BOL, with parameters corresponding to known plant values. After the simulator has stabilized for 30 minutes, simulator data is recorded and compared with plant data. A calorimetric is conducted using controlled copies of the R.E. ginna plant procedures and compared to plant data if available.

If a step is performed and the response of the simulator does not meet the plant data, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't but should, then a simulator discrepancy report is written.

The simulator response is evaluated against the acceptance criteria specified in the plant procedures, best estimate judgement where R. E. Ginna plant data is not available, and ANSI/ANS-3.5-1985, Section 4.1 Steady State Operation, paragraph 2.a.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, 100% Power, BOL, Steady State, Automatic Control Condition
80% power, steady state
25% power, BOL
75% power, BOL

FINAL CONDITIONS: IC-12, 100% Power, BOL, Steady State, Automatic Control Condition
80% power, steady state
25% power, BOL
75% power, BOL

TEST FREQUENCY: Once per year

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Test Number: 14.4.4.1 Test Title: NSSS - BOP ENERGY BALANCE

DATE CONDUCTED: 10/10/90

DURATION OF TEST: 7.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 89-120 Charging Flow High
SM 90-69 Gross Gen MW low from SSA Test

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.5.1 Test Title: NSSS MASS BALANCE TEST

ANSI/ANS 3.5 RELATIONSHIP: Section 4.1 (2d) - Principal mass and energy balances shall be satisfied - Mass balance of pressurizer.

DESCRIPTION OF TEST: STEADY STATE MASS BALANCE CHECK. The simulator is initialized to 100% Power, Steady State, BOL. Automatic makeup and letdown divert are disabled. All drain paths are isolated. The simulator is allowed to stabilize and operate with no operator action for one hour. If after the one hour operation, the Pressurizer and VCT water mass change more than 2% of the pressurizer volume, a Simulator Discrepancy Report is written.

LETDOWN MASS BALANCE CHECK. The VCT is drained to the HUT. If the mass received by the HUT is not within 2% of the mass drained from the VCT, a Simulator Discrepancy Report is written. The charging pump is placed in manual control and the pressurizer level is reduced and stabilized at the new level. If the mass lost by the pressurizer is not within 2% of the mass gained by the VCT a Simulator Discrepancy Report is written.

MAKEUP MASS BALANCE CHECK. The charging pump is returned to automatic. Once automatic makeup has terminated, if the primary system mass increase is not within 2% of the mass lost by the VCT, plus water and boric acid added by the makeup system, a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, 100% Power, BOL, Steady State

FINAL CONDITIONS: IC-12, 100% Power, BOL, Steady State

TEST FREQUENCY: Annual

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 2.4 hours

CRITICAL PARAMETERS MONITORED:

RCS Node Masses	L/D Line Masses
VCT Mass	RCP #3 Seal Leakoff Flow
Hold Up Tank Masses	Boric Acid Tank Masses
RCDT Masses	Reactor Makeup Water Masses
RWST Mass	Makeup Line Mass
PZR Mass	PZR Relief Tank Steam Mass

TEST DEFICIENCIES:

SM 89-105 PZR to VCT Mass change >2%

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulf Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.5.2 Test Title: BOP MASS BALANCE TEST

ANSI/ANS 3.5 RELATIONSHIP: Section 4.1 (2e) - Principal mass and energy balances shall be satisfied - Mass balance of steam generator.

DESCRIPTION OF TEST: STEADY STATE MASS BALANCE CHECK. The simulator is initialized to a steady state condition. Design leakage is set to zero, S/G blowdown and sampling are isolated, condensate transfer is stopped, and the hotwell level controller is placed in manual at 50% output. The simulator is allowed to stabilize and operate with no operator action for one hour. If after the one hour operation the mass of both hotwells and both S/G's change more than 2% of the nominal S/G mass, a Simulator Discrepancy Report is written.

STEAM GENERATOR MASS BALANCE. The simulator is initialized to a steady state condition. Feedwater flow is manually reduced and maintained. When both S/G's have been reduced by at least 10000 lbm., the simulator is placed in FREEZE. If the S/G mass loss is not within 2% of the flowrates (steam flow, blowdown, and feed flow), a Simulator Discrepancy Report is written.

MASS TRANSFER FROM CST TO HOTWELL BALANCE. The simulator is initialized to a steady state condition. Design leakage is set to zero, DI makeup is isolated. Mass is transfer from the CST to the hotwell until hotwell mass increases by 10,000 lbm. The simulator is placed in FREEZE. If the CST mass decrease does not equal the hotwell mass increase within 2%, a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: CST "A" & "B"

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: One of the steady state conditions allowed per test

FINAL CONDITIONS: N/A

TEST FREQUENCY: Annually

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 3 hours

CRITICAL PARAMETERS MONITORED:

S/G Mass	FW Heater Mass
HDT Mass	Reheater Drain Tank Mass
Presep Drain Tank Mass	Moisture Sep Mass
CST 1A Mass	CST 1B Mass
Hotwell Liq Mass	Condenser Vapor Mass
S/G Feed Flow	S/G Steam Flow
S/G Blowdown Flow	

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
NORMAL AND STEADY STATE PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.6.1 Test Title: Startup Test--Initial Criticality and Low Power Physics

ANSI/ANS 3.5 RELATIONSHIP: Sections 3.1.1 (9c) - Core performance testing - Reactivity coefficient measurements; 3.1.1 (9d) - Core performance testing - Control rod worth measurements.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-23, BOL, critical 1E-8 amps. Core physics tests are performed to determine the isothermal coefficient, boron coefficient, and control rod worth. This exercise is conducted using controlled copies of the R. E. Ginna plant procedures. If a step is performed and the response of the simulator does not meet the plant procedure acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the acceptance criteria specified in the plant procedures.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-6, BOL critical 1E-8 amps

FINAL CONDITIONS: N/A

TEST FREQUENCY: Once per Simulator core model replacement

DATE CONDUCTED: 11/28/90

DURATION OF TEST: 28 hours

CRITICAL PARAMETERS MONITORED:

Interm Range Pwr.	RCS Boron	RCS TAVG
Reactivity		
Core Exit Temperature		Rod Position
IR SUR		
SR Power		

TEST DEFICIENCIES:

NOTE: THIS PROCEDURE IS ONLY CONDUCTED DURING ACCEPTANCE OF NEW CORE MODELS.

SM 91-004 Isothermal temperature coefficient too positive test 14.4.6.1

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

MALFUNCTION PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.7.1.1	CRC-1 Circulating Water Pump Trip
14.4.7.1.2	CRC-2 Loss of Circulating Water
14.4.7.1.3	CRC-3 CWS Leaks
14.4.7.2.1	CLG-1 Service Water Pump Trip
14.4.7.2.2	CLG-2 CCW Pump Trip
14.4.7.2.3	CLG-3 Non-Regenerative Letdown HX Tube Leak
14.4.7.2.4	CLG-4 Loss of CCW to RHR Heat Exchanger
14.4.7.2.5	CLG-5 CCW Supply Line Break
14.4.7.2.6	CLG-6 Seal Water Heat Exchanger Tube Leak
14.4.7.2.7	CLG-7 CCW HX Tube Leak
14.4.7.3.1	CND-1 Condensate Booster Pump Trip
14.4.7.3.2	CND-2 Main Condenser Tube Leak
14.4.7.3.3	CND-3 Hotwell Level Transmitter Failure
14.4.7.3.4	CND-4 Condensate Pump Failure
14.4.7.3.6	CND-6 Condensate Trim Valve Failure
14.4.7.3.7	CND-7 Loss of Condenser Vacuum
14.4.7.3.8	CND-8 Condensate Pipe Break
14.4.7.4.1	CVC-1 Letdown Line Leak Inside Containment
14.4.7.4.2	CVC-2 Letdown Line Leak Outside Containment
14.4.7.4.3	CVC-3 Charging Line Leak Inside Containment
14.4.7.4.4	CVC-4 Make-Up Control Failure in All Modes
14.4.7.4.5	CVC-5 Loss of CCW to Non-Regenerative Letdown HX
14.4.7.4.6	CVC-6 Letdown Orifice Isolation Valve Failure
14.4.7.4.7	CVC-7 Letdown Pressure Control Valve Fails
14.4.7.4.8	CVC-8 RCS Filter Plugged
14.4.7.4.9	CVC-9 VCT Divert Control Valve Failure
14.4.7.4.10	CVC-10 VCT Level Transmitter Failure
14.4.7.4.11	CVC-11 Charging Line Leak Outside Containment
14.4.7.4.12	CVC-12 Charging Pump Trip
14.4.7.4.13	CVC-13 BAT Pump Trip
14.4.7.4.14	CVC-14 RMWT Pump Trip
14.4.7.4.15	CVC-15 Boric Acid Flow Transmitter Failure
14.4.7.4.17	CVC-17 RMW to Blender Flow Transmitter Failure
14.4.7.4.18	CVC-18 Charging Pump Speed Controller Failure
14.4.7.4.19	CVC-19 Plugged Seal Injection Filter

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

MALFUNCTION PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.7.4.21	CVC-21 Boric Acid Storage Tank Leak
14.4.7.4.22	CVC-22 Regenerative Letdown Heat Exchanger Tube Leak
14.4.7.4.23	CVC-23 Letdown Line Safety Valve Fails Open
14.4.7.4.24	CVC-24 Charging Backpressure Control Valve Failure
14.4.7.4.25	CVC-25 VCT H2 Pressure Control Valve Failure
14.4.7.4.27	CVC-27 Charging Pump Suction Line Rupture
14.4.7.5.1	EDS-1 Loss of Off-Site Power
14.4.7.5.2	EDS-2 Loss of Station Service Transformer
14.4.7.5.3	EDS-3 Loss of No. 11 Aux Transformer
14.4.7.5.4	EDS-4 Loss of Emergency Bus
14.4.7.5.5	EDS-5 Loss of DC Bus
14.4.7.5.6	EDS-6 Loss of Switchyard (Station Blackout)
14.4.7.5.7	EDS-7 Loss of Instrument Bus Supplies
14.4.7.6.1	FDW-1 Feedpump Suction Header Break
14.4.7.6.2	FDW-2 Feedwater Pump Trip
14.4.7.6.4	FDW-4 Feedwater Pump Lube Oil System Failure
14.4.7.6.5	FDW-5 Feedline Leak Between Flow Element and Check Valve
14.4.7.6.6	FDW-6 Feed Flow Transmitter Failure
14.4.7.6.7	FDW-7 Feed Regulating Valve Control Failure
14.4.7.6.8	FDW-8 Feedline Break Outside Containment Downstream of Check Valve
14.4.7.6.9	FDW-9 Feedline Break Inside of Containment
14.4.7.6.10	FDW-10 Feed Regulating Valve Failure
14.4.7.6.11	FDW-11 Auxiliary Feedwater Pump Failure
14.4.7.6.12	FDW-12 AFW Turbine Driven Pump Speed Control Failure
14.4.7.6.13	FDW-13 AFW Pump Suction Line Break
14.4.7.6.14	FDW-14 AFW Feed Control Valve Failure
14.4.7.6.15	FDW-15 Standby Auxiliary Feed Pump Failure
14.4.7.6.16	FDW-16 AFW Pump Discharge Rupture
14.4.7.6.17	FDW-17 MFW Pump Failure to Trip
14.4.7.7.1	GEN-1 Main Generator Trip
14.4.7.7.3	GEN-3 Main Generator Voltage Regulator Failure
14.4.7.7.4	GEN-4 Diesel Engine Trip

ROCHESTER GAS AND ELECTRIC CORPORATION
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MALFUNCTION PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.7.7.5	GEN-5 Diesel Generator Failure to Load
14.4.7.7.6	GEN-6 Diesel Generator Breaker Trip
14.4.7.7.7	GEN-7 Failure of D-G Load Sequencing
14.4.7.8.2	HTR-2 Heater Drain Tank Pump Trip
14.4.7.9.1	MIS-1 Loss of Instrument Air
14.4.7.9.5	MIS-5 Containment Isolation Valve Failure
14.4.7.10.1	NIS-1 Source Range Channel Failure
14.4.7.10.2	NIS-2 Noisy Source Range Channel
14.4.7.10.3	NIS-3 Failure of Source Range Channel High Voltage to Disconnect
14.4.7.10.4	NIS-4 Intermediate Range Channel Failure
14.4.7.10.5	NIS-5 Intermediate Range Gamma Compensation Failure
14.4.7.10.6	NIS-6 Power Range Channel Detector Failure
14.4.7.10.7.1	NIS-7 Power Range Channel Fails High
14.4.7.10.7.2	NIS-7 Power Range Channel Failure - Low
14.4.7.10.8	NIS-8 Intermediate Range Blown Fuse
14.4.7.10.9	NIS-9 Source Range High Voltage Failure
14.4.7.10.10	NIS-10 Source Range Blown Fuse
14.4.7.11.1	PZR-1 Pressurizer Spray Valve Failure
14.4.7.11.2	PZR-2 Pressurizer Pressure Channel Failure
14.4.7.11.3	PZR-3 Pressurizer Level Channel Failure
14.4.7.11.4	PZR-4 Pressurizer Master Pressure Controller Failure
14.4.7.11.5	PZR-5 Pressurizer Relief Valve Failure
14.4.7.11.6	PZR-6 Pressurizer Safety Valve Failure
14.4.7.11.7	PZR-7 Pressurizer Steam Space Leak
14.4.7.11.8	PZR-8 Pressurizer Level Master Controller Failure
14.4.7.12.1	RCS-1 RCP Thermal Barrier Leak
14.4.7.12.2	RCS-2 RCS Leak Into Containment (LOCA)
14.4.7.12.3	RCS-3 Variable RCS Boron Concentration
14.4.7.12.5	RCS-5 RCP Trip
14.4.7.12.6	RCS-6 RCP Shaft Shear
14.4.7.12.7	RCS-7 RCP Locked Rotor
14.4.7.12.8	RCS-8 RCP Oil Reservoir Failure
14.4.7.12.9	RCS-9 Wide Range RCS Pressure Channel Failure
14.4.7.12.10	RCS-10 RCS Loop Flow Transmitter Failure
14.4.7.12.11	RCS-11 RTD Failure

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

MALFUNCTION PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.7.12.12	RCS-12 RCS #1 Seal Failure
14.4.7.12.13	RCS-13 RCSP #2 Seal Failure
14.4.7.12.14	RCS-14 RCP #3 Seal Failure
14.4.7.12.15	RCS-15 RCP High Vibration
14.4.7.12.16	RCS-16 Fuel Cladding Failure
14.4.7.12.17	RCS-17 RVLIS Transmitter Fails
14.4.7.13.1	RHR-1 RHR Pump Trip
14.4.7.13.2	RHR-2 RHR Heat Exchanger Flow Control Valve Failure
14.4.7.13.3	RHR-3 RHR Heat Exchanger Tube Leak
14.4.7.13.4	RHR-4 RHR Heat Exchanger Bypass Valve Control Failure
14.4.7.13.5	RHR-5 RHR Bypass Line Leak
14.4.7.13.6	RHR-6 Containment Sump to RHR Pump Screens Foul
14.4.7.13.7	RHR-7 RHR Pump Suction Line Rupture
14.4.7.14.1	RMS-1 Area Monitor Failure
14.4.7.14.2	RMS-2 Process Radiation Monitor Failure
14.4.7.15.1	ROD-1 Uncontrolled Rod Motion
14.4.7.15.2	ROD-2 Dropped Rod
14.4.7.15.3	ROD-3 Stuck Rod
14.4.7.15.4	ROD-4 Control Bank Rods Fail to Move
14.4.7.15.5	ROD-5 Rod Ejection
14.4.7.15.6	ROD-6 Rod Drive MG Set Trip
14.4.7.15.7	ROD-7 T-Ref Failure in Rod Control
14.4.7.15.8	ROD-8 Rod Speed Controller Failure
14.4.7.15.9	ROD-9 Improper Bank Overlap
14.4.7.15.10	ROD-10 Step Counter Failure
14.4.7.15.11	ROD-11 RPI Failure
14.4.7.15.12	ROD-12 Rod Stop Failure
14.4.7.15.13	ROD-13 MRPI System Failures
14.4.7.16.1	RPS-1 Inadvertent Containment Isolation
14.4.7.16.2	RPS-2 Inadvertent Control Room Environmental Isolation
14.4.7.16.3	RPS-3 Containment Spray Pump Trip
14.4.7.16.5	RPS-5 Reactor Trip Failure
14.4.7.16.6	RPS-6 Containment Isolation Failure
14.4.7.16.7	RPS-7 Failure of ESF Components to Actuate

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

MALFUNCTION PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.7.16.8	RPS-8 Containment Spray Failure to Actuate
14.4.7.17.1.1	SGN-1 S/G Level Channel Failure - High
14.4.7.17.1.2	SGN-1 S/G Level Channel Failure - Low
14.4.7.17.2	SGN-2 S/G Level Controller Oscillates
14.4.7.17.3	SGN-3 Steam Generator Pressure Channel Failure
14.4.7.17.4	SGN-4 Steam Generator Tube Rupture
14.4.7.18.1	SIS-1 Inadvertent SIS Actuation
14.4.7.18.2	SIS-2 SIS Failure to Actuate
14.4.7.18.3	SIS-3 SI Pump Trip
14.4.7.18.4	SIS-4 RWST Leak
14.4.7.18.5	SIS-5 Accumulator Leak
14.4.7.18.6	SIS-6 Safety Injection Header Leak
14.4.7.19.1	STM-1 Steam Flow Channel Failure
14.4.7.19.2	STM-2 Steamline Break Outside Containment Downstream of MSIV's
14.4.7.19.3	STM-3 Steamline Break Outside Containment Downstream of MSIV's
14.4.7.19.4	STM-4 Atmospheric Relief Valve Failure
14.4.7.19.5	STM-5 Main Steam Isolation Valve Failure
14.4.7.19.6	STM-6 Main Steam Header Pressure Transmitter Failure
14.4.7.19.9	STM-9 Main Steam Safety Valve Failure
14.4.7.19.10	STM-10 Steam Dump Failure
14.4.7.19.11	STM-11 Steamline Break Upstream of Flow Element (Inside Containment)
14.4.7.20.1	TUR-1 Inadvertent Turbine Trip
14.4.7.20.2	TUR-2 Turbine Failure to Trip
14.4.7.20.3	TUR-3 Turbine Lube Oil Failure
14.4.7.20.4	TUR-4 Turbine High Eccentricity
14.4.7.20.5	TUR-5 Turbine High Vibration
14.4.7.20.6	TUR-6 Turbine Lube Oil Temperature Control Valve Failure
14.4.7.20.7	TUR-7 Turbine Thrust Bearing High Wear
14.4.7.20.8	TUR-8 TSI Failure
14.4.7.20.9.1	TUR-9 Turbine EHC Failure EHC Leak
14.4.7.20.9.2	TUR-9 Turbine EHC Failure - Load Reference Failure
14.4.7.20.10	TUR-10 AMSAC Failure
14.4.7.20.11	TUR-11 Turbine Control Valve Failure
14.4.7.20.12	TUR-12 Reheat Stop/Intercept Valve Failure
14.4.7.20.16	TUR-16 First Stage Pressure Transmitter Failure
14.4.7.20.17	TUR-17 Turbine Stop Valve Failure

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.1.1 Test Title: Circulating Water Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (d); Malfunction to include local site consideration

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Circulating Water Pump Trip (malfunction CRC-1A) is inserted with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the turbine trips on high condenser pressure. The exercise is repeated using malfunction CRC-1B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CRC "A" or CRC "B"

TESTED OPTIONS: CRC "A"/CRC "B"

MALFUNCTION RANGES: Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full Power, BOL

FINAL CONDITIONS: Reactor tripped, turbine tripped on high condenser pressure.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/11/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: Condenser Vacuum

TEST DEFICIENCIES:

SM 90-91 Test 14.4.7.1 did not get turbine low vacuum trip

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.1.2 Test Title: Loss of Lake Water

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Lake temperature is less than 34°F. Service Water is lineup with 1A, 1B, and 1C pumps in operation and 1D pump in standby. A Loss of Lake Water (malfunction CRC-2, Frazzle ice blocks intake structure) is inserted at 100% severity with a 900 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the turbine trips on high condenser pressure.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select percentage of block - 0-100%; Select ramp time of 0-3600 seconds.

FINAL CONDITIONS: CCW temperature increase, condenser pressure increases, main turbine tripped, reactor tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/22/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:

TR 1757 Alarms do not come in with cavitation
TR 1758 CCW Surge Tank decreases

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.1.3 Test Title: CWS Leak

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Circ water system leak (malfunction CRC-3) is inserted at a severity of 20,000 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the leak stops and the screenhouse sump level decreases after the circ pump discharge valves close due to the circ pump trip.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CRC-3A "Screenhouse Combined Header"; CRC-3B "Condenser 'B' Inlet"; CRC-3C "Condenser 'A' Inlet"

TESTED OPTIONS: CRC-3A "Screenhouse Combined Header"

MALFUNCTION RANGES: Select leak rate CRC-3A - 0-200,000 gpm, CRC-3B/3C - 0-100,000 gpm; Select ramp time of 0-3600 seconds.

FINAL CONDITIONS: Circ water pumps tripped, Circ pump discharge valves closed, leak stopped, turbine tripped, reactor tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 06/28/89

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED:

Screenhouse Sump Mass
Main Generator Gross MW'S
Condenser Pressure

TEST DEFICIENCIES:

SM 88-70 I-26 should not alarm on Malfunction CRC-3A

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.1 Test Title: Service Water Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (6) - Loss of service water or cooling to individual components

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Three service water pumps are running, including pump 1A. A Service Water Pump Trip (malfunction CLG-1A) is inserted. The standby pump is started after the low flow and D/P alarms actuate due to the header pressure decrease. The 1A pump handswitch is positioned to stop to verify the breaker tripped alarm clears. The exercise is terminated when the header pressure returns to normal and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CLG-1A "Pump A", CLG-1B "Pump B", CLG-1C "Pump C", CLG-1D "Pump D"

TESTED OPTIONS: CLG-1A "Pump A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Three service water pumps are running, including the initial standby pump, Pump 1A tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: .25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.2 Test Title: CCW PUMP TRIP

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Component Cooling Water Pump Trip (malfunction CLG-2A) is inserted. The 1B CCW pump starts to supply the required flow to CCW cooled components. The 1A CCW pump handswitch is placed in stop. The pump tripped alarm clears. The exercise is terminated after CCW flow stabilizes. The exercise is repeated using malfunction CLG-2B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CLG-2A CCW Pump 1A
CLG-2B CCW Pump 1B

TESTED OPTIONS: CLG-2A, CLG-2B

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, Full Power, BOL

FINAL CONDITIONS: IC-12, Full Power, Standby CCW pump supplying required flow to the components served by CCW.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/11/90

DURATION OF TEST: 1/2 hour

CRITICAL PARAMETERS MONITORED: CCW HX Outlet Temperature

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.3 Test Title: Non-regenerative Letdown HX Tube Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (8) - Loss of component cooling system or cooling to individual components

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Non-regenerative Letdown Hx Tube Leak (malfunction CLG-3) is inserted at a severity of 200 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the reactor make-up system responds to the decrease in the VCT level (automatic make-up actuates) and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select leak rate - 0-200 gpm (actual leak rate depends on letdown flowrate); Select ramp time - 0-3600 seconds

FINAL CONDITIONS: Letdown pressure controller closed, High radiation level in CCW system, Component cooling surge tank vent valve closed, Automatic make-up actuated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/13/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Letdown Flow
VCT Level
CCW Surge Tank Level

TEST DEFICIENCIES:

TR 1760 Letdown, Press, Flow

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.4 Test Title: Loss of CCW to RHR Heat Exchanger

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (8) - Loss of component cooling system or cooling to individual components

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-2, Heatup in progress, BOL. 'A' RHR heat exchanger flow control valve is closed to stop RHR flow through the 'A' HX. 'B' RHR heat exchanger flow control valve is opened to establish RHR flow through the 'B' HX, and adjusted to stop the heat up in progress. A Loss of CCW to RHR Heat exchanger (malfunction CLG-4B, Inlet MOV to the HX Disc failure) is actuated when plant temperatures have stabilized on the 'B' RHR HX. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CLG-4A "A RHR HX inlet MOV-738A", CLG-4B "B RHR HX inlet MOV-738B"

TESTED OPTIONS: CLG-4B "B RHR HX inlet MOV-738B"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: RCS cold leg temperature increasing, RCS pressure increasing, Letdown flow increases, CCW surge tank level erratic due to flashing in the RHR HX.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 06/26/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

RCS Pressure
Letdown Flow
VCT Level
RCS Temperature

TEST DEFICIENCIES:

SM 88-75 Malfunction CLG-4 problem

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.5 Test Title: CCW Supply Line Break

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (8) - Loss of component cooling system or cooling to individual components

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. 1A CCW pump is running and 1B CCW pump is in standby. A CCW supply line break (malfunction CLG-5, downstream of FIT-619) is inserted at a severity of 1000 gpm with a ramp time of 0 seconds. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. 1B CCW pumps auto starts due to 1A CCW low discharge pressure. The exercise is terminated when CCW pumps 1A and 1B trip and all other expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected leak rate - 0-1000 gpm; Select ramp time - 0-3600 seconds

FINAL CONDITIONS: 1A and 1B CCW pumps tripped, CCW Surge tank low level, components cooled by CCW high temperature and/or low flow alarms, Auxiliary Building Sump high level alarm.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED:

CCW Surge Tank Level
CCW Flow Rate
Letdown Temperature
RX Support Cooler Outlet Temp

TEST DEFICIENCIES:

SM 90-13 Malf does not cause high temp alarm even long after CCW pumps trip. CCW Pump Cavitation

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.6 Test Title: Seal Water Heat Exchanger Tube Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (8) - Loss of component cooling system or cooling to individual components.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Seal Water Heat Exchanger Tube Leak (malfunction CLG-6) is inserted at 100 gpm severity with a 0 second ramp time. CCW to the seal water Hx is isolated after RCS T_{avg} increases, or rod motion inward indicates dilution. The exercise is terminated after CCW to the seal water Hx is isolated and the CCW surge tank level decrease is verified to correspond to the VCT and HUT level increase.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CLG-6

TESTED OPTIONS: CLG-6

MALFUNCTION RANGES: Selected leak rate of 0-100 gpm, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full Power, BOL

FINAL CONDITIONS: The exercise is terminated and the malfunction is cleared when the CCW to seal water Hx is isolated and it is verified that the CCW surge tank level decrease corresponds to the VCT and HUT level increase.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/11/90

DURATION OF TEST: 1/2 hour

CRITICAL PARAMETERS MONITORED:

CCW Surge Tank Level
VCT Level
HUT Masses
RCS Tavg

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.2.7 Test Title: CCW Heat Exchanger Tube Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (8) - Loss of component cooling system or cooling to individual components

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. 1A CCW pump is running and 1B CCW pump is in standby. A CCW heat exchanger tube leak (malfunction CLG-7A) is inserted at a severity of 100 gpm with a ramp time of 0 seconds. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. 1B CCW pumps auto starts due to 1A CCW low discharge pressure. The exercise is terminated when the temperature increase in all CCW cooled components have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CLG-7A "HX 1A", CLG-7B "HX 1B"

TESTED OPTIONS: CLG-7A "HX 1A"

MALFUNCTION RANGES: Selected leak rate - 0-100 gpm; Select ramp time - 0-3600 seconds

FINAL CONDITIONS: 1A and 1B CCW pumps running, CCW low pressure/flow alarms, CCW Surge tank low level, components cooled by CCW high temperature and/or low flow alarms.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/15/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

CCW Surge Tank Level
CCW Pressure
CCW Flow
NRHX Outlet Temperature

TEST DEFICIENCIES:

TR 1766 R-17 Alarm
TR 1767 No K-28 Alarm

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.1 Test Title: Condensate Booster Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (9); Loss of normal feedwater or normal feedwater system failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL, with the A and B Condensate Booster pumps running and the C Condensate Booster pump in Auto not running. A Condensate Booster Pump Trip (malfunction CND-1) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the standby booster pump is running in AUTO, feedwater pump suction pressure has returned to normal, and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CND-1A "Pump 1A", CND-1B "Pump 1B", CND-1C "Pump 1C"

TESTED OPTIONS: CND-1A "Pump 1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Condensate Booster Pump 1A tripped, Condensate Booster Pump 1C running in AUTO, Feedwater pump suction pressure decreases until auto booster pump is up to speed.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED:

Condensate Pump Discharge Pressure
Booster Pump Discharge Pressure
Feedwater Pump A Suction Pressure
Feedwater Pump B Suction Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.2 Test Title: Main Condenser Tube Leak

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-8, 25% Power, BOL. A Main Condenser Tube Leak (malfunction CND-2) is inserted at a severity of 1000 gpm with a 0 second ramp time. Hotwell reject is manually stopped after verification of condensate storage tank level increasing. The exercise is terminated when the standby condensate pump auto starts, the tube bundle has been isolated and the hotwell level has stopped increasing.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CND-2A "Condenser 1A via MOV-3152", CND-2B "Condenser 1A via MOV-3154", CND-2C "Condenser 1B via MOV-3153", CND-2D "Condenser 1B via MOV-3155"

TESTED OPTIONS: CND-2A "Condenser 1A via MOV-3152",

MALFUNCTION RANGES: Select Leak Rate of 0-1000 gpm, Select ramp time of 0-3600 seconds.

FINAL CONDITIONS: Standby Condensate Pump running in AUTO, Turbine Plant Sampling Rack Trouble alarms actuated, Condenser 1A tube bundle 1A2 isolated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/11/89

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

Main Condenser 1B Hotwell Level
Main Condenser 1A Hotwell Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.3 Test Title: Hotwell Level Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (5) - Loss of condenser vacuum including loss of condenser level control. Section 3.1.2(d) Local site considerations.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. The 1A & 1B condensate pumps are in run, the 1C condensate pump is in Auto-standby. A hotwell level transmitter (LT-2006) failure (malfunction CND-3A) is inserted at 0" severity with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after the standby condensate pump starts.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CND-3A "LT-2006 Hotwell 1B" or CND-3B "LT-2006A Hotwell 1A"

TESTED OPTIONS: CND-3A "LT-2006 Hotwell 1B"

MALFUNCTION RANGES: Selected leak rate of 0-48", Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full Power, BOL, condensate pumps 1A & 1B running, condensate pump 1C in Auto-standby

FINAL CONDITIONS: Hotwell 1B indicated level 0", Hotwell 1A indicated level 48", CST level decrease, 1A, 1B, & 1C condensate pump running.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 1/2 Hour

CRITICAL PARAMETERS MONITORED:

Hotwell Level
Condensate Storage Tank Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.4 Test Title: Condensate Pump Failure

ANSI/ANS 3.5 RELATIONSHIP: 3.1.2(9) Loss of Normal Feedwater or Normal Feedwater System Failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% Power, MOL, with the 1A and 1B Condensate pumps running and the 1C Condensate pump in Auto-standby. A Condensate Pump Failure (malfunction CND-4) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the standby pump is running in AUTO, condensate pump discharge pressure increases to normal, feed pressures and flow return to normal, and all other expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CND-4A "Pump 1A", CND-4B "Pump 1B", CND-4C "Pump 1C"

TESTED OPTIONS: CND-4A "Pump 1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Condensate Pump 1A tripped, Condensate Pump 1C running in AUTO, condensate pump discharge pressure normal, feed pressures and flow normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/08/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: Condensate Pump Discharge Pressure
Booster Pump Discharge Pressure
Feed Pump Suction Pressure
Feed Pump Discharge Pressure
S/G A Feed Flow
S/G B Feed Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.6 Test Title: Condensate Trim Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(9) Normal Feedwater System Failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% Power, MOL with Condensate Pumps 1A and 1B running and Condensate pump 1C in standby. A Condensate Trim Valve Failure (malfunction CND-6) is inserted with a severity of 100% open at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the standby condensate pump starts and the condensate pump header pressure recover and stabilize.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CND-6A "Valve 9508D", CND-6B "Valve 9508G"

TESTED OPTIONS: CND-6B "Valve 9508G"

MALFUNCTION RANGES: Select Fail position - 0-100%, Select Ramp time - 0-3600 seconds

FINAL CONDITIONS: Affected valve indicates open, Standby Condensate Pump running, Condensate pump header pressure recovered and stable, Feed pump suction pressure returned to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/11/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED: Condensate Pump Header Pressure
Feed Pump Suction Pressure

TEST DEFICIENCIES: SM 89-43 Test 14.4.7.19.11, RPS did not sense FF/SF mismatch during Malfunction STM-11B

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.7 Test Title: Loss of Condenser Vacuum

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (5) - Loss of condenser vacuum including loss of condenser level control.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. An exhaust boot seal (East "1B") failure (malfunction CND-7A) is inserted at 900 scfm severity with a 0 second ramp time. Both priming ejectors are initiated after the reactor trips. The exercise is terminated after condenser pressure stabilizes at 21.7" Hg.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Failure of exhaust boot seal. CND-7A "East (1B)" or CND-7B "West (1A)"

TESTED OPTIONS: CND-7A "East (1B)"

MALFUNCTION RANGES: Selected leak rate of 0-900 scfm, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, 100% Power, BOL

FINAL CONDITIONS: Turbine tripped, Reactor tripped, Condenser pressure stable at 21.7" Hg

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: Condenser Pressure
Condensate Temperature
Reactor Power
Generator Output
Condenser Vacuum "HG"

TEST DEFICIENCIES: SM 90-81 Test 14.4.7.3.7, Alarm I-5 came in

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Don Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.3.8 Test Title: Condensate Pipe Break

ANSI/ANS 3.5 RELATIONSHIP: 3.1.2(9) Normal Feedwater System Failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-19, 100% Power, EOL. A Condensate Pipe Break (malfunction CND-8) is inserted with a severity of 20000 gpm at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the reactor trips on low steam generator water level.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select Leak Rate - 0-20000 gpm, Select Ramp time - 0-3600 seconds

FINAL CONDITIONS: Standby Condensate Pump running, Condensate Booster pumps tripped on low suction, Feed pressure and flow decreases, S/G level low, Reactor Tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/19/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:
Feed Pump A Suction Pressure
Feed Pump B Suction Pressure
S/G A Level
S/G B Level
Condensate Discharge Pressure
Hotwell 1B Level
S/G A Feed Flow
S/G B Feed Flow

TEST DEFICIENCIES: TR 1785

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hull Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.1 Test Title: Letdown Line Leak Inside Containment

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL, with the 1A boric acid and makeup water pumps in PULL-TO-LOCK, the 1B boric acid and makeup water pumps running, and the 60 gpm letdown orifice on service. A letdown line leak downstream of orifice valves inside containment (malfunction CVC-1) is inserted at a severity of 150 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the VCT level decreases to 5% and charging pump suction shifts to the RWST.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected leak rate of 0-300 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Containment radiation levels increase, Containment temperature increases, automatic makeup initiated, 1B boric acid and makeup water pumps start, VCT level 5%, charging pump suction shifted to RWST.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:
Letdown Flow
Letdown Pressure
Letdown Temperature
VCT Level
VCT Pressure
PZR Level
Charging Flow
Containment Area Radiation

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.2 Test Title: Letdown Line Leak Outside Containment

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(1b.2) - Loss of Coolant - Outside primary containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A letdown line leak downstream of 371 outside containment between FT-134 and PCV-135 (malfunction CVC-2) is inserted at 150 gpm at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the VCT level decreases to 20% and automatic makeup initiates.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected leak rate of 0-300 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: VCT level 20%, automatic makeup initiated, PCV-135 shut trying to maintain pressure, Aux Building radiation levels increase.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/11/89

DURATION OF TEST: 1.0 hours

CRITICAL PARAMETERS MONITORED:

VCT Level
VCT Pressure
Letdown Flow
Letdown Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hildt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.3 Test Title: Charging Line Leak Inside Containment

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Reactor Coolant Pressure and Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL with charging pump 1A off, 1B running in manual, and 1C in automatic. A charging line leak upstream of regenerative heat exchanger inside containment downstream of 370B (malfunction CVC-3) is inserted at 150 gpm at a 0 second ramp time. The charging flow controller is manually closed, isolating the leak, after the letdown isolation valves close. The exercise is terminated after alternate charging is established.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-3

TESTED OPTIONS: CVC-3 - Charging Line Leak Inside Containment, Upstream RHX

MALFUNCTION RANGES: Selected leak rate of 0-500 gpm, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full power, BOL, charging pump 1A is off, 1B is running in manual, and 1C is in automatic.

FINAL CONDITIONS: Charging pump suction shifted to the RWST, pressurizer heaters off, letdown isolated, alternate charging established.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: Charging Pump Outlet Pressure
VCT Level
Pressurizer Level
Containment Sump Level
Regen HX Letdown Outlet Temperature
Non-Regen HX Letdown Outlet Temperature
Charging Flow
Seal Injection Flow RCP 1A

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.4 Test Title: Make-up Control Failure in All Modes

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Make-up Control Failure in All Modes (malfunction CVC-4) is activated to fail off. The VCT letdown divert valve is positioned to the HUT position to decrease VCT level to below 20%. Automatic make-up does not occur. Make-up flow is attempted in the borate, dilute, and alternate dilute positions with no make-up flow being established. Manual operation is verified available for the reactor makeup flow and boric acid flow controllers, and the reactor makeup water and boric acid pumps. The exercise is terminated after verifying manual control is available for the flow controllers and pumps.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Make-up fails to the borate mode, Make-up fails to the dilute mode, or Make-up fails to "OFF".

TESTED OPTIONS: Make-up fails to "OFF"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Automatic make-up flow is not available in the borate, dilute, or alternate dilute modes. Manual control is available for the flow controllers and pumps.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/09/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.5 Test Title: Loss of CCW to Non-regenerative Letdown Hx

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (8) Loss of Component Cooling to Individual Components

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Loss of CCW to Non-regenerative Letdown Hx (malfunction CVC-5) is inserted at a severity of 50°F. The simulator is allowed to run with NO OPERATOR ACTION for until the VCT temperature increases to the high temperature alarm point. The temperature is placed in manual with the controller output lower to open the valve. The exercise is terminated when the VCT temperature returns to normal and demineralizer flow is restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected temperature of 0-2000°F

FINAL CONDITIONS: Temperature controller TCV-130 is in manual controlling temperature, Demineralizer flow and VCT temperature are restored to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: Letdown Temperature
VCT Temperature

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.6 Test Title: Letdown Orifice Isolation Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Volume Control System

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with letdown orifice 200B only in service. A Letdown orifice isolation valve failure (malfunction CVC-6) is activated to fail closed with a ramp time of 0 seconds. The simulator is allowed to run with NO OPERATOR ACTION for until the VCT level decreases to cause automatic makeup to initiate. A manual attempt is made to open the letdown orifice isolation valve. Letdown flow is established through orifice 200A. The exercise is terminated when the letdown flow is restored to normal through orifice 200A.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-6A "AOV-200A", CVC-6B "AOV-200B", or CVC-6C "AOV-202

TESTED OPTIONS: CVC-6B "AOV-200B"

MALFUNCTION RANGES: Selected failed position of closed or open, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: Letdown flow re-established through orifice 200A, Letdown flow is restored to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: Letdown Flow
Charging Flow
PZR Level
VCT Level

TEST DEFICIENCIES: None.

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.7 Test Title: Letdown Pressure Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Reactor Coolant Pressure and Volument Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Letdown Pressure Control Valve (malfunction CVC-7A) failure is inserted at 100% open with manual control available at a 0 second ramp time. The letdown pressure control is placed in manual with letdown pressure and flow returned to normal after letdown flow is diverted to the VCT. The exercise is terminated after letdown pressure and flow are restored manually to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-7A "Manual control available" or CVC-7B "Manual control not available"

TESTED OPTIONS: CVC-7A "Manual control available"

MALFUNCTION RANGES: Selected failed position of 0-100% open, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full Power, BOL

FINAL CONDITIONS: Letdown pressure control in manual with letdown pressure and flow restored to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: Letdown Flow
VCT Level
Letdown Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.8 Test Title: RCS Filter Plugged

ANSI/ANS 3.5 RELATIONSHIP: 3.1.2 (18) Failure of Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCS Filter Plugged (malfunction CVC-8) is inserted at severity of 100% with a ramp time of 120 seconds. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the letdown pressure control valve is full open, and the letdown line relief valve has actuated.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select blockage 0-100%, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: Letdown pressure control valve full open, Letdown line relief valve actuated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/09/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: Letdown Flow
Letdown Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.9 Test Title: VCT Divert Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Volume Control System.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A VCT Divert Control Valve Failure (malfunction CVC-9) is inserted at a severity of 100% (Zero flow to the VCT, Full flow to the HUT) with a ramp time of 5 seconds. The simulator is allowed to run with NO OPERATOR ACTION until the VCT level decreases to cause automatic makeup to initiate. An attempt is made to manually control the divert valve with no success. The exercise is terminated after the unsuccessful attempt to control the divert valve, the CCW Process radiation monitor levels have increased, and all other expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected failed position of 0-100% where 0 = Full flow to VCT and zero flow to HUT, and 100 = Zero flow to VCT and full flow to HUT, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: VCT Letdown divert valve is in HUT position, CCW process radiation monitor levels have increased, manual control of divert valve is unavailable, VCT level decreases to cause automatic makeup initiation.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/14/91

Test Number: 14.4.7.4.10 Test Title: VCT Level Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized in IC-12, 100% power, BOL. A VCT Level Transmitter (malfunction CVC-10A) failure is inserted at 100% at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the VCT empties and charging flow decreases to zero. When charging flow decreases to zero and charging header pressure decreases, the charging pump suction is manually shifted to the RWST. The exercise is terminated after charging header pressure and flow return to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria , or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R.E. Ginna Simulator Design Data Basis Documentation, and best estimate judgement where R.E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-10A "LT-112" or CVC-10B "LT-139"

TESTED OPTIONS: CVC-10A "LT-112"

MALFUNCTION RANGES: Selected failed position of 0-100%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Letdown flow diverted to the HUT. Charging pump suction manually shifted to RWST, VCT empty, Charging header pressure and flow restored to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/21/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED: VCT Level (112/139)
Charging Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.11 Test Title: Charging Line Leak Outside Containment

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1b.2) - Loss of Coolant - Outside primary containment. Failure of Reactor Coolant Pressure and Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL with charging pump 1A off, 1B running in manual, and 1C in automatic. A charging line leak upstream of HCV-142 outside containment (malfunction CVC-11) is inserted at 150 gpm at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after letdown isolates and PZR level decreases only due to seal leakoff.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-11, Charging Line Leak Outside Containment

TESTED OPTIONS: CVC-11, Charging Line Leak Outside Containment

MALFUNCTION RANGES: Selected leak rate of 0-500 gpm, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full power, BOL, charging pump 1A is off, 1B is running in manual, and 1C is in automatic.

FINAL CONDITIONS: Charging pump suction shifted to the RWST, pressurizer heaters off, letdown isolated, pressurizer low pressure, reactor tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 1.25 hours

CRITICAL PARAMETERS MONITORED: Charging Line Flow
VCT Level
Charging Pump Outlet Pressure
Pressurizer Pressure
Pressurizer Level
Regen HX Letdown Outlet Temperature
Non-Regen HX Letdown Outlet Temperature
RCP 1A Seal Injection Flow
Letdown Line Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Huff Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.12 Test Title: Charging Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR).

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with the CCP 1A off, CCP 1B running in manual, and CCP 1C in Automatic. A Charging Pump Trip (malfunction CVC-12) is inserted. The simulator is allowed to run with NO OPERATOR ACTION until the following indications are verified: Charging flow decrease, Seal injection flow decrease, Pzr level decrease, VCT level increase, and VCT pressure increase. An attempt is made to restart the tripped pump with no success. The 1A pump is started in manual, set at 30 gpm charging flow, and transferred to automatic when Pzr level is within the program band. The exercise is terminated when all expected indications have been verified and normal charging flow has been restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-12A "CCP 1A TRIP", CVC-12B "CCP 1B TRIP", CVC-12C "CCP 1C TRIP"

TESTED OPTIONS: CVC-12C "CCP 1C TRIP"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: CCP 1C tripped, CCP 1A running in automatic, Pzr level within program band, Charging flow restored to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/09/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: Charging Flow
VCT Level
PZR Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.13 Test Title: Boric Acid Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR).

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with the 1A Boric Acid pump in Pull-to-Lock, 1B Boric Acid pump in Automatic, and the Boric Acid flow controller in Auto. A Boric Acid Pump Trip (malfunction CVC-13) is inserted. Automatic makeup is initiated by positioning the VCT letdown divert valve to the HUT position. The VCT level decreases, reactor makeup water pump starts, Boric Acid Pump 1B trips after start attempt. Thirty seconds after the boric acid pump trips on attempted start, the blended flow to charging pump suction valve closes. When the VCT Level alarms, the VCT letdown divert valve is positioned to the VCT position. The 1B Boric Acid pump is place in Pull-to Lock, the 1A Boric Acid pump is placed in Auto. Makeup Control is placed in Start, makeup does not start. Makeup control is placed in off (reset), then start. Auto makeup initiates, 1A Boric Acid Pump starts. The exercise is terminated when all expected indications have been verified, 1A Boric Acid pump starts and auto makeup flow has been restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-13A "Pump 1A TRIP", CVC-13B "Pump 1B TRIP"

TESTED OPTIONS: CVC-13B "Pump 1B TRIP"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Boric Acid Pump 1B tripped, Boric Acid Pump 1A running in automatic, Automatic makeup initiated after reset.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.14 Test Title: RMWT Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR).

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with the 1A reactor makeup water pump in Pull-to-Lock, 1B pump in Automatic. A RMWT Pump Trip (malfunction CVC-14) is inserted. Automatic makeup is initiated by positioning the VCT letdown divert valve to the HUT position. When the VCT level decreases to cause auto makeup to initiate, the VCT letdown divert valve is repositioned to the VCT position. The Boric Acid pump starts, the Reactor Water Makeup Pump 1B does not start. Thirty seconds after the reactor makeup water pump does not start, the blended flow to charging pump suction valve closes. The 1B RMW pump is place in Pull-to Lock, the 1A RMW pump is placed in Auto. The 1A RMW pump starts. Makeup control is placed in off (reset), then start. Auto makeup initiates. The exercise is terminated when all expected indications have been verified, 1A RMW pump starts and auto makeup flow has been restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-14A "Pump 1A TRIP", CVC-14B "Pump 1B TRIP"

TESTED OPTIONS: CVC-14B "Pump 1B TRIP"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: RMW Pump 1B tripped, RMW Pump 1A running in automatic, Automatic makeup initiated after reset.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.15 Test Title: Boric Acid Flow Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Reactor Coolant Pressure and Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL and boric acid control set at 1.8 gpm. A Boric Acid Flow Transmitter (malfunction CVC-15) failure is inserted at 5.9 gpm at a 0 second ramp time. The VCT letdown divert valve is manually positioned to the HUT to cause auto makeup to initiate. The exercise is terminated after the blended flow to charging pump suction valve closes.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simluator response is evaluated against best estimate judgement where R.E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-15, Boric Acid Flow Transmitter Failure

TESTED OPTIONS: CVC-15, Boric Acid Flow Transmitter Failure

MALFUNCTION RANGES: Selected failed position of 0-10 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Blended flow to charging pump suction valve closed.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.17 Test Title: RWM to Blender Flow Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized in IC-16, 100% power, MOL. A RMW to Blender Flow Control Valve (malfunction CVC-17) failure is inserted at 0% open with a 0 second ramp time. The VCT letdown divert valve is manually positioned to the HUT position. When auto makeup initiates, the VCT letdown divert valve is positioned to the AUTO position. The simulator is allowed to run with NO OPERATOR ACTION for the remaineder of the exercise. The exercise is terminated when blended flow to the charging pump suction valve closes and boric acid and blended water flows decrease to zero.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R.E. Ginna Simulator Design Data Basis Documentation, and best estimate judgement where R.E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected failed position of 0-100%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Blended flwo to charging pump suction valve closed, Boric acid and blended water flows decrease to zero.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 09/11/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.18 Test Title: Charging Pump Speed Controller Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR).

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with CCP 1A in off, CCP 1B running in manual, and CCP 1C running in automatic. A Charging Pump Speed Controller Failure (malfunction CVC-18,) is inserted at a severity of 60 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until VCT level decreases to cause automatic makeup to initiate. The 1C CCP is tripped, the 1A CCP is started in manual with speed set to 30 gpm charging flow. When normal charging flow and pressure are maintained, the 1A CCP is placed in Auto and the 1C CCP is placed in Manual. The exercise is terminated when all expected indications have been verified and the 1A CCP is operating in automatic with normal charging flow and pressure being maintained.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-18A "CCP 1A Trip", CVC-18B "CCP 1B Trip", CVC-18C "CCP 1C Trip"

TESTED OPTIONS: CVC-18C "CCP 1C Trip"

MALFUNCTION RANGES: Select final pump output 15-60 gpm, Select ramp time 0-3600 seconds.

FINAL CONDITIONS: 1C CCP tripped and placed in manual, 1A CCP operating in Automatic maintaining normal charging flow and pressure, Pzr level deviation alarm clear.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: 0.30 hours

CRITICAL PARAMETERS MONITORED: Charging Flow
VCT Level
PZR Level
PZR Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.19 Test Title: Plugged Seal Injection Filter

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Reactor Coolant Pressure and Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL with charging pump 1A in off, 1B running in manual, and 1C running in automatic. A Plugged Seal Injection Filter (malfunction CVC-19) is inserted at 100% severity at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after the RCP's labyrinth seal differential pressure decreases to the alarm point.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-19, Plugged Seal Injection Filter

TESTED OPTIONS: CVC-19, Plugged Seal Injection Filter

MALFUNCTION RANGES: Selected blockage of 0-100%, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full Power, BOL, 1A charging pump - off, 1B charging pump - running in manual, 1C charging pump - running in automatic.

FINAL CONDITIONS: RCP's labyrinth seal differential pressure decreases to the alarm point.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: RCP Labyrinth Seal Differential Pressure
RCP Seal Water Inlet Temperature
Charging Flow
RCP 1A Seal Injection Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.21 Test Title: Boric Acid Storage Tank Leak

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with SI-HS-826 A & C open and SI-HS-826 B & D closed. A Boric Acid Storage Tank Leak (malfunction CVC-21) is inserted at a severity of 1000 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until SI pump suction transfers from the boric acid tanks to the RWST. When the SI pump suction transfer is complete, valves 331 and 827A are closed using local operator actions and the boric acid tank 1B level stabilizes. The exercise is terminated after valves 331 and 827A are closed and the level of boric acid tank 1B has stabilized.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-21A "BAT 1A", CVC-21B "BAT 1B"

TESTED OPTIONS: CVC-21A "BAT 1A", Local operator actions for open and closing valves 331 and 827A where used during the performance of this test.

MALFUNCTION RANGES: Select leak rate of 0-1000 gpm, Select ramp time 0-3600 seconds.

FINAL CONDITIONS: Boric Acid Tank 1A empty, Boric Acid Tank 1B stable, SI Pump suction transferred to RWST, Valves 331 and 827A closed by local operator action.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 0.50 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 88-78 1B BAST level not stable with 1A tank isolated

R. E. GINNA
FORM GSS-2.6-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulmt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.22 Test Title: Regenerative Letdown HX Tube Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Regenerative Letdown Heat Exchanger Tube Leak (Malfunction CVC-22) is inserted at a severity of 50 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until verification off all expected indications is complete. An attempt to manually borated rods out proceeds very slowly due to most of the charging flow being recirculated back to the VCT. The exercise is terminated when all expected indications have been verified.

If a step is performed and the reponse of the simulator does not meet the acceptance criteria or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R.E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R.E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select leak rate of 0-100 gpm, Select ramp time 0-3600 seconds.

FINAL CONDITIONS: Regen HX letdown outlet temperature decreases, Letdown temperature controller decreases CCW flow to Non-regen HX, Letdown line radiation level decreases, Any boration or dilution will have no significant impact on RCS temperature or rod position.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: 0.50 hours

CRITICAL PARAMETERS MONITORED:

Letdown Temperature
R-9 Radiation Level
PZR Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.6-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.23 Test Title: Letdown Line Safety Valve Fails Open

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) Process instrumentation, alarms, and control system failures. Section 3.1.2 (18) Failure of Reactor Coolant Pressure and Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Letdown Line Safety Valve Fails Open (malfunction CVC-23) is inserted. The letdown divert valve is manually positioned to the HUT. The exercise is terminated after the expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R.E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-23, Letdown Line Safety Valve Fails Open

TESTED OPTIONS: CVC-23, Letdown Line Safety Valve Fails Open

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: IC-12, Full Power, BOL

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/06/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

Pressurizer Level
Letdown Flow
VCT Level
Relief Valve 209 Flow to VCT

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.24 Test Title: Charging Backpressure Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with the alternate charging isolation valve opened by local operator action. A Charging Backpressure Control Valve Failure (malfunction CVC-24) is inserted at a severity of 0% open with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until letdown flow diverts and letdown flow indicates fluctuations as flashing starts. Flow through the normal charging path is restored by opening valve 384C using local operator action. The exercise is terminated when the normal charging flow path has been restored and all indications have returned to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: Local operator actions for the alternate charging isolation valve open and closed, and normal charging flow path through V-384C open and closed.

MALFUNCTION RANGES: Select fail position of 0-100% open, Select ramp time 0-3600 seconds.

FINAL CONDITIONS: Alternate charging valve 392B opens when charging pump pressure is 250 psi greater than RCS and closed when normal charging path is restored through 384C, Letdown flow diverted, Normal charging flow path established through V-384C.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/18/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: Letdown Temperature
Letdown Flow
Charging Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.25 Test Title: VCT H2 Pressure Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) Failure of Volume Control Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A VCT H2 Pressure Control Valve Failure (malfunction CVC-25) is activated to fail open with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until VCT pressure reaches 75 psi and stabilizes (VCT relief valve relieves to the HUT). The malfunction is removed and the H2 pressure regulator (PCV-141) is reset to 39.7 psia using local operator action (VCT pressure remains high). The VCT vent valve is opened. VCT pressure decreases, but cannot be lowered below the setpoint of the H2 pressure regulator. The exercise is terminated when the VCT pressure has been restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Failed open or Failed Closed.

TESTED OPTIONS: Failed Open. The local operator action for setting the H2 pressure regulator (PCV-141) is used during the performance of this test.

MALFUNCTION RANGES: Select fail position of open or closed, Select ramp time 0-3600 seconds.

FINAL CONDITIONS: H2 pressure regulator (PCV-141) reset to 39.7 psia, VCT pressure restored to normal, RCP seal flow restored to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 0.50 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulbert Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.4.27 Test Title: Charging Pump Suction Line Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1b.2) - Loss of Coolant - Outside primary containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to Hot Shutdown, 8 hours after trip, with 1A charging pump off, 1B charging pump running in manual, and 1C charging pump running in automatic. A Charging Pump Suction Line (malfunction CVC-27C) failure is inserted at 100 gpm at a 0 second ramp time. The 1C charging pump is tripped, 1B charging pump speed is increased, and the leak is manually isolated by Local Operator Action after the charging pump suction shifts to the RWST. The exercise is terminated after the leak is verified isolated.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: CVC-27A (charging pump 1), CVC-27B (charging pump 2), CVC-27C (charging pump 3).

TESTED OPTIONS: CVC-27C (charging pump 3) at a leak rate of 100 gpm and ramp time of 0 seconds. Local Operator Action V-399 - Open, Closed

MALFUNCTION RANGES: Selected leak rate of 0-100 gpm, Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-9, Hot Shutdown, 8 hours after trip, 1A charging pump - off, 1B charging pump - running in manual, and 1C charging pump - running in automatic

FINAL CONDITIONS: Charging pump suction transferred to RWST, Leak isolated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: Pressurizer Level
Charging Flow
VCT Level
RWST Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.1 Test Title: Loss of Off-Site Power

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3a) - Loss or degraded electrical power to the station, including loss of offsite power.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-8, 25% power, with Ckt 767 closed supplying the station auxiliary transformer and Ckt 751 open. A Loss of Offsite Power (malfunction EDS-1B) is inserted. The diesel generators will start within 10 seconds and re-energize the busses. The selected CCW pumps will restart. The selected service water pumps will restart 40 seconds after the busses are re-energized. The 1A Condensate booster pump is verified not to start. The exercise is terminated after the busses are verified re-energized, and components lost are re-started.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: EDS-1A (CKT 751), EDS-1B (CKT 767)

TESTED OPTIONS: EDS-1B (CKT 767)

MALFUNCTION RANGES: Select time between losses of 0-3600 seconds if EDS-1A and EDS-1B are both selected.

FINAL CONDITIONS: Emergency Diesel Generators running, Busses re-energized, Components lost are re-energized with the except of 1A Condensate booster pump.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/18/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Bus 12A Voltage
Bus 12B Voltage
Bus 14 Voltage
Bus 16 Voltage
Bus 17 Voltage
Bus 18 Voltage
Inst Bus B Voltage
34KV Bus Voltage

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hill Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.2 Test Title: Loss of Station Service Transformer

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3d) - Loss or degraded electrical power to the station, including loss of power to the plant's electrical distribution buses.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL, with 1A CCP and 1A CCW pumps running and 1B CCW pump in automatic. A Loss of Station Service Transformer (malfunction EDS-2B) is inserted. The simulator is allowed to run with NO OPERATOR ACTION until the diesel generator starts and picks up the lost bus. When the diesel generator picks up the lost bus, the loads that where lost are verified not to have re-energized and are manually restarted. The exercise is terminated after the components lost are re-started. This test is repeated for EDS-2E and EDS-2F.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: EDS-2A (Xfmr #13), EDS-2B (Xfmr #14), EDS-2C (Xfmr #15), EDS-2D (Xfmr #16), EDS-2E (Xfmr #17), EDS-2F (Xfmr #18)

TESTED OPTIONS: EDS-2B (Xfmr #14); EDS-2E (Xfmr #17); EDS-2F (Xfmr #18)

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Emergency Diesel Generator 1A running supply bus 14, Components lost are re-started.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/30/90

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED: Bus 14 Voltage
Inst Bus B Nominal Voltage

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.3 Test Title: Loss of Number 11 Aux Transformer

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3d) - Loss or degraded electrical power to the station, including loss of power to the plant's electrical distribution buses.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Loss of Number 11 Aux Transformer (malfunction EDS-3) is inserted. The Bus 11A and 11B feeder breakers trip, the bus 13 and 15 feeder and supply breakers trip. Attempt to start the loads that where lost, verify they will not start. The exercise is terminated when the components powered from Bus 11A, 11B, 13 and 15 are verified not to start.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Reactor tripped, Busses 11A, 11B, 13 and 15 are de-energized

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/21/89

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: Bus 11A Voltage
Bus 11B Voltage
Bus 13 Voltage
Bus 15 Voltage
Inst Bus D Voltage

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.4 Test Title: Loss of Emergency Bus

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(3b) - Loss or degraded electrical power to the station, loss of emergency power.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Loss of Emergency Bus (malfunction EDS-4B) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after the emergency diesel generator starts but does not pick up load, the bus is verified de-energized, and components do not respond to attempts to re-start them.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: EDS-4A (480V Bus 14), EDS-4B (480V Bus 16), EDS-4C (480V Bus 17), EDS-4D (480V Bus 18)

TESTED OPTIONS: EDS-4B (480V Bus 16), EDS-4A (480V Bus 14), EDS-4C (480V Bus 17), EDS-4D (480V Bus 18)

MALFUNCTION RANGES: N/A

INITIAL CONDITIONS: IC-12, Full Power, BOL

FINAL CONDITIONS: 480V Bus 16 de-energized, Emergency Diesel Generator 1B running, not loaded.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SDR 90-210 MRPI CRT did not fail

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulm Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.5 Test Title: Loss of DC Bus

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3e.2) - Loss or degraded electrical power to the station, including loss of power to the individual instrumentation buses (DC) that provide power to the control room indication or plant control functions affecting the plant's response.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with control power for the 4160V breakers selected to DCA by local operator action. A Loss of 125VDC 1A Bus (malfunction EDS-5A) is inserted. The 125 VDC Bus A voltage decreases to zero, all control and indication power for all components connected to the 125 VDC Bus A is lost. Control power is manually re-energized to buses 11A, 11B, 12A and 12B. The exercise is terminated after verification that control power is available to the components on buses 11A, 11B, 12A and 12B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: EDS-5A (125 VDC Bus 1A), EDS-5B (125 VDC Bus 1B)

TESTED OPTIONS: EDS-5A (125 VDC Bus 1A)

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: 125 VDC Bus 1A de-energized, Control power transferred for busses 11A, 11B, 12A, and 12B

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/18/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.6 Test Title: Loss of Switchyard (Station Blackout)

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3a) - Loss or degraded electrical power to the station, including loss of power offsite power.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A complete loss of offsite power (malfunction EDS-6) is inserted to simultaneously trip Ckts 767 and 751. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after the emergency diesel generators start, re-energize the 480V Safeguard busses, the CCW pumps have restarted, and the service water pumps have sequenced onto the D/G's.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Choice of loss mode "Sequential" (Ckt 767 and 751 breaker trips are at one minute intervals), "Fast" (Simultaneous trip of Ckt 767 and 751 breakers)

FINAL CONDITIONS: Reactor tripped, Emergency Diesel Generators started re-energizing the 480V Safeguard busses.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 06/29/89

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED:

Bus 11A Voltage
Bus 11B Voltage
Bus 12A Voltage
Bus 12B Voltage
Bus 13 Voltage
Bus 14 Voltage
Bus 15 Voltage
Bus 16 Voltage
Bus 17 Voltage
Bus 18 Voltage

TEST DEFICIENCIES: SM 87-17 PT-950 and PT-474 power supplies incorrect

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.5.7 Test Title: Loss of Instrument Bus Supply

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3e.1) - Loss or degraded electrical power to the station, including loss of power to the individual instrumentation buses (AC) that provide power to the control room indication or plant control functions affecting the plant's response; Section 3.1.2 (11) - Loss of Protective system Channel

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A loss of instrument bus supply (malfunction EDS-7B) due to feeder breaker trip is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after verification that the bistables for the affected channel are tripped (Channel I and II) and the instrumentation powered by the affected channel are de-energized. This test is repeated for Malfunctions EDS-7A, EDS-7C and EDS-7D.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: EDS-7A "Bus 1A (red)", EDS-7B "Bus 1B (white)", EDS-7C "Bus 1C (blue)", EDS-7D "Bus 1D (yellow)"

TESTED OPTIONS: EDS-7B "Bus 1B (white)", EDS-7A (red), EDS-7C (blue), EDS-7D (yellow)

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Instrument Bus 1B de-energized, Channel I and II bistable lights de-energized, all instrumentation power from instrument bus 1B de-energized.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES:

SDR 90-318 "B" FRV did not fail in auto
SDR 90-321 Auto charging pump went to minimum
SM 91-012 EHC did not shift to imp out
SM 90-064 P-2 - Low power auto feed W/D blocked - status light did not come on

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.1 Test Title: Feedwater Suction Header Break

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (9) - Loss of normal feedwater or normal feedwater system failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with 1A and 1B condensate pumps running and 1C condensate pump in standby. A feedwater suction header break (malfunction FDW-1) is inserted at a severity of 15,600 gpm with a ramp time of 0 seconds. The simulator is allowed to run with NO OPERATOR ACTION until the condensate booster pumps trip. The condensate pumps are stopped and the hotwell level stabilizes. The exercise is terminated when the reactor trips and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected leak rate of 0-15,600 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Condensate bypass valve open, Feed pump recirculation valves open, Main Feed pumps tripped, Turbine tripped, Reactor tripped, Auxiliary feed pumps start, Standby condensate pump started, Makeup Valves open, S/G low feed flow and low level alarms, Circulating Water pumps tripped, Steam Dump Valves close, Condensate Booster Pumps Tripped, Condensate Pumps stopped, Hotwell level stable.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 09/25/89

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED:

S/G A Water Level
S/G B Water Level
Condensate Pump Discharge Header Pressure
Condensate Booster Pump Discharge Header Pressure
Condensate Storage Tank Level
Hotwell Level East
Hotwell Level West

TEST DEFICIENCIES: SM 90-05 Test 14.4.7.6.1 MFW pumps trip but cause not apparent

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.2 Test Title: Feedwater Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (9) - Loss of normal feedwater or normal feedwater system failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A feedwater pump trip (malfunction FDW-2A) due to overcurrent is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the reactor trips and all auxiliary feed pumps start.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-2A "Pump 1A", FDW-2B "Pump 1B"

TESTED OPTIONS: FDW-2A "Pump 1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: S/G low feed flow and low level alarms, reactor tripped, auxiliary feed pumps started.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED:

S/G A/B Feed Flow
S/G A/B Steam Flow
S/G A/B Level
RCS Tavg
RCS Avg Tavg

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.4 Test Title: Feedwater Pump Lube Oil System Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.3(9) - Loss of normal feedwater or normal feedwater failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to 100% power, BOL. A Feedwater Pump Lube Oil System (malfunction FDW-4) is inserted for pump 1A at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after feedwater pump 1A trips.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Pump 1A, Pump 1B

TESTED OPTIONS: Pump 1A

MALFUNCTION RANGES: Selected ramp time of 0-3600 seconds.

INITIAL CONDITIONS: IC-12, Full Power, BOL

FINAL CONDITIONS: Feedwater Pump 1A tripped

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: .1 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.5 Test Title: Feedline Leak Between Flow Element Check Valve

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20d) - Main feed line break outside of containment

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with the "A" and "B" Feed Reg Valve Bypass Valves in automatic. A feedline leak between the flow element and the check valve (malfunction FDW-5) is inserted at a severity of 3.7 x 10^6 lbm/hr with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after leak flow stops when all FRV's and bypass valves close on feedwater isolation.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-5A (S/G 1A), FDW-5B (S/G 1B)

TESTED OPTIONS: FDW-5A (S/G 1A)

MALFUNCTION RANGES: Selected leak rate of 0 - 3.7 x 10^6 lbm/hr, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Reactor tripped, Turbine tripped, Hotwell makeup initiated, Motor driven auxiliary feed pumps started, S/G B level normal, S/G A level low, All FRV's and bypass valves close on feedwater isolation, Leak flow terminated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/10/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

S/G A Water Level
S/G B Water Level
S/G A Feed Flow
S/G B Feed Flow

TEST DEFICIENCIES: TR 1790 Retention Tank Level

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.6 Test Title: Feed Flow Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with feed flow transmitter FT-466 controlling S/G A flow. A Feed Flow Transmitter Failure (malfunction FDW-6) is inserted at a severity of 0 lbm/hr with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the 1A FRV commences cycling at 67% S/G level and the S/G A High level bistables commence cycling on and off. The feed flow transmitter FT-467 is manually transferred to controlling S/G A flow. The exercise is terminated when all expected indications have been verified and proper level control of S/G A is reestablished.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-6A "FT-466", FDW-6B "FT-467", FDW-6C "FT-476", FDW-6D "FT-477"

TESTED OPTIONS: FDW-6A "FT-466"

MALFUNCTION RANGES: Select failed value of 0-3.7 x 10^6 lbm/hr, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: Feed Flow Transmitter FT-467 is controlling S/G A flow, S/G A level control is reestablished.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED:

S/G A Feed Flow
S/G A Water Level
S/G A Feed Flow

TEST DEFICIENCIES: SM 88-04 FRV response on FF transmitter failure low

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.7 Test Title: Feed Regulating Valve Control Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Feed Regulating Valve Control Failure (malfunction FDW-7, Controller output fails to selected value) is inserted at a severity of 0% open with manual control available at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the expected indications have been verified and the S/G B level Deviation alarm has actuated. The failed controller is placed in the manual mode of operation and normal feed flow is restored to the B S/G. The exercise is terminated when S/G B feed flow and level have been restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.,

AVAILABLE OPTIONS: FDW-7A "FCV-466 Manual Control Available", FDW-7B "FCV-466 Manual Control Not Available", FDW-7C "FCV-476 Manual Control Available", FDW-7D "FCV-476 Manual Control Not Available", FDW-7E "FCV-4271 Manual Control Available", FDW-7F "FCV-4271 Manual Control Not Available", FDW-7G "FCV-4272 Manual Control Available", FDW-7H "FCV-4272 Manual Control Not Available",

TESTED OPTIONS: FDW-7C "FCV-476 Manual Control Available"

MALFUNCTION RANGES: Select failed value of 0-100% open, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: Feed Regulating Valve Controller FCV-476 in manual control, Normal feed flow and level restored to S/G B.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.8 Test Title Feedline Break Outside Containment Downstream of Check Valve

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20) - Main feed line break outside of containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% power, MOL. A feedline break between the check valve and the manual stop valve (malfunction FDW-8) is inserted at a severity of 2 x 10^6 lbm/hr at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until SI initiates. Auxiliary feedwater is secured to S/G A until S/G A pressure decreases to zero. Auxiliary feedwater is then restored to S/G A. The exercise is terminated after S/G A level starts to recover.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-8A (S/G 1A), FDW-8B (S/G 1B)

TESTED OPTIONS: FDW-8A (S/G 1A)

MALFUNCTION RANGES: Selected leak rate of 0 - 20 x 10^6 lbm/hr, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Reactor tripped, Turbine tripped, SI initiated, S/G B level normal, S/G A depressurized with level recovering.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED:

Control Rod Bank D Group 1/2 Position
S/G 1A Feed Flow
S/G 1A Steam Flow
S/G 1A Narrow Range Level
S/G 1B Narrow Range Level
S/G 1A Wide Range Level
S/G 1A Pressure
S/G 1B Pressure
Reactor Power
RCS Tcold
RCS Pressure

TEST DEFICIENCIES: SDR 90-234 No rod motion noted

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hull Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.9 Test Title: Feedline Break Inside Containment

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20c) - Main feed line break inside of containment

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A feedline break inside the containment (malfunction FDW-9A) is inserted at a severity of 2×10^7 lbm/hr at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after S/G A blows dry, SI initiates, and S/G B level returns to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-9A (S/G 1A), FDW-9B (S/G 1B)

TESTED OPTIONS: FDW-9A (S/G 1A)

MALFUNCTION RANGES: Selected leak rate of 0 - 20×10^6 lbm/hr, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Reactor tripped, Turbine tripped, SI initiated, S/G B level normal, S/G A blown dry.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/17/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Control Rod D Position
Containment Pressure
Containment Temperature
S/G A/B Feed Flow
S/G A/B Steam Flow
S/G A/B Narrow Range Level
S/G A/B Pressure
Nuclear Power
RCS Loop A Delta T
RCS Loop B Delta T
RCS Avg Tavg

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.10 Test Title: Feed Regulating Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (9) - Normal feedwater system failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% power, BOL. A Feed Regulating Valve Failure (malfunction FDW-10, Mechanical failure of valve to selected value) is inserted at a severity of 100% open with at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified, S/G B high level status light actuate, and S/G B level continues to increase.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-10A "FCV-466", FDW-10B "FCV-476"

TESTED OPTIONS: FDW-10B "FCV-476"

MALFUNCTION RANGES: Select failed position of 0-100% open, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: S/G B feed flow increases, Feed Regulating Valve Controller FC-476 output decreases to zero, Power increases, Control Rods Step out, S/G B level continues to increase.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

S/G A Steam Flow
S/G A Feed Flow
S/G B Steam Flow
RCS Loop A Delta T
RCS Loop B Delta T
Average Tavg

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.11 Test Title: Auxiliary Feedwater Pump Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(23) Passive malfunction in systems such as Emergency Feedwater System.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, 1 hour after trip with 1A MDAFP secured and 1B MDAFP supplying both S/G's. An auxiliary feedwater pump failure (malfunction FDW-11B) due to overcurrent is inserted. The simulator is allowed to run with NO OPERATOR ACTION the S/G level deviation alarms actuate. The 1A MDAFP is manually started to return feed flow and pressure to normal. The exercise is terminated when auxiliary feed flow and pressure are restored and the S/G levels are increasing.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-11A "MDAFP 1A", FDW-11B "MDAFP 1B"

TESTED OPTIONS: FDW-11B "Pump 1B"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: MDAFP 1A running supplying feed flow to both S/G's, Auxiliary feed flow and pressure restored, S/G level increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/29/90

DURATION OF TEST: .75 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SDR 89-252 G-3/G-5 Annunciators did not alarm

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.12 Test Title: AFW Turbine Driven Pump Speed Control Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, 1 hour after trip with the motor driven auxiliary feedwater pumps (MDAFP) 1A and 1B off and the turbine drive auxiliary feedwater pump (TDAFP) operating. An AFW Turbine Driven Pump Speed Control (malfunction FDW-12) failure is inserted at a severity of 5100 rpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the TDAFP trips on overspeed and the S/G level deviation alarms actuate. Auxiliary feedwater is then restored by manually starting steam generator auxiliary feedwater pumps 1A and 1B. The exercise is terminated after auxiliary feed flow is reestablished and S/G level starts to recover.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-12, AFW turbine driven pump speed control failure.

TESTED OPTIONS: FDW-12

MALFUNCTION RANGES: Selected pump flow output of 0-5100 rpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: IC-5, Hot Shutdown, 1 hour after trip, MDAFP's 1A and 1B - operating, TDAFP - tripped

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.13 Test Title: AFW Pump Suction Line Break

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(23) - Passive malfunction in Emergency Feedwater System.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot Shutdown, 1 hour after trip, with MDAFP's 1A and 1B operating. An AFW Pump Suction Line Break (malfunction FDW-13) is inserted at a severity of 600 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the affected AFW Pump trips on overcurrent, the affected S/G level decreases slowly, and the condensate storage tank level decreases. The leak is isolated using local operator actions. The exercise is terminated after the leak is isolated and the condensate storage tank level stabilizes.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-13A (MDAFP 1A), FDW-13B (MDAFP 1B), FDW-13C (TDAFP)

TESTED OPTIONS: FDW-13B (MDAFP 1B). The following local operator actions where used during the performance of this test: V-4018 - Open, Close; V-4026 - Open, Close; V-4344 - Open, Close.

MALFUNCTION RANGES: Selected leak rate of 0-600 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: MDAFP 1B tripped, Aux feed flow to S/G B decreases to zero, S/G B level decreasing slowly, Condensate Storage tank level decreases until leak is isolated, Leak Isolated, Leak flow terminated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/14/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR 1811 Malf FDW-13 discrepancies

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.14 Test Title: AFW Feed Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, 1 hour after trip with MOV's 4000A and 4000B shut. An AFW Feed Control Valve Failure (malfunction FDW-14, Valve fails to selected position) is inserted at a severity of 100% open at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the expected indications have been verified and the S/G A level Deviation alarm has actuated. An attempt is made to close the affected valve with no success. The exercise is terminated when all expected indications have been observed and attempts to control the affective valve are unsuccessful.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-14A "V-4297", FDW-14B "V-4298", FDW-14C "V-4008", FDW-14D "V-4007", FDW-14E "V-4480", FDW-14F "V-4481"

TESTED OPTIONS: FDW-14E "V-4480"

MALFUNCTION RANGES: Select failed value of 0-100% open, Select ramp time of 0-3600 seconds

FINAL CONDITIONS: Aux feed flow to S/G A increases, Aux feed flow to S/G B remains constant, S/G A level increasing, S/G B level remains constant, S/G A level deviation alarm actuated, No control of valve V4480.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: .25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.15 Test Title: Standby Auxiliary Feedwater Pump Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(23) Passive malfunction in systems such as Emergency Feedwater System.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, 1 hour after trip with 1A & 1B MDAFP and 1D SAFP secured and 1C SAFP supplying both S/G's. A standby auxiliary feedwater pump failure (malfunction FDW-15A) due to overcurrent is inserted. The simulator is allowed to run with NO OPERATOR ACTION the S/G level deviation alarms actuate. The 1D SAFP is manually started to return feed flow and pressure to normal. The exercise is terminated when standby auxiliary feed flow has been re-established.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-15A "SAFP 1C", FDW-15B "SAFP 1D"

TESTED OPTIONS: FDW-15A "SAFP 1C"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: SAFP 1D running supplying feed flow to both S/G's, Standby aux feed discharge pressure and flow returned to normal, S/G level increasing slowly.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/14/89

DURATION OF TEST: .75 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.16 Test Title: AFW Pump Discharge Line Rupture

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(23) Passive malfunctions in systems such as Emergency Feedwater Systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, 1 hour after trip with the motor driven auxiliary feedwater pumps (MDAFP) 1A and 1B in service. An AFW Pump Discharge Line Rupture (malfunction FDW-16B) is inserted at a severity of 200 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after the expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FWD-16A - "MDAFP 1A", FWD-16B - "MDAFP 1B", FWD-16C - "TDAFP"

TESTED OPTIONS: FWD-16B "MDAFP 1B"

MALFUNCTION RANGES: Selected leak rate of 0-200 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: IC-5, Hot Shutdown, 1 hour after trip, MDAFP's 1A and 1B - operating, TDAFP - off, S/G B level decreasing, CST level decreasing

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 3/4 hour

CRITICAL PARAMETERS MONITORED:

S/G A Aux Feed Flow
S/G B Aux Feed Flow
S/G A NR Level
S/G B NR Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.6.17 Test Title: Main Feedwater Pump Fails to Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% power, MOL. A Main Feedwater Pump Fails to Trip (malfunction FDW-17, Trip coil fails to energize) is activated. A Safety Injection signal is manually initiated. The simulator is allowed to run with NO OPERATOR ACTION until the expected indications have been verified. An attempt to manually trip the feedwater pump is made with no success. The exercise is terminated when all expected indications have been observed and attempts to trip the affective feedwater pump are unsuccessful.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: FDW-17A "Feedwater Pump 1A", FDW-17B "Feedwater Pump 1B"

TESTED OPTIONS: FDW-17A "Feedwater Pump 1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Plant response to the SI is normal except that Main Feed pump 1A continues to run, S/G levels increase, Feed control valves close, Recirc valve to the condenser (CV-18, AOV-4262) opens, Attempts to manually trip the feed pump are unsuccessful.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/14/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR 1812 Pump Recirc Valve did not open fully.
Feed pump light load did not alarm.

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.7.1 Test Title: Main Generator Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (16) - Generator Trip

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Main Generator Trip (malfunction GEN-1) due to loss of exciter field current is inserted. The simulator is allowed to run with NO OPERATOR ACTION until the main turbine shaft rotation has completely stopped. The shaft turning gear is engaged and started (local operator action) when the turbine shaft has stopped. The exercise is terminated after the main turbine has been placed on the shaft turning gear and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Generator trip due to 1) Generator ground, 2) Loss of exciter field current, 3) Generator differential current, 4) Negative sequence, or 5) Main generator field breaker trip

TESTED OPTIONS: Generator trip due to loss of exciter field current

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: 4KV bus auto transferred (11A - 12A Tie Closed, 11B - 12B Tie Closed, 11A & B Normal Feeders open), Generator tripped and locked out, Turbine tripped, Reactor tripped, Steam dumps modulate to maintain T_{avg} at no load T_{avg}, Pzr pressure and level steady at no load value, MDAFP's 1A & 1B and TDAFP running supplying feed to both S/G's, S/G level increasing

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/88

DURATION OF TEST: 2.25 hours

CRITICAL PARAMETERS MONITORED:

Tavg	Nuclear Power
Charging Flow	Pressurizer Pressure
Pressurizer Level	S/G A Pressure
S/G B Pressure	S/G A Level
S/G B Level	S/G A Feed Flow
S/G B Feed Flow	Turbine Speed

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.7.3 Test Title: Main Generator Voltage Regulator Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Main Generator Voltage Regulator (malfunction GEN-3) Failure is inserted at a severity of 120% with a 200 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the auto voltage regulator trips. The voltage regulator control switch is placed in off, and the generator voltage is controlled using the base adjuster controller. The exercise is terminated after the expected indications have been verified and the generator voltage is being controlled using the base adjuster controller.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: GEN-3

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected percent of voltage 80-120% of normal voltage, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: IC-12, 100% Full Power, BOL, Generator Voltage being controlled manually using the base adjuster controller.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED:

Gen MVARS
Gen Voltage
Voltage Regulator Milliamps
Exciter Field Current
Generator Current

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hull Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.7.4 Test Title: Diesel Generator Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3c) - Loss or degraded electrical power to station, loss of emergency generators

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Diesel generator 1A is manually started and paralleled to Bus 14. A Diesel Generator Trip under all conditions (malfunction GEN-4) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: GEN-4A "Diesel 1A", GEN-4B "Diesel 1B"

TESTED OPTIONS: GEN-4A "Diesel 1A" - Generator trip due all conditions (overcrank, overspeed, lo-lo oil pressure, manual pushbutton, overcurrent, or reverse power)

MALFUNCTION RANGES: Generator trip due all conditions (overcrank, overspeed, lo-lo oil pressure, manual pushbutton, overcurrent, or reverse power), Generator trip except during an SI (will not trip due to manual pushbutton, overcurrent, or reverse power)

FINAL CONDITIONS: Diesel Generator 1A-Bus 14 breaker tripped, Diesel Generator 1A tripped

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/14/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hiedt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.7.5 Test Title: Diesel Generator Failure to Load

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3c) - Loss or degraded electrical power to station, loss of emergency generators

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. 1B CCW pump is started and 1A CCW pump is placed in auto. A Diesel Generator Failure to Load (malfunction GEN-5) is inserted at a selected load of 100 Kw and a selected droop of 1 rpm/Kw. The normal supply breaker to Bus 14 is tripped. The 1A CCW pump is started when the 1A D/G has started and is supplying Bus 14. Additional loads are started on Bus 14 to observe the continued degradation of frequency and voltage. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: GEN-5A "Diesel 1A", GEN-5B "Diesel 1B"

TESTED OPTIONS: GEN-5A "Diesel 1A"

MALFUNCTION RANGES: Select load 0.0-1950 Kw, Select droop 0.1 - 10 rpm/Kw

FINAL CONDITIONS: D/G 1A running supplying Bus 14, D/G 1A frequency and voltage degraded dependent on loads started.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: D/G A Voltage
D/G A Frequency
D/G A RPM

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.7.6 Test Title: Diesel Generator Breaker Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (3c) - Loss or degraded electrical power to station, loss of emergency generators

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Diesel generator 1A is manually started and placed in parallel operation supplying 1000 Kw. A Diesel Generator Breaker Trip (malfunction GEN-6A) due to overcurrent relay failure is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after verification of load transfer to the normal feeder.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: GEN-6A "Diesel 1A Bus 14", GEN-6B "Diesel 1A Bus 18", GEN-6C "Diesel 1B Bus 16", GEN-6D "Diesel 1B Bus 17"

TESTED OPTIONS: GEN-6A "Diesel 1A Bus 14"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Diesel Generator 1A-Bus 14 breaker tripped, Bus load transferred to the normal feeder.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/15/89

DURATION OF TEST: .5 hours

CRITICAL PARAMETERS MONITORED: D/G A Output Current
D/G A Frequency
D/G A Watts
Bus 14 Voltage

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.7.7 Test Title: Failure of Diesel Generator Load Sequencing

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems; Section 3.1.2(3) Loss or degraded electrical power

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-9, Hot shutdown, 8 hours after trip. Loads are shifted as necessary to ensure that all Train B equipment is removed from service. A Diesel Generator Load Sequencing (malfunction GEN-7B) Failure is inserted. A Safety Injection signal is manually inserted. The exercise is terminated after the verification that the expected components do not sequence on after the SI. This test is repeated for Malfunction GEN-7A.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: GEN-7A "Train A", GEN-7B "Train B"

TESTED OPTIONS: GEN-7B "Train B", GEN-7A "Train A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: IC-9, Hot Shutdown, 8 hours after trip, manual SI signal present, Train B equipment failed to sequence on.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.8.2 Test Title: Heater Drain Tank Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2(9) Normal Feedwater System failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Heater Drain Tank Pump Trip (malfunction HTR-2) is activated. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the heater drain to condenser dump valve opens and controls the heater drain tank level.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: HTR-2A "HDP-1A", HTR-2B "HDP-1B"

TESTED OPTIONS: HTR-2A "HDP-1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Condensate header and feed pump suction pressure decreases, Condensate bypass valve opens, Standby Condensate pump starts, T_{avg} decreases, Reactor Power increases, Heater drain tank level increases, Heater drain to condenser dump valve opens and controls the heater drain tank level.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED:

Feed Flow (1A S/G)
S/G Level (1B S/G)
Tavg
Reactor Power
Heater Drain Tank Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Huff Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.9.1 Test Title: Loss of Instrument Air

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (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.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Instrument air compressors 1A and 1B are operating in "constant speed", instrument air compressor 1C and the service air compressor are in "auto". A Loss of Instrument Air (malfunction MIS-1G) due to piping rupture is inserted at a severity of 1400 SCFM with a 120 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the "auto" have started, all four compressors have tripped due to high temperature and all the valves supplied by the affected header have failed to their specified failed position and cannot be operated.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: MIS-1A "Inst Air Rcvr 1A", MIS-1B "Inst Air Rcvr 1B", MIS-1C "Inst Air Rcvr 1C", MIS-1D "Combined Inst Air Hdr", MIS-1E "Turb Room Loop", MIS-1F "Aux Bldg Hdr", MIS-1G "Reactor Vessel Hdr"

TESTED OPTIONS: MIS-1G "Reactor Vessel Hdr"

MALFUNCTION RANGES: Select leak rate 0-1400 SCFM, Select ramp time 0-3600 seconds

FINAL CONDITIONS: All Air Compressors tripped, Valves supplied from associated header are in failed position and cannot be operated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

"A" Instrument Air Compressor Air Outlet Temperature
"B" Instrument Air Compressor Air Outlet Temperature
"C" Instrument Air Compressor Air Outlet Temperature
Service Air Compressor Air Outlet Temperature

TEST DEFICIENCIES: SM 91-011 Instrument air compressors trip at 475 degrees F and service air compressors do not

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.9.5 Test Title: Containment Isolation Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-9, Hot shutdown, 8 hours after trip. A Containment Isolation Valve Failure (malfunction MIS-5) is activated to fail as is. A containment isolation is manually initiated. A containment isolation is verified to have occurred by verifying all x-relay and y-relay sections on the auxiliary relay cabinet are not lit. The selected valve is verified open and attempts to manually close the selected valve verify the valve cannot be closed. The exercise is terminated after verifying the containment isolation has occurred, the selected valve has not isolated, and cannot be manually isolated.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: MIS-5A "AOV-371 (Ltdn Isol. Vlv.)", MIS-5B "MOV-814 (Comp. Cool Sup.)", MIS-5C "AOV-5392 (Inst. Air Isol. Vlv.)", MIS-5D "MOV-313 (Seal Water Rtn. Vlv.)", MIS-5E "AOV-508 (RMW to PRT Vlv.)", MIS-5F "V-1003A (RCDT)", MIS-5G "Recombiner Isol. A Vlvs", MIS-5H "Recombiner Isol. B Vlvs", MIS-5I "AOV-955 (B Hot Leg Sample Vlv.)", MIS-5J "AOV-539 (PRT to GA Vlv)"

TESTED OPTIONS: MIS-5A "AOV-371 (Ltdn Isol. Vlv.)" to Fail as is

MALFUNCTION RANGES: Select failure - Fail on Isolation Signal Only or Fail As Is

FINAL CONDITIONS: Manual Containment Isolation occurred, Valve AOV-371 failed to isolate and cannot be manually closed.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.1 Test Title: Source Range Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-23, Shutdown Bank Cocked, Hot shutdown, BOL. Channel N-31 is selected as the audio count rate channel and selected on the N-45 recorder. A Source Range Channel Failure (malfunction NIS-1) is inserted at a severity of 10^6 CPS with a 60 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the reactor trips and all expected indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-1A "Channel 31", NIS-1B "Channel 32"

TESTED OPTIONS: NIS-1A "Channel 31"

MALFUNCTION RANGES: Selected failed value - 10^0 - 10^6 CPS, Select ramp time - 0-3600 seconds

FINAL CONDITIONS: SR Channel N-31 meter increases to full scale, SR Channel N-31 counts increase to full scale, Audio count rate circuit increases its beeps in proportion to failed channel, Scaler timer indicates the higher count rate, SR SUR channel goes full scale then decrease, Source Range Trip NC31D Bistable light energized, Source Range Hi Flux Level Reactor Trip

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/18/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.2 Test Title: Noisy Source Range Channel

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-9, Hot Shutdown, 8 hours after trip. A normal reactor startup is started with SR Audio Count Rate selected to channel 31, and N-31 is selected on the N-45 recorder. A Noisy Source Range Channel (malfunction NIS-2A) is inserted at a severity of 10^2 CPS. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after one minute or when all expected indications have been observed. This test is repeated for Malfunction NIS-2B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-2A "Channel 31", NIS-2B "Channel 32"

TESTED OPTIONS: NIS-2A "Channel 31", NIS-2B "Channel 32"

MALFUNCTION RANGES: Selected maximum magnitude of noise - 10^0 - 10^6 CPS

FINAL CONDITIONS: IC-9, Hot Shutdown, 8 hours after trip, normal reactor startup in progress

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.3 Test Title: Failure of Source Range Channel High Voltage to Disconnect

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown 1 hour after trip. Channel N-32 is selected as the audio count rate channel and selected on the N-45 recorder. A normal reactor startup is started. A Failure of Source Range Channel High Voltage to Disconnect (malfunction NIS-3) is activated for Channel N-32. When P-6 is received, the block buttons are depressed for both trains of source range reactor trip. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when Source Range Channel N-32 fails to 10 CPS.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-3A "Channel 31", NIS-3B "Channel 32"

TESTED OPTIONS: NIS-3B "Channel 32"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: SR Channel N-31 indications go to zero, SR Channel N-32 indications do not go to zero, SR Channel N-31 high voltage goes to zero, SR Channel N-32 high voltage does not change, Audio counter-scaler continues to operate, SR Channel N-32 continues to operate, saturates at 10^6 CPS, and fails to 10 CPS.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.33 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.4 Test Title: Intermediate Range Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-6, Heatup with reactor critical at 10^{-8} amps, BOL. N-35 and N-36 are selected on the N-45 recorder and SR trip P-6 is verified defeated. An Intermediate Range Channel Failure (malfunction NIS-4A) is inserted at a severity of 10^{-3} amps with a 60 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until failure of the source range to automatically re-energize is verified. The source range block is manually reset. The exercise is terminated after verification that the source range re-energized and all other expected indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-4A "Channel 35", NIS-4B "Channel 36"

TESTED OPTIONS: NIS-4A "Channel 35"

MALFUNCTION RANGES: Select failed value 10^{-11} to 10^{-3} amps

FINAL CONDITIONS: Reactor tripped, source range block manually reset, source range re-energized.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.5 Test Title: Intermediate Range Gamma Compensation Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-7, prime mover startup, BOL. N-35 and N-36 are selected on the N-45 recorder. An Intermediate Range Gamma Compensation Failure (malfunction NIS-5A) is inserted at a severity of $+1x10^{-9}$ amps. The reactor is manually tripped. The exercise is terminated after verification that the source range high voltage did not re-energize and all other expected indications have been observed. This test is repeated for Malfunction NIS-5B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-5A "Channel 35", NIS-5B "Channel 36"

TESTED OPTIONS: NIS-5A "Channel 35", NIS-5B "Channel 36"

MALFUNCTION RANGES: Selected current value $-1x10^{-8}$ to $+1x10^{-8}$ amps

FINAL CONDITIONS: Reactor tripped, source range high voltage not energized

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: N35 IR Power
N36 IR Power

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.6 Test Title: Power Range Channel Detector Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. N-44 is selected on the N-45 recorder, and control rods are placed in automatic. A Power Range Channel Detector Failure (malfunction NIS-6) is inserted at a severity of 5 ma with a 3 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the rods complete moving when the signal decays out of the control rod system. The rod bank selector switch is placed in manual and the comparator channel defeat switch is placed in the N44 position. The exercise is terminated after all expected indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-6A "Channel N41A (Upper)", NIS-6B "Channel N41B (Lower)", NIS-6C "Channel N42A (Upper)", NIS-6D "Channel N42B (Lower)", NIS-6E "Channel N43A (Upper)", NIS-6F "Channel N43B (Lower)", NIS-6G "Channel N44A (Upper)", NIS-6H "Channel N44B (Lower)"

TESTED OPTIONS: NIS-6H "Channel N44B (Lower)"

MALFUNCTION RANGES: Select final current - 0 to 5 ma, Select ramp time 0-3 seconds

FINAL CONDITIONS: Channel 44 detector B current goes high, Channel 44 indications go to maximum, Rod speed indication jumps to maximum then decreases to zero, Control Rods have stepped in, T_{ave} decreases below T_{ref}, Power Range Channel Deviation on then clear, Channel Defeat Status light comes on.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/15/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

NI-44 Power
NI-44 Detector A Current
NI-44 Detector B Current

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.7.1 Test Title: Power Range Channel Fails High

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. N-44 is selected on the N-45 recorder. A Power Range Channel Failure (malfunction NIS-7, Failure of summing amplifier output) is inserted at a severity of 150% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after verification of the selected Power Range channel failure and all associated indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-7A "Channel N41", NIS-7B "Channel N42", NIS-7C "Channel N43", NIS-7D "Channel N44"

TESTED OPTIONS: NIS-7D "Channel N44"

MALFUNCTION RANGES: Select failed value 0-180 percent, Select ramp time 0-3 seconds

FINAL CONDITIONS: Control Rods have stepped in, T_{ave} below T_{ref}, Power Range Channel Deviation, Power Range Overpower Rod Stop

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Huff Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.7.2 Test Title: Power Range Channel Failure - Low

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. N-43 is selected on the N-45 recorder. A Power Range Channel Failure (malfunction NIS-7, Failure of summing amplifier output) is inserted at a severity of 0% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after verification of the selected Power Range channel failure and all associated indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-7A "Channel N41", NIS-7B "Channel N42", NIS-7C "Channel N43", NIS-7D "Channel N44"

TESTED OPTIONS: NIS-7C "Channel N43"

MALFUNCTION RANGES: Select failed value 0-180 percent, Select ramp time 0-3 seconds

FINAL CONDITIONS: Turbine Runback, T_{ave} increases above T_{ref}, Steams dumps open as required to control T_{ave}, $T_{ref\ Deviation}$, Control Rods have stepped in, Power Range Channel Deviation, Rod Speed Indicator reads 8

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SDR 89-244 Rod Speed indicates 6-9 when it should be zero

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.8 Test Title: Intermediate Range Blown Fuse

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-6, Reactor critical at 10^{-8}, BOL with a heat up in progress. N-35 and N-36 are selected on the N-45 recorder. An Intermediate Range Blown Fuse (malfunction NIS-8A) is inserted for the control power fuse. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the reactor trips, source range high voltage energizes, and all other expected indications have been observed. This test is repeated for Malfunction NIS-8B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-8A "Channel 35", NIS-8B "Channel 36"

TESTED OPTIONS: NIS-8A "Channel 35", NIS-8B "Channel 36"

MALFUNCTION RANGES: Selected fuse - "Instrument", "Control", "Both"

FINAL CONDITIONS: Reactor tripped, source range high voltage - energized

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/13/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.9 Test Title: Source Range High Voltage Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown 1 hour after trip, BOL. N-31 and N-32 are selected on the N-45 recorder. The S/D bank is pulled until the rod bottom lights clear. A Source Range High Voltage Failure (malfunction NIS-9B) is inserted at a severity of 2500 VDC. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the expected indications have been verified and the reactor trips on source range high neutron flux from the affected channel.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-9A "Channel 31", NIS-9B "Channel 32"

TESTED OPTIONS: NIS-9B "Channel 32"

MALFUNCTION RANGES: Select final detector voltage 300 to 2500 volts

FINAL CONDITIONS: Reactor tripped, source range trip NC32D bistable light on, Source range channel 32 drawer level trip light energized.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/15/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.10.10 Test Title: Source Range Blown Fuse

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (21) - Nuclear Instrumentation Failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown 1 hour after trip, BOL. Channel N-31 is selected as the audio count rate channel, Channels N-31 and N-32 are selected on the N-45 recorder. A Source Range Blown Fuse (malfunction NIS-10A) is inserted for the instrument power fuse. The simulator is allowed to run with NO OPERATOR ACTION the indications of the Source Range Channel loss of instrument power have been verified. When all indication for the loss of instrument power for source range channel N31 have been verified, the Level Trip Bypass switch on the N-31 drawer is positioned to bypass. The exercise is terminated after the source range high flux level reactor trip alarm clears, and all other expected indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: NIS-10A "Channel 31", NIS-10B "Channel 32"

TESTED OPTIONS: NIS-10A "Channel 31"

MALFUNCTION RANGES: Selected fuse - "Instrument", "Control", "Both"

FINAL CONDITIONS: SR Channel 31 instrument power on light - off, SR channel 31 counts - 0, SR volts - 0, SR SUR - 0, Audio count rate - 0, Level trip bypass switch on N-31 position to the bypass position, Source Range Trip NC31D Bistable light energized, Source Range Hi Flux Level Reactor Trip clear

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/22/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SDR 88-77 Instrument fuses do not light on blown fuse

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.1 Test Title: Pressurizer Spray Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR)

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Pressurizer Spray Valve Failure (malfunction PZR-1) is inserted at a severity of 100% open with a 0 second ramp time. Manual control is verified not available as the spray valve controller output increases to 100% and pressurizer pressure decreases. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after pressurizer low pressure safety injection initiates and verification that the spray valve closes on loss of instrument air after the containment isolation. The failure is repeated with manual control available. Operator action is taken to stabilize pressurizer pressure. This test is repeated for Malfunctions PZR-1A, PZR-1B and PZR-1C.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: PZR-1A "PCV-431A (manual control)", PZR-1B "PCV-431A (no manual control)", PZR-1C "PCV-431B (manual control)", PZR-1D "PCV-431B (no manual control)",449"

TESTED OPTIONS: PZR-1D "PCV-431B (no manual control)"; PZR-1C, "PCV-431B (no manual control)"; PZR-1A "PCV-431A" (manual control)"; PZR-1B "PCV-431A (no manual control)"

MALFUNCTION RANGES: Selected fail position - 0-100% open, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Pzr heaters energized, Pzr low pressure alarms actuate, OT delta T turbine runback cycles several times as pressure decreases, Reactor Tripped, Pzr low pressure safety injection initiated, Spray valve closed due to loss of instrument air.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/30/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

Pressurizer Pressure
Pressurizer Level
RCS Tavg
Reactor Power
RCS Delta T
OT Delta T Setpoint
Spray Flows
Pressurizer Spray Temperature Loop A/B
Pressurizer Vapor Temperatures

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.2 Test Title: Pressurizer Pressure Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR); Section 3.1.2 (22) - Process instrumentation alarms and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL with pressurizer pressure being controlled with channels 430 and 449. The pressurizer pressure channel defeat switch is placed in the "Normal" position. A Pressurizer Pressure Channel Failure (malfunction PZR-2D) is inserted at a severity of 2500 psig with a 0 second ramp time. The pressurizer spray valves are manually closed and the pressurizer pressure channel defeat switch is placed in the "Loop B - Unit 2" position after the pressurizer low pressure alarm actuates. The exercise is terminated after pressurizer pressure returns to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: PZR-2A "Channel 429", PZR-2B "Channel 430", PZR-2C "Channel 431", PZR-2D "Channel 449"

TESTED OPTIONS: PZR-2D "Channel 449"

MALFUNCTION RANGES: Selected failed value of 1700-2500 psig, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: IC-12, 100% power, BOL, Pressure Channel Defeat switch positioned to "Loop B - Unit 2", Spray valve control in manual.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED:

PZR Pressure (449)
PZR Pressure (431)
PZR Spray Temp (422)
PZR Spray Temp (423)

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.3 Test Title: Pressurizer Level Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR);

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The pressurizer level channel defeat switch is placed in "NORMAL", and the pressurizer level recorder transfer switch is placed in the channel 428 position. A Pressurizer Level Channel Failure (malfunction PZR-3C) is inserted at a severity of 0% with a 0 second ramp time. The pressurizer level channel defeat switch is placed in the "DEF III" position after the indication of a failed pressurizer level channel have been verified (Pzr low level indication for affected channel, Heaters turn off, Letdown isolation valves close, Pzr Level deviation alarm, Charging flow increase, VCT level decrease, Pzr level indication for non-affected channels increase). The Control heaters are reset when the Pzr low level alarm clears. The exercise is terminated after pressurizer level returns to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: PZR-3A "Channel 426 (I)", PZR-3B "Channel 427 (II)", PZR-3C "Channel 428 (III)", PZR-3D "Channel 433 (Cold Cal.)"

TESTED OPTIONS: PZR-3C "Channel 428 (III)"

MALFUNCTION RANGES: Selected failed value of 0-100% for PZR-3A, PZR-3B, & PZR-3C; Selected failed value of 0-235 in for PZR-3D; Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: IC-12, 100% power, BOL, Pzr Level Channel Defeat switch positioned to "DEF III", Pzr low level alarm clear, Letdown isolation valves open, Pzr Control Htrs on, Charging flow normal, Pzr level normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/15/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Pressurizer Level (426/428)
Charging Flow
Letdown Flow
VCT Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hilt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.4 Test Title: Pressurizer Master Controller Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR); Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Pressurizer Master Controller Failure (malfunction PZR-4, Controller Output Fails to Selected Value) is inserted at a severity of 0% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after all expected indications have been verified, and PORV-PCV-430 cycles to maintain pressurizer pressure at 2335 psig.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected controlled output value - 0-100%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Master pressure controller output zero, Pzr heaters energized, Pzr high pressure alarm DOES NOT actuate, PCV-430 cycles to maintain pressure at 2335 psig, PCV-431 remains closed, Pzr relief valve outlet temperature increases and alarm actuates, OT delta T setpoints increase.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/25/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: Pressurizer Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.5 Test Title: Pressurizer Relief Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1d) - Failure of safety and relief valves

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Pressurizer Relief Valve Failure (malfunction PZR-5A) is inserted at a severity of 100% open with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the Pzr low pressure alarm actuates. The pressurizer relief stop valve is manually closed to isolate the PORV. The exercise is terminated after Pressurizer pressure has returned to normal and the backup heaters have turned off. This test is repeated with Malfunction PZR-5B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: PZR-5A "Valve PCV-430", PZR-5B "Valve PCV-431C"

TESTED OPTIONS: PZR-5A "Valve PCV-430", PZR-5B "Valve PCV-431C"

MALFUNCTION RANGES: Selected failed position of 0-100% open, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: PORV stop valve closed, Pzr relief valve outlet temperature decreasing, Pzr pressure returned to normal, Pzr backup Htrs off.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/30/90

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

Pressurizer Pressure
OT Delta T Setpoint
PRT Pressure
PRT Level
PRT Temperature
PZR Relief Valve Outlet Temperature
OT Delta T Setpoint

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.6 Test Title: Pressurizer Safety Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1d) - Failure of safety and relief valves

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Pressurizer Safety Valve Failure (malfunction PZR-6A) is inserted at a severity of 100% open with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after Safety Injection has initiated, Pressurizer pressure is stabilized, and Pressurizer level is increasing.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: PZR-6A "Valve PCV-434", PZR-6B "Valve PCV-435"

TESTED OPTIONS: PZR-6A "Valve PCV-434", PZR-6B "Valve PCV-435"

MALFUNCTION RANGES: Selected failed position of 0-5% open (valve leakage) or 100% open (failure to reseat), Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Reactor tripped, Safety Injection initiated, Pressurizer pressure stable, Pressurizer level increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/16/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

PZR Pressure
PZR Level
Reactor Power
RCS Loop Pressure
RCS Tavg
RCS DT
OTDT Setpoint
PRT Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.7 Test Title: Pressurizer Steam Space Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR); Section 3.1.2 (1b.1) - Loss of Coolant - Inside primary containment; Section 3.1.2 (1c.2) - Loss of Coolant - Small reactor coolant break including demonstration of saturation conditions.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Pressurizer Steam Space Leak (malfunction PZR-7) is inserted at a severity of 89,000 lbm/hr with a 100 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when pressure decreases resulting in a reactor trip followed by low pressure safety injection initiation.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected leak rate - 0-89,000 lbm/hr, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Containment radiation increases, RMS Process and RMS Area Monitor High Activity alarms, Pzr heaters energized, Pzr level decreases, Pzr low pressure alarms actuate, OT delta T turbine runback cycles several times as pressure decreases, Reactor Tripped, Pzr low pressure safety injection initiated, Containment pressure and temperature increase.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/25/88

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

Tavg
RCS Delta T
OT Delta T Setpoint
Pressurizer Pressure
Pressurizer Level
Reactor Power
Containment Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.11.8 Test Title: Pressurizer Level Master Controller Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (18) - Failure of reactor coolant pressure and volume control systems (PWR); Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Pressurizer Level Master Controller Failure (malfunction PZR-8, controller output fails to selected value) is inserted at a severity of 100% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the pressurizer high level alarm actuates. The charging pump speed controllers are placed in manual and the pressurizer level is reduced by reducing charging flow. The exercise is terminated when pressurizer level has been restored.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected controller output value - 0-100%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Master level controller output 100%, Pzr heaters energized, Charging pump speed alarm actuated, Pzr level restored to normal, Charging pump speed controllers in manual maintaining Pzr level.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/11/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED: Pressurizer Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.1 Test Title: RCP Thermal Barrier Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1c) Loss of coolant, small break.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP Thermal Barrier Leak (malfunction RCS-1A) is inserted at a severity of 200 gpm with a 100 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the Volume Control Tank level decreases to activate automatic makeup. This test is repeated for Malfunction RCS-1B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-1A "RCP 1A", RCS-1B "RCP 1B"

TESTED OPTIONS: RCS-1A "RCP 1A", RCS-1B "RCP 1B"

MALFUNCTION RANGES: Selected leak rate of 0-200 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Pressurizer level decreasing, Component Cooling Water surge tank level full, Volume Control Tank level decreasing, Automatic makeup initiated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1.25 hours

CRITICAL PARAMETERS MONITORED: PZR Level
CCW Radiation Level R-17
CCW Surge Tank Level

TEST DEFICIENCIES: SM 90-11 Corrections for SDR's 89-234 and 89-235
(Malfunction NIS-6A problems)

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.2 Test Title: RCS Leak into Containment (LOCA)

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1b.1) - Loss of Coolant - Inside primary containment; Section 3.1.2 (1c.1) Loss of Coolant - Large reactor coolant breaks including demonstration of saturation conditions.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCS Leak into the containment (LOCA) (malfunction RCS-2B) is inserted initially at 5000 gpm with 0 ramp time. Data is taken and the leak is increased to a severity of 12,000 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the RCP's are both stopped when RCP trip criteria is met per emergency procedure E-1.1. RCS is transferred to cold leg recirculation and high head recirculation with spray per emergency procedure E-1.3. Containment spray flow is regulated to maintain at least 400 gpm. The exercise is terminated after all expected indications have been verified, and verification that the malfunction can not be cleared.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-2A "Loop A Hot Leg", RCS-2B "Loop A Cold Leg", RCS-2C "Loop B Hot Leg", RCS-2D "Loop B Cold Leg"

TESTED OPTIONS: RCS-2B "Loop A Cold Leg"

MALFUNCTION RANGES: Select leak rate 0-400,000 gpm; Select ramp time of 0-3600 seconds.

FINAL CONDITIONS: Reactor tripped, Turbine Tripped, SI initiated, Containment isolation activated, Containment Ventilation isolation activated, Safeguard sequencing completed, RCP's stopped, Containment Spray activated, RCS transferred to cold leg recirculation and high head recirculation with spray, Containment spray flow regulated to maintain at least 400 gpm.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 04/26/89

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED:

Pressurizer Pressure	Power Range NI
Pressurizer Level	S/G A/B N.R. Level
Accumulator A/B Pressure	RCS Pressure
Accumulator A/B Level	RCS Mass
S/G A/B Pressure	PZR Mass
S/G A/B Level	CNM Sump Mass
Boric Acid Tank A/B Level	RWST Mass
RWST Level	A/B Accumulator Mass
Containment Pressure	
Containment Temperature	

Test Number: 14.4.7.12.2 Test Title: RCS Leak into Containment (LOCA)

TEST DEFICIENCIES:

SDR 89-93 Should not get low CCW discharge pressure alarm
SM 89-103 PZR refill during big LOCA test 14.4.7.12.2

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.3 Test Title: Variable RCS Boron Concentration

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The initial RCS Boron concentration is monitored. A Change in the RCS Boron Concentration (malfunction RCS-3) is inserted at a severity equal to 100 ppm less than the initial RCS Boron concentration with a 600 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the Bank C control rods step in to their insertion limit.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select final RCA Boron Concentration 0-3000 ppm; Select ramp time of 0-3600 seconds.

FINAL CONDITIONS: RCS T_{ave} increases, Delta flux goes more negative, Bank D Control Rods step in to insertion limit, Bank C Control Rods step in to insertion limit.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: Nuclear Power
Tavg

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.5 Test Title: RCP Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (4) - Loss of forced core coolant flow due to single or multiple pump failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP Pump Trip (malfunction RCS-5B, failure of pump due to motor overcurrent relay actuation) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after verification of affected loop reverse flow.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-5A "RCP-1A", RCS-5B "RCP-1B"

TESTED OPTIONS: RCS-5B "RCP-1B"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: RCP-1B tripped, Reverse flow in reactor coolant loop B, Reactor tripped, S/G level oscillation due to unbalance heat load, S/G level deviation alarms

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/16/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: RCS Loop Flow
Tavg
RCS Delta T
S/G Steam Flow
S/G Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.6 Test Title: RCP Shaft Shear

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (4) - Loss of forced core coolant flow due to single or multiple pump failure

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-8, 25% power, BOL, with rod control in automatic. A RCP Shaft Shear (malfunction RCS-6, shear between motor and impeller) is activated. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been observed. This test is repeated for Malfunction RCS-6B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-6A "RCP-1A", RCS-6B "RCP-1B"

TESTED OPTIONS: RCS-6A "RCP-1A"; RCS-6B "RCP-1B"

MALFUNCTION RANGES: Malfunction is non-recoverable

FINAL CONDITIONS: RCS loop A flow decreases to zero in one second then reverse flow of about 20%, Loop A Tavg decreases to Loop B cold leg temp, Control Bank D rods stepped out, Loop A delta T goes to zero, Rod motion stops, S/G A steam flow decreases to about 10% of total flow, RCS Loop B delta T increases; Plant stabilizes with S/G B steam flow and feed flow higher, S/G A steam flow and feed flow lower or zero, Loop A Tavg lower, Loop A delta T lower or zero, Loop B delta T higher, Steam pressure S/G A and S/G B the same.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/30/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

RCS Tavg
RCS Delta T
S/G A/B Steam Flow
S/G A/B Pressure
RCS Loop A/B Flow Rate
Pressurizer Pressure
Pressurizer Level
S/G A/B Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.7 Test Title: RCP Locked Rotor

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (4) - Loss of forced core coolant flow due to single or multiple pump failure

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP Locked Rotor (malfunction RCS-7, mechanical seizure) is activated. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the reactor trips and all expected indications have been observed.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-7A "RCP-1A", RCS-7B "RCP-1B"

TESTED OPTIONS: RCS-7B "RCP-1B"

MALFUNCTION RANGES: Malfunction is non-recoverable

FINAL CONDITIONS: RCS loop B decreases to zero in one second then reverse flow of about 20%, RCP 1B tripped, Reactor tripped, S/G B steam flow less than S/G A steam flow, S/G B level remains higher than S/G A, RCS Loop B Tavg decreases, RCS Loop A Tavg increases.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: RCS Loop A/B Flow
RCS Tavg
RCS Delta T
S/G A/B Steam Flow
S/G A/B Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.8 Test Title: RCP Oil Reservoir Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (4) Loss of forced core coolant flow due to single pump failure.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP Oil Reservoir Failure (malfunction RCS-8C) is inserted at a severity of -3 inches with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the affected RCP trips and all expected indications have been verified. This test is repeated for Malfunction RCS-8A.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-8A "RCP-1A Upper Brg", RCS-8B "RCP-1A Lower Brg", RCS-8C "RCP-1B Upper Brg", RCS-8D "RCP-1B Lower Brg"

TESTED OPTIONS: RCS-8C "RCP-1B Upper Brg"; RCS-8A "RCP-1A Upper Brg"

MALFUNCTION RANGES: Selected final level of -3 to +3 inches, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RCP-1B Tripped

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.9 Test Title: Wide Range RCS Pressure Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-13, Cold Shutdown. The RHR pumps are secured, RHR suction from loop A hot leg (MOV-700) is closed, and RHR discharge to loop A cold leg (MOV-721) is closed. A Wide Range RCS Pressure Channel Failure (malfunction RCS-9A) is inserted at a severity of 3000 psig with a 0 second ramp time. The associated RCS pressure indication increases to full scale and the RCS low pressure alarm clears. An attempt is made to open MOV-700 and MOV-721. The exercise is terminated after verification of the inability to open MOV-700 and MOV-721.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-9A "PT-420", RCS-9B "PT-450", RCS-9C "PT-451", RCS-9D "PT-452"

TESTED OPTIONS: RCS-9A "PT-420"

MALFUNCTION RANGES: Select failed pressure of 0-3000 psig, Select ramp rate of 0-3600 seconds.

FINAL CONDITIONS: IC-13, Cold shutdown, RHR secured, RC-PI-420 and RC-PR-420 indicate full scale, Inability to open RHR suction from loop A hot leg (MOV-700) and RHR discharge to loop A cold leg (MOV-721).

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/17/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.10 Test Title: RCS Loop Flow Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCS Loop Flow Transmitter Failure (malfunction RCS-10A) is inserted at a severity of 0% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-10A "FT-411 (Lp 1)", RCS-10B "FT-412 (Lp 1)", RCS-10C "FT-413 (Lp 1)", RCS-10D "FT-414 (Lp 2)", RCS-10E "FT-415 (Lp 2)", RCS-10F "FT-416 (Lp 2)"

TESTED OPTIONS: RCS-10A "FT-411 (Lp 1)"

MALFUNCTION RANGES: Select final flow of 0-120%, Select ramp rate of 0-3600 seconds.

FINAL CONDITIONS: RCS Loop 1A-1 flow indication pegs low, Reactor coolant low flow loop A channel alert alarm activated, Coolant flow loop A FC411 Status lights energized.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/25/88

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hilt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.11 Test Title: RTD Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The Delta Temperature recorder transfer switch is placed in the "1A-1" position. The temperature defeat switches (T/405E, T/405F, T/401A, & T/401B) are placed in the "Operate" position. A RTD Failure (malfunction RCS-11A) is inserted at a severity of 675°F with a 30 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until a turbine runback occurs. When a turbine runback occurs, the Loop A T_{ave} defeat switch is place in the "Defeat Loop A1" position and the Loop A Delta T defeate switch is placed in the "Defeat Loop A" position. The exercise is terminated when all expected indications have been verified and the plant returns to a stable condition. Malfunction RCS-11S is also performed from IC-12, 409B1 indication and RVLIS response is checked.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Loop A Hot: RCS-11A TE-401A; RCS-11B TE-405A; RCS-11C TE-402A; RCS-11D TE-406A. Loop A Cold: RCS-11E TE-401B; RCS-11F TE-405B; RCS-11G TE-402B; RCS-11H TE-406B. Loop B Hot: RCS-11I TE-403A; RCS-11J TE-407A; RCS-11K TE-404A; RCS-11L TE-408A. Loop B Cold: RCS-11M TE-403B; RCS-11N TE-407B; RCS-11O TE-404B; RCS-11P TE-408B. Tsat/Zirc: RCS-11Q Loop A Hot TE-409A1; RCS-11R Loop B Hot TE-410A1; RCS-11S Loop A Cold TE-409B1; RCS-11T Loop B Cold TE-409B1

TESTED OPTIONS: RCS-11A Loop A Hot TE-401A(TT-401); RCS-11S Loop A Cold TE-409B1

MALFUNCTION RANGES: Select final value RCS-11A through RCS-11P - 475°F-675°F, RCS-11Q through RCS-11T - 0°F-700°F, Select ramp rate of 0-3600 seconds.

FINAL CONDITIONS: RCS T_{ave} deviation alarm, Turbine runback, Loop A T_{ave} defeat switch in the "Defeat Loop A1" position, Loop A Delta T defeate switch in the "Defeat Loop A" position, plant in a stable condition.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/30/90

DURATION OF TEST: 0.2 hours

CRITICAL PARAMETERS MONITORED:

RCS Tavg (affected and unaffected loop)
RCS Delta T (affected and unaffected loop)
Avg Tavg
Gen MWE
RCS OTDT Setpoint Loop A
RCS OPDT Setpoint Loop A
RCS Loop A Cold Leg Wide Range Temperature
RVLIS Meter

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.12 Test Title: RCP No. 1 Seal Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1b.1) - Loss of Coolant - Inside primary containment

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP No. 1 Seal Failure (malfunction RCS-12A) is inserted at a severity of 40 gpm with a 30 second ramp time. The RCP 1A No. 1 seal leakoff valve is closed after the No. 1 seal outlet high temperature alarm actuates. The exercise is terminated when the RCP 1A No. 2 seal fails resulting in leakage to containment and all expected indications have been verified. This test is repeated for Malfunction RCS-12B.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-12A "RCP-1A", RCS-12B "RCP-1B"

TESTED OPTIONS: RCS-12A "RCP-1A", RCS-12B "RCP-1B"

MALFUNCTION RANGES: Selected leak rate of 0-300 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RCP-1A, No. 1 and No. 2 seals failed

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED:

A RCP:
- RCP 1A Seal Leakoff Flow
- RCP 1A #1 Seal DP
- VCT Level
- RCP 1A #1 Seal Inlet Temperature
- RCP 1A #1 Seal Outlet Temperature
- RCP 1A Labyrinth Seal DP

B RCP:
- RCP 1B Seal Leakoff Flow
- RCP 1B #1 Seal DP
- VCT Level
- RCP 1B #1 Seal Inlet Temperature
- RCP 1B #1 Seal Outlet Temperature
- RCP 1B Labyrinth Seal DP

COMMON:
- Charging Header Pressure
- Charging Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.13 Test Title: RCP No. 2 Seal Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP No. 2 Seal Failure (malfunction RCS-13) is inserted at a severity of 3 gpm with a 30 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-13A "RCP-1A", RCS-13B "RCP-1B"

TESTED OPTIONS: RCS-13B "RCP-1B"

MALFUNCTION RANGES: Selected leak rate of 0-300 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RCP-1B No. 1 seal leakoff flow decreased, RCP-1B No. 1 Seal Flow alarm actuated, RCP 1B Standpipe Hi Level alarm Actuated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/21/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: TR 1839 For Malfunction RCS-13 B/A #1/#2 Seal Leakoff Flow should be approximatley .5 GPM

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.14 Test Title: RCP No. 3 Seal Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP No. 3 Seal Failure (malfunction RCS-14) is inserted at a severity of 10 gpm with a 30 second ramp time. The RCP stand pipe is filled using reactor makeup water to clear the stand pipe low level alarm. The exercise is terminated when all expected indications have been verified and the stand pipe low level alarm clears.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-14A "RCP-1A", RCS-14B "RCP-1B"

TESTED OPTIONS: RCS-14A "RCP-1A"

MALFUNCTION RANGES: Selected leak rate of 0-300 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RCP-1A STAND PIPE LO LEVEL alarm actuates requiring frequent filling to clear alarm.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/25/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.15 Test Title: RCP High Vibration

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RCP High Vibration (malfunction RCS-15) is inserted at a severity of 25 mils with a 60 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-15A "RCP-1A Shaft", RCS-15B "RCP-1B Shaft", RCS-15C "RCP-1A Seismic", RCS-15D "RCP-1B Seismic",

TESTED OPTIONS: RCS-15A "RCP-1A Shaft"

MALFUNCTION RANGES: Selected final vibration of 0-25 mils for Shaft (RCS-15A and RCS-15B) or 0-10 mils for Seismic (RCS-15C and RCS-15D), Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RCP 1A shaft and seismic vibration increases with a final shaft vibration of 25 mils in 60 seconds and seismic vibration lagging shaft vibration, Reactor Coolant Pump Vibration Alert and Danger alarms actuate.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.3 hours

CRITICAL PARAMETERS MONITORED:

RCP 1A Shaft Horizontal Vibration
RCP 1A Shaft Vertical Vibration
RCP 1A Frame Horizontal Vibration
RCP 1A Frame Vertical Vibration

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.16 Test Title: Fuel Cladding Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (14) - Fuel cladding failure resulting in high activity in reactor coolant or off gas and the associated high radiation alarms.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Fuel Cladding Failure (malfunction RCS-16) is inserted at a severity of 10^{+4} μc/ml with a 60 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated after containment ventilation has isolated and all expected process activity indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected RCS activity level of 10^{-1} to 10^{+4} μc/ml, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Containment Ventilation Isolated

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: Letdown Line Monitor R-9

TEST DEFICIENCIES: SM 91-001 Test 14.4.7.12.16, R-11, R-12, R-29, R-30, E-16 and A-15 did not come in

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.12.17 Test Title: RVLIS Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RVLIS Transmitter Failure (malfunction RCS-17B) is inserted at a severity of 0% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified. This test is repeated for Malfunction RCS-17A.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RCS-17A "LT-490A", RCS-17B "LT-490B"

TESTED OPTIONS: RCS-17B "LT-490B"; RCS-17A "LT-490A"

MALFUNCTION RANGES: Selected final value of 0-108%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: A and B RVLIS channels failed to 0% fluid fraction.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/05/90

DURATION OF TEST: 0.1 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.1 Test Title: RHR Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (7) - Loss of shutdown cooling

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-3, Cooldown in progress, RCS temperature 350°F. The RHR system is placed in operation using both RHR pumps using controlled copies of Ginna operating procedures. An RHR Pump Trip (malfunction RHR-1A) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RHR-1A "Pump 1A", RHR-1B "Pump 1B"

TESTED OPTIONS: RHR-1A "Pump 1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: RHR Pump 1A tripped, RHR flow decreases, Letdown flow decreases, Pressurizer level increases, RCS cooldown rate decreases.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/17/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: RCS Pressure
RCS Temperature
RHR Flow
Letdown Flow
Pressurizer Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.2 Test Title: RHR Heat Exchanger Flow Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-2, on RHR prior to drawing bubble, BOL. The pressurizer backup and proportional heaters are turned off. A RHR Heat Exchanger Flow Control Valve Failure (malfunction RHR-2) is inserted at a severity of 0% with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RHR-2A "HVC-624", RHR-2B "HVC-625"

TESTED OPTIONS: RHR-2B "HVC-625"

MALFUNCTION RANGES: Selected fail position of 0-100%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RHR loop flow decreases then returns to normal, RHR HX bypass valve flow controller demand increased, RHR HX inlet temperature increased, RCS Cooldown rate decreases, RCS pressure increases and Letdown pressure controller output decreases to maintain RCS pressure.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/02/88

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: RCS Pressure
RCS Temperature
RHR HX Inlet Temperature
RHR HX Outlet Temperature

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.3 Test Title: RHR Heat Exchanger Tube Leak

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-3, C/D in progress, RCS temperature 350°F. RHR is placed in operation using a controlled copy of the R. E. Ginna Plant Procedure. A RHR Heat Exchanger Tube Leak (malfunction RHR-3) is inserted at a severity of 500 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RHR-3A "Heat exchanger A", RHR-3B "Heat exchanger B"

TESTED OPTIONS: RHR-3B "Heat exchanger B"

MALFUNCTION RANGES: Selected leak rate of 0-500 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RHR loop flow decreased then increased as the heat exchanger bypass valve opened, CCW surge tank level increased, CCW radiation monitor level increased, RMS process monitor activity level increased, CCW surge tank vent valve isolated on high radiation, Pzr level decreased, VCT level decreased.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 1.25 hours

CRITICAL PARAMETERS MONITORED:

CCW Radiation (R-17)
RHR Flow
Charging Flow
CCW Surge Tank Level
Pressurizer Level
VCT Level
Letdown Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dave Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.4 Test Title: RHR Heat Exchanger Bypass Valve Control Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-3, Cool down in progress, with RCS temperature of 350°F. RHR is placed in operation with both pumps running using the plant operating procedures, pressurizer fill is not yet in progress. A RHR Heat Exchanger Bypass Valve Control (malfunction RHR-4) Failure (Auto controller fails to selected value) is inserted at 100% open with manual control available at a 0 second ramp time. The RHR heat exchanger bypass flow controller is placed in manual and adjusted to restore the RCS cooldown rate after indications of RCS cooldown rate decrease and RHR Hx inlet temperature increase are verified. The exercise is terminated after the RHR Hx bypass flow has been manually adjusted to restore RCS cooldown rate.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: "Manual control available" or "Manual control not available"

TESTED OPTIONS: "Manual control available"

MALFUNCTION RANGES: Selected failed position of 0-100% open, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RHR Heat Exchanger Bypass Flow Controller in manual with RCS cooldown rate restored.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED:

RCS Temperature
RHR HX Inlet Temperature
THT HX Outlet Temperature
RHR Flow

TEST DEFICIENCIES: SM 89-90 Test 14.4.7.13.4

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Wilt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.5 Test Title: RHR Bypass Line Leak

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-3, C/D in progress, RCS temperature 350°F. RHR is placed in operation using a controlled copy of the R. E. Ginna Plant Procedure. A RHR Bypass Line Leak (malfunction RHR-5) is inserted at a severity of 400 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until automatic makeup initiates. Automatic makeup is stopped and the leak is isolated using local operator actions to isolate the leak. The exercise is terminated when all expected indications have been verified, the leak is isolated, and the Pressurizer level stabilizes.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: Local operator actions for opening and closing valves 712A and 712B where used during the performance of this test.

MALFUNCTION RANGES: Selected leak rate of 0-2000 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RHR loop flow decreases until leak is isolated, RHR heat exchanger bypass valve opened (no effect on RHR flow), RCS Pressure decreased, Pzr level decreases at approximately 6%/min until leak is isolated then stabilizes, VCT level decreases at approximately 3%/min, Aux. building radiation levels increased, RMS process monitor activity level increased.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/20/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

RHR System Flow
VCT Level
RCS Pressure
Pressurizer Level
Charging Flow
Letdown Flow

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.6 Test Title: Containment Sump to RHR Pump Screens Foul

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A DBA LOCA is actuated using malfunction RCS-2B at a leak rate of 100,000 gpm. When the RWST is below 28%, RHR is placed on cold leg recirc. using a controlled copy of the R. E. Ginna Plant Procedure. A Containment Sump to RHR Pump Screens Foul (malfunction RHR-6) is inserted at a severity of 100% blockage with a 120 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the affected RHR pump trips and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RHR-6A "MOV-851A", RHR-6B "MOV-851B"

TESTED OPTIONS: RHR-6A "MOV-851A"

MALFUNCTION RANGES: Selected blockage of 0-100%, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RHR loop flow decreased, Core exit temperature increases, As blockage increases RHR pump A cavitates, RHR Pump A tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 04/27/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: RHR Flow
Incore Thermocouple Temperatures
RCS System Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.13.7 Test Title: RHR Pump Suction Line Rupture

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1.b.2) Loss of coolant outside primary containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-3, C/D in progress, RCS temperature 350°F. RHR is placed in operation using a controlled copy of the R. E. Ginna Plant Procedure. A RHR Pump Suction Line Rupture (malfunction RHR-7) is inserted at a severity of 400 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected leak rate of 0-3000 gpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RHR loop flow decreased, RHR heat exchanger bypass valve opened (no effect on RHR flow), RCS Pressure decreased, Letdown line flow decreased, Pzr level decreases at approximately 6%/min, VCT level decreases at approximately 3%/min, Aux. building radiation levels increased, RMS process monitor activity level increased.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

RHR System Flow
VCT Level
RHR Pressure
RCS Temperature
Pressurizer Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.14.1 Test Title: Area Monitor Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) Process instrumentation alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. An Area Monitor (malfunction RMS-1E) Failure (Selected monitor fails to selected value) is inserted at 1000 mr/hr at a 0 second ramp time. The exercise is terminated verification that the selected monitor indicates 1000 mr/hr and the High Alarm trips. This test is repeated for Malfunctions RMS-1B, RMS-1C, RMS-1D.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RMS-1A, "Area Monitor R-2 (Containment)"; RMS-1B, "Area Monitor R-4 (Chg. Pump Room)"; RMS-1C, "Area Monitor R-5 (Spent Fuel Pit)"; RMS-1D, "Area Monitor R-7 (Incore Instrumentation)"; RMS-1E, "Area Monitor R-9 (Letdown Line)"

TESTED OPTIONS: RMS-1E, "Area Monitor R-9 (Letdown Line)"; RMS-1A "Area Monitor R-2 (Containment)"; RMS-1B "Area Monitor R-4 (Charging Pump Room)"; RMS-1C "Area Monitor R-5 (Spent Fuel Pit)"; RMS-1D "Area Monitor R-7 (Incore Instrumentation)"

MALFUNCTION RANGES: Selected fail value of 0.1 - 10^4 mr/hr, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Area monitor R-2 (Letdown Line) reads 1000 mr/hr and High Alarm light energized

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1/2 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.14.2 Test Title: Process Radiation Monitor Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-3, C/D in progress. The containment purge, sample and pressure relief valves are opened. The containment purge supply and exhaust fans are started. A Process Radiation Monitor Failure (malfunction RMS-2) is inserted at a severity of 10^5 cpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified, and the associated automatic actions have occurred. This test is repeated for Malfunction RMS-2E.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RMS-2A "R-11 Containment Part.", RMS-2B "R-12 Containment Gas", RMS-2C "R-13 Aux. Bldg. Part.", RMS-2D "R-14 Aux. Bldg. Gas", RMS-2E "R-15 Cond. Air Ej.", RMS-2F "R-17 CCW Pump Suction", RMS-2G "R-18 Liq. Waste Disp.", RMS-2H "R-19 S/G BD"

TESTED OPTIONS: RMS-2B "R-12 Containment Gas"; RMS-2E "R-15 Cond. Air Ej."

MALFUNCTION RANGES: Selected fail value of 1-10^6 cpm, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: RMS Process Monitor High Activity alarm actuated, R-12 Containment Gas indicates the selected fail value, Containment Ventilation Isolated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/20/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.1 Test Title: Uncontrolled Rod Motion

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (12) - Control rod failure including stuck rods, uncoupled rods, drifting rods, and misaligned rods; Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% power, BOL, with the bank selector switch in the "AUTO" position. An Uncontrolled Rod Motion (malfunction ROD-1A) is inserted with a rod speed of 66 steps/min. Turbine power is raised to 390 MW at a rate of 3 %/min. Bank D rods begin stepping out at a rate of 66 steps/min. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: ROD-1A "AUTO", ROD-1B "MANUAL"

TESTED OPTIONS: ROD-1A "AUTO"

MALFUNCTION RANGES: 8-66 steps/min for ROD-1A only

FINAL CONDITIONS: Turbine power stable at 390 MW, Reactor power increasing, T_{ave} increasing, Bank D rods step out until they reach 230 steps or a rod stop occurs.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/02/88

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

RCS Avg Tavg
RCS Tref
Reactor Power
Turbine Power
S/G Pressure
OTDT Setpoint

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.2 Test Title: Dropped Rod

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (12) - Control rod failure including stuck rods, uncoupled rods, drifting rods, and misaligned rods; Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Dropped Rod (malfunction ROD-2A, electrical failure) is inserted for the stationary gripper. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified and the plant stabilizes at a lower power level.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: ROD-2A, ROD-2B, ROD-2C, ROD-2D "Electrical Failures, ROD-2E, ROD-2F "Mechanical Failures" (Allows selection of six rods to drop simultaneously.

TESTED OPTIONS: ROD-2A "Electrical" for rod D4

MALFUNCTION RANGES: Movable or stationary gripper failure

FINAL CONDITIONS: NIS power range rod drop-rod stop alarm actuates, Turbine runs back to 390 MW, T_{ave} decreases, Nuclear power decreases, Pzr level and pressure decrease, Backup heaters energize, Plant stabilizes at a lower power.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED:

Reactor Power N43 Upper/Lower
Reactor Power N44 Upper/Lower
RCS Avg Tavg
Pressurizer Pressure
Pressurizer Level
Turbine Load

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Huff Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.3 Test Title: Stuck Rod

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (12) - Control rod failure including stuck rods, uncoupled rods, drifting rods, and misaligned rods. Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% power. A Stuck Rod (malfunction ROD-3A) (Selected rod will not move) is inserted with a selected variation of untrippable. A power reduction to 50% power is commenced using controlled copies of the R. E. Ginna plant procedures. After verification that the selected rod does not move, the reactor is manually tripped. The exercise is terminated following verification that the selected control rod remains at its previous position.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: ROD-3A, ROD-3B, ROD-3C, ROD-3D - Each category can be used as a separate malfunction within which any single rod can be selected to fail.

TESTED OPTIONS: ROD-3A, "One rod selected" using untrippable malfunction range.

MALFUNCTION RANGES: Selected variation - trippable or untrippable

FINAL CONDITIONS: Reactor tripped, Malfunction ROD-3A cleared and selected rod (G11) on the bottom.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1.5 hour

CRITICAL PARAMETERS MONITORED:

Reactor Power:
- N41 Upper/Lower
- N42 Upper/Lower
- N43 Upper/Lower
- N44 Upper/Lower

TEST DEFICIENCIES:

SM 91-002 Power indicated by CH 41 & 43 did not decrease more than on CH 42 & 44, Rod G-11 did not drop after malfunction cleared

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.4 Test Title: Control Banks Fail to Move

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (13) - Inability to drive control rods; Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% power, BOL, with the bank selector switch in the "AUTO" position. A Controlled Banks Fail to Move (malfunction ROD-4D) is inserted. Turbine load is reduce by 20% at a rate of 3 %/min. The simulator is allowed to run with NO OPERATOR ACTION until verification that Bank D rods do not move with steam flow decreasing and T_{ave} increasing. The exercise is terminated after verification of failure of rods to move with the bank selector switch in the "Manual" or "CBD" position.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: ROD-4A "Power Cabinet 1AC", ROD-4B "Power Cabinet 2AC", ROD-4C "Power Cabinet 1BD", ROD-4D "Power Cabinet 2BD"

TESTED OPTIONS: ROD-4D "Power Cabinet 2BD"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Turbine power stable, Steam flow decreased, T_{ave} increased.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/21/86

DURATION OF TEST: Not available

CRITICAL PARAMETERS MONITORED:

Generator MWE
Reactor Power
S/G A Steam Flow
S/G B Steam Flow

TEST DEFICIENCIES:

TR 1846 Rod speed on MCB indicator

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.5 Test Title: Rod Ejection

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (12) - Control rod failure including stuck rods, uncoupled rods, drifting rods, and misaligned rods; Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-7, 5% power, BOL. A Rod Ejection (malfunction ROD-5) is inserted for rod K7 with a leak rate at the severity of 2000 gpm. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when a pressurizer low pressure safety injection occurs and the malfunction is verified as unrecoverable.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Selectable rod, selectable leak rate.

TESTED OPTIONS: Rod K7 ejection with a leak rate of 2000 gpm.

MALFUNCTION RANGES: Select leak rate 0-2000 gpm.

FINAL CONDITIONS: Reactor power excursion, In-core thermocouples near rod show higher temperatures than in other areas, Pzr pressure decreases, Pzr level decreases, Reactor tripped, Pzr low pressure safety injection actuated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/88

DURATION OF TEST: 0.75 hour

CRITICAL PARAMETERS MONITORED:

Incore Thermocouples A-7; B-5; B-7; C-8; D-7; E-6; E-10; I-4; I-7; J-6; J-8; L-7
Intermediate range startup rate
Reactor Power
Pressurizer Power
Containment Pressure
Pressurizer Level

TEST DEFICIENCIES:

SM 89-18 Rod ejection should cause coil stack MRPI failure
SM 89-07 Incore T/C does not respond to K7 rod ejection

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.6 Test Title: Rod Drive MG Set Trip

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Rod Drive MG Set Trip (malfunction ROD-6) is inserted for MG Set 1A. After verifying MG Set 1A has tripped (Alarm and indicating lights) a Rod Drive MG Set Trip (malfunction ROD-6) is inserted of MG Set 1B. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: ROD-6A "MG Set 1A", ROD-6B "MG Set 1B"

TESTED OPTIONS: ROD-6A "MG Set 1A" (individually), then combined with ROD-6B "MG Set 1B"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Rod drive MG sets 1A and 1B tripped, ROD CONTROL NON-URGENT FAILURE and ROD CONTROL URGENT FAILURE ROD STOP alarms actuated, Reactor trip breakers open, Reactor tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.5 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.7 Test Title: T-Ref Failure in Rod Control

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% power. A T-Ref Failure in Rod Control (malfunction ROD-7) (Failure of the Tref signal processor to a selectable value) is inserted at a severity of 600°F with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the plant has stabilized with all rods out at a higher Tavg. "The simulator is allowed to run with NO OPERATOR ACTION until a turbine runback occurs. If the turbine runback occurs, rod control is placed in manual, and reactor power is reduced to match turbine power. The exercise is terminated when the plant has stabilized with reactor power matching turbine power."

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Selected failed value - 500 to 600°F, Selected ramp time 0 to 3 seconds.

FINAL CONDITIONS: IC-10, 75% Power, plant stable will all rods out at a higher Tavg, Turbine runback, rod control in manual, reactor power reduced to match turbine power.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1.0 hour

CRITICAL PARAMETERS MONITORED:

OTDT Setpoint
OPDT Setpoint
TAVG
Delta T
Reactor Power

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.8 Test Title: Rod Speed Controller Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (17) - Failure of automatic control system(s).that effect reactivity and core heat removal

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Rod Speed Controller Failure (malfunction ROD-8) is inserted at a severity of 66 steps per minute. Turbine power is reduced to 95% at a rate of 1 percent per minute to initiate rod motion. Rod motion will initiate with a rod speed of the selected fail speed (66 spm). Rods will cycle in at the selected fail speed (66 spm) until the load reduction is complete. The exercise is terminated when all expected indications have been verified and the load reduction is complete.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select rod speed of 1 to 66 steps/min.

FINAL CONDITIONS: Turbine power 95%, Bank D rods stepped in at a rate of the selected rod speed (66 spm).

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/22/86

DURATION OF TEST: Not available

CRITICAL PARAMETERS MONITORED:

Rod Speed

TEST DEFICIENCIES:

TR 1855 When 66 SPM is set, a higher rate is received.
No temperature overshoot.

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.9 Test Title: Improper Bank Overlap

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (17) - Failure of automatic control system(s) that effect reactivity and core heat removal

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, BOL. An Improper Bank Overlap (malfunction ROD-9) is inserted at a severity of 200 steps between banks B and C. A normal reactor startup is started using controlled copies of the R. E. Ginna plant operating procedures. When Bank A reaches 130 steps, Bank B starts to move (normal). When Bank A reaches 200 steps, Bank B reaches 70 steps, and Bank C will attempt to move actuating the URGENT FAILURE ROD STOP alarm. The exercise is terminated when all expected indications have been verified and rod motion stops.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Selected bank overlap points; Overlap banks A and B, Overlap banks B and C, or Overlap banks C and D.

TESTED OPTIONS: Overlap banks B and C.

MALFUNCTION RANGES: Select overlap thumbwheel setting of 0-999 steps.

FINAL CONDITIONS: Bank A at 200 steps, Bank B at 70 steps, Bank C at 0 steps, ROD CONTROL URGENT FAILURE ROD STOP alarm actuated, Rod motion stopped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.10 Test Title: Step Counter Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-5, Hot shutdown, BOL. A Step Counter Failure (malfunction ROD-10) is inserted for rod group CB2. A normal reactor startup is started using controlled copies of the R. E. Ginna plant operating procedures. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Select Bank and Group - "CA1, CA2, CB1, CB2, CC1, CC2, CD1, or CD2".

TESTED OPTIONS: Bank and Group - "CB2"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: When Bank A reaches 130 steps, Bank B starts to move, RPI and step counter for Bank B group 1 indicates proper position, Step counter for Bank B Group 2 indicates erroneous position.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.11 Test Title: RPI Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) failure in automatic contol system that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A RPI Failure (malfunction ROD-11A) (Failure of signal conditioning module for the selected rod) is inserted with a severity of 0 steps. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of the exercise. The exercise is terminated when the plant has stabilized at a lower reactor power level.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: ROD-11A, ROD-11B, ROD-11C, ROD-11D - Each category can be used as a separate malfunction within which any single RPI unit can be selected to fail.

TESTED OPTIONS: ROD-11A, "One RPI unit selected"

MALFUNCTION RANGES: Selected failed position - 0 to 230 steps

FINAL CONDITIONS: Turbine runback has occurred, Rod Bank D has stepped in, Reactor power decreased, Plant stabilized at a lower power level.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Huff Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.12 Test Title: Rod Stop Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (17) - Failure in automatic control system that affects reactivity.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-8, 25% Power, BOL. A Rod Stop Failure (malfunction ROD-12) is inserted for rod control in automatic. An uncontrolled rod motion malfunction (ROD-1) is inserted for automatic rod control at a rod speed of 66 spm. Turbine power is increased to 320 Mwe at a rate of 3%/min to initiate rod motion. After Bank D rods begin stepping out at 66 spm, malfunction ROD-11A (RPI Failure) is inserted to fail to zero steps for Bank D rod K7 to activate a rod stop. Indication of a dropped rod is verified, a turbine runback occurs, and Bank D rods continue stepping out at 66 spm. Place the rod control bank selector switch is in manual. Verify rod motion stops. Withdraw rod in manual, verify rods will move. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Select failure mode to "Auto Only" or Auto and Manual"

TESTED OPTIONS: Failure mode to "Auto Only"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Rod control bank selector switch in manual, Rod control available in manual, Rod stop conditions do not stop rod movement when in automatic control.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/22/86

DURATION OF TEST: Not applicable

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.15.13 Test Title: MRPI System Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. The "B" Channel MRPI is place in service using local operator action. A MRPI System Failure (malfunction ROD-13) is inserted for a failure mode of A/B Gray Code Mismatch for rod B08. The PPCS ROD SEQUENCE OR DEVIATION alarm actuates. The selected rod does not indicate aligned with the bank, the bus monitor status indicates failed on the system status page, and the A/B gray codes are mismatched for the affected rod on MRPI. Place the "A" MRPI Channel in service using local operator action. Verify the PPCS ROD SEQUENCE OR DEVIATION alarm clears and the selected rod indicates aligned with its bank. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Select failure mode ROD-13A "A/B Gray Code Mismatch", ROD-13B "Det Interface Card", ROD-13C "Det Coil Stack"

TESTED OPTIONS: ROD-13A "A/B Gray Code Mismatch" for rod B08. The local operator action (LOA-8) was used during the performance of this test to select the controlling channel of MRPI (A or B)

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: "A" MRPI Channel selected as controlling channel, PPCS ROD SEQUENCE OR DEVIATION alarm clear, Selected rod indicates aligned with its bank.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/89

DURATION OF TEST: 0.10 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.1 Test Title: Inadvertent Containment Isolation

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. The RCDT pump control switches are placed in pull/stop and the RCDT is filled. All equipment effected by a containment isolation loss of instrument air is operated to ensure operability prior to malfunction activation. An Inadvertent Containment Isolation (malfunction RPS-1) is activated. The simulator is allowed to run with NO OPERATOR ACTION until the containment isolation is complete. All equipment effected by the containment isolation loss of instrument air is verified in its failed position and cannot be operated. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: RPS-1

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Containment isolation occurs, Letdown isolated, Seal return isolated, Instrument air to containment isolated, Containment Ventilation isolated, Spray valves remain closed, PORVs won't operate, Pzr level increasing, VCT level decreasing, Auto makeup initiated, PRT level increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/17/89

DURATION OF TEST: 2.0 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hadt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.2 Test Title Inadvertent Control Room Environmental Isolation

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. The outside air inlet, exhaust relief, and toilet exhaust dampers indicate open and Control Room Charcoal Filter Fan is off. An Inadvertent Control Room Environmental Isolation (malfunction RPS-2) is activated. When the control room HVAC isolation is complete, the isolation is manually overridden. After verifying the control room HVAC isolation is overridden (all isolated components return to normal), the override switch is returned to normal. When the control room HVAC isolation is complete, the malfunction is cleared with no change in the Control Room HVAC Lineup. The Control Room Isolation Reset pushbutton is depressed. The exercise is terminated when all expected indications have been verified and the control room ventilation lineup has returned to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: RPS-2

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Control room environmental isolation malfunction clear, Control room environmental isolation reset, Control room ventilation lineup returned to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/12/90

DURATION OF TEST: 0.5 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hudt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.3 Test Title: Containment Spray Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A DBA LOCA is actuated using malfunction RCS-2B at a leak rate of 24,000 gpm. When containment spray has actuated, A Containment Spray Pump Trip (malfunction RPS-3) is inserted for pump 1A. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RPS-3A "Pump 1A", RPS-3B "Pump 1B"

TESTED OPTIONS: RPS-3A "Pump 1A"

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: LOCA with SI in progress, Containment Spray initiated, Containment Spray Pump 1A tripped, Spray additive flow decreased, Sodium hydroxide level decreasing at a slower rate.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/89

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED:

Spray Additive Flow
Spray Additive Tank Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.5 Test Title: Reactor Trip Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (24) - Failure of automatic reactor trip system.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Reactor Trip Failure (malfunction RPS-5) is inserted for both breakers with manual trip not available. Reactor trip signals are generated (main turbine trip, manual reactor trip). The reactor is verified not tripped. The MG sets are tripped using a local operator action. The Reactor is verified to trip. The Ginna simulator is re-initialized to IC-12, 100% power, BOL. A Reactor Trip Failure (malfunction RPS-5) is inserted for both breakers with manual trip available. A Reactor trip signal is generated by manually tripping the main turbine. The reactor is verified not tripped. The reactor is manually tripped. The Reactor is verified to trip. The exercise is terminated when the reactor trips.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Select faulty breaker (Bkr A, Bkr B, or Both), Manual trip available or not available.

TESTED OPTIONS: Both breakers faulty, test with and without manual trip available.

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: (Manual trip not available) Turbine Tripped, Reactor tripped by local tripping of MG sets; (Manual trip available) Turbine tripped, Reactor tripped manually.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/27/90

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.6 Test Title: Containment Fails to Isolate

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features.

ESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Containment Fails to Isolate (malfunction RPS-6) is activated. A containment isolation signal is manually initiated and the Pzr low pressure SI bistables are manually tripped. Neither action causes a containment isolation to occur with the exception of a Containment Ventilation Isolation, which actuates. All equipment effected by the containment isolation signal is verified to be operable manually. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: RPS-6

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Manual and automatic Containment Isolation Signals present, No Containment Isolation occurs, Containment Ventilation isolated, Reactor Tripped, SI initiated, Containment Isolation components can be manually operated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/21/86

DURATION OF TEST: Not available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.7 Test Title: Failure of ESF Components to Activate

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% Power, MOL as necessary during the performance of this test procedure. The Failure of ESF Components to Actuate (malfunction RPS-7) is inserted for the ESF components. Simulator malfunctions and operations are performed that would normally cause the activation of ESF components (Steamline break upstream of flow element, Inadvertent SIS activation, Starting of Diesel Generators, and manually tripping the reactor). The ESF components are verified to not automatically actuate. Manually actuation of the failed components is verified operable. The exercise is terminated when all ESF components have been verified to not automatically actuate and manual activation of all components is available.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: RPS-7A through RPS-7Z for the following components "A & B SI pumps, C SI pump Bus 14 & Bus 16, A & B RHR pumps, A, B, C, & D CNMT recirc fans, A & B MDAFW pumps, TDAFW steam supplies MOV-3504A (B S/G) & MOV-3505A (A S/G), A, B, C, & D SW pumps, A & B MSIVs, A & B MAIN FRVs, A & B FW bypass valves, MOV-871A, and MOV-871B

TESTED OPTIONS: All available options.

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: All ESF components fail to automatically activate, manual activation remains operable.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/27/90

DURATION OF TEST: 1.0 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.16.8 Test Title: Containment Spray Failure to Actuate

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% Power, MOL. A Containment Spray Failure to Actuate (malfunction RPS-8) is inserted for both Trains A & B with no manual control available. A Steamline break upstream of flow element (malfunction STM-11) is inserted to cause the activation of containment spray. Containment spray is verified not to actuate. Manual activation of containment spray is attempted with no success. The simulator is re-initialized to IC-16, 100% Power, MOL. Malfunction RPS-8 is re-inserted for Train B with manual control available. Malfunction STM-11 is re-inserted to cause the activation of containment spray. Containment spray is verified for Train A and not Train B. Manual activation of Train B is attempted with success. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Failure of Train A, B, or Both; Manual activation available or not available

TESTED OPTIONS: Failure of Both Trains with Manual activation not available, and Failure of Train B with Manual activation available.

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Containment spray failed to activate (both Trains) with manual control not available, and Containment spray failed to activate for Train B, with manual control available (Train B activated Manually)

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/27/90

DURATION OF TEST: 0.5 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.17.1.1 Test Title: S/G Level Channel Failure - High

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A S/G Level Channel Failure (malfunction SGN-1) is inserted at a severity of 100% level with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the affected S/G SF FF Channel Alert alarm actuates and the STM FW FLOW DEV bistable lights energize. The feed flow controller for the affected S/G is placed in manual and the S/G level is restored. The exercise is terminated when S/G level has been restored to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SGN-1A "LT-460 (Wide Range)", SGN-1B "LT-461 (I)", SGN-1C "LT-462 (III)", SGN-1D "LT-463 (IV)", SGN-1E "LT-470 (Wide Range)", SGN-1F "LT-471 (IV)", SGN-1G "LT-472 (I)", SGN-1H "LT-473 (III)"

TESTED OPTIONS: SGN-1B "LT-461 (I)"

MALFUNCTION RANGES: Select failed Value - 0-100% level, Select ramp time 0-3600 seconds

FINAL CONDITIONS: S/G A Level pegged high, S/G A feed regulating valve demand signal decreasing when feed flow controller is in automatic, S/G A feed flow controller in manual, S/G A level restored.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/89

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED:

S/G A/B Level
S/G A/B Feed Flow
S/G A Feed Reg Valve position

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulbert Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.17.1.2 Test Title: S/G Level Channel Failure - Low

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A S/G Level Channel Failure (malfunction SGN-1) is inserted at a severity of 0% level with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indication have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SGN-1A "LT-460 (Wide Range)", SGN-1B "LT-461 (I)", SGN-1C "LT-462 (III)", SGN-1D "LT-463 (IV)", SGN-1E "LT-470 (Wide Range)", SGN-1F "LT-471 (IV)", SGN-1G "LT-472 (I)", SGN-1H "LT-473 (III)"

TESTED OPTIONS: SGN-1F "LT-471 (IV)"

MALFUNCTION RANGES: Select failed Value - 0-100% level, Select ramp time 0-3600 seconds

FINAL CONDITIONS: S/G B Level pegged low, S/G B LEVEL DEVIATION and LO-LO LEVEL CHANNEL ALERT alarms actuated, S/G B LO-LO LEVEL bistable status light energized, S/G B level oscillating around the 67% setpoint for the HI LEVEL alarm, FRV-B and bypass valve close on high alarm (swell on closure) and reopen when clear (shrink on opening).

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/21/89

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED:

S/G A/B Level
S/G A/B Feed Flow
S/G A Feed Reg Valve position

TEST DEFICIENCIES: SDR 89-252 G-5 does not alarm

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.17.2 Test Title: S/G Level Controller Oscillates

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A S/G Level Controller Oscillates (malfunction SGN-2A - Controller oscillates at preset frequency between selected limits with manual control available) is inserted at a severity of 10% level above and below operating level at a 120 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until all expected indications have been verified. When all expected indications have been verified, the feed flow controller is placed in manual and the oscillations stopped. The exercise is terminated after the oscillations have stopped with the feed flow controller in manual.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SGN-2A "S/G 1A", SGN-2B "S/G 1B"

TESTED OPTIONS: SGN-2A "S/G 1A"

MALFUNCTION RANGES: Selected magnitude 0-50% level (Level demand will oscillate up to 50% level above and below operating level), Selected ramp time of 0-600 seconds.

FINAL CONDITIONS: S/G A feed flow controller in manual with all system oscillations stopped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

CRITICAL PARAMETERS MONITORED:

S/G "A" Feed Reg Valve position
S/G "A" Level
S/G "A" Feed Flow
S/G "A" Steam Flow
Loop "A" T-Cold
Reactor Power
S/G "B" Feed Flow
S/G "B" Level

TEST DEFICIENCIES:

SDR 90-240 No change in HVC meters for valves

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.17.3 Test Title: Steam Generator Pressure Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. The S/G steam flow control transfer switch is positioned to the channel that will be failed to ensure the failed channel is providing input to the control system. A S/G Pressure Channel Failure (malfunction SGN-3) is inserted at a severity of 1200 psig with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the affected S/G Level Deviation Alarm actuates. The S/G steam flow control transfer switch is positioned to the channel that is not failed. The exercise is terminated when the affected S/G feed flow returns to normal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SGN-3A "PT-468 (A S/G, FT-464)", SGN-3B "PT-469 (A S/G, FT-465)", SGN-3C "PT-478 (B S/G, FT-474)", SGN-3D "PT-479 (B S/G, FT-475)", SGN-3E "PT-482 (A S/G)", SGN-3F "PT-483 (B S/G)"

TESTED OPTIONS: SGN-3B "PT-469 (A S/G, FT-465)"

MALFUNCTION RANGES: Select failed pressure - 0-1200 psig, Select ramp time 0-3600 seconds

FINAL CONDITIONS: Affected S/G pressure indication pegged high, Affected S/G flow indication increased, Non-affected S/G flow indication no change, S/G steam flow control transfer switch positioned to the channel that is not failed, S/G feed flow returns to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/21/86

DURATION OF TEST: Not available

CRITICAL PARAMETERS MONITORED:

S/G "A" Steam Pressure
S/G "A" Steam Flow
S/G "A" Feed Flow
S/G "A" Level
SGFP Discharge Pressure
S/G "B" Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hudt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.17.4 Test Title: Steam Generator Tube Rupture

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (1a) - Loss of Coolant - Significant PWR steam generator leaks

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A Steam Generator Tube Rupture (malfunction SGN-4A) is inserted at a severity of 1200 gpm with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until a pressurizer low pressure safety injection actuates. The 1A S/G is isolated using controlled copies of the R. E. Ginna emergency operating procedures. The exercise is terminated when the steam generator has been isolated and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SGN-4A "S/G 1A", SGN-4B "S/G 1B"

TESTED OPTIONS: SGN-4A "S/G 1A"

MALFUNCTION RANGES: Select leak rate of 0-2400 gpm, Select ramp time of 0-3600 seconds.

FINAL CONDITIONS: Pzr level and pressure decrease, Charging flow increases, Condenser air ejector radiation monitor level increase, Charging pump suction transfers to the RWST, Pzr low pressure trip and SI actuate, S/G 1A isolated, S/G 1A and RCS pressure stabilize.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/22/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Pressurizer Level
S/G Levels (WR)
RCS Pressure (WR)
S/G "A" Pressure
S/G "A" Level
S/G "A" Feed Flow
S/G "A" Steam Flow
Loop "A" Tcold
Pressurizer Pressure
Reactor Power
TAVG
S/G "B" Pressure
S/G "B" Feed Flow
S/G "B" Steam Flow
Air Ejector Radiation Level (R-15)

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.18.1 Test Title: Inadvertent SIS Actuation

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (17) - Failure of automatic control system(s) that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The containment purge system is placed in operation, and 1A charging pump is running. An Inadvertent SIS Actuation (malfunction SIS-1) is inserted for Train A. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after SI initiates, and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Train A or Train B

TESTED OPTIONS: Train A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Reactor tripped, SI Train A initiated, Main Feed Pumps tripped, Charging Pump A tripped, Containment Ventilation Isolation actuated, D/G 1A started remains at idle speed, SI pumps 1A and 1C start, SI flow remains zero, RHR pump 1A starts, MDAFP A starts, Auxiliary feed flow increases to normal.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 03/10/90

DURATION OF TEST: 1.5 hours

CRITICAL PARAMETERS MONITORED:

Boric Acid Tank Level 1A/1B
RWST Level

TEST DEFICIENCIES:

SM 89-26 BAST level increases during SI

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Holt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.18.2 Test Title: SIS Failure to Actuate

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Valves MOV-826B and MOV-826D are verified closed or closed, and Valves MOV-826A and MOV-826C are verified open or opened. An SIS Failure to Actuate (malfunction SIS-2) is inserted for Train B with no manual mode available. Malfunction RCS-2 (LOCA) is initiated at a severity of 1000 gpm to cause initiation of safety injection. The simulator is allowed to run with NO OPERATOR ACTION until all indications of SI Train A actuation and SI Train B failure to actuate have been verified. The SI actuation pushbutton is depressed for Train B. Train B SI does not initiate. The exercise is terminated after verification of SI Train B failure to initiate due to automatic initiation signal or manual initiation signal.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: Affected Train - (A, B, or Both); Mode - Manual initiation available or No Manual Initiation available.

TESTED OPTIONS: Train B with no manual initiation available.

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Reactor tripped, turbine tripped, SI Train A initiated, SI Train B will not initiate automatically or manually.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/17/89

DURATION OF TEST: 0.5 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.18.3 Test Title: SI Pump Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) passive failure in Engineered Safety Feature System.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-6, 100 power, MOL. A leak from the Loop A Cold Leg is inserted at 1000 gpm severity. The simulator is allowed to run until all three Safety Injection Pumps start. With all three Si pumps running, a SI Pump Trip (malfunction SIS-3B - Selected pump trips on overcurrent) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after verification of SI pump 1C flow to Loop 1B, and SI pump 1A flow to Loop 1A. Malfunctions SIS-3A and SIS-3B are also tested.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SIS-3A "Pump 1A", SIS-3B "Pump 1B", SIS-3C "Pump 1C"

TESTED OPTIONS: SIS-3B "Pump 1B", SIS-3A "Pump 1A", SIS-3C "Pump 1C"

MALFUNCTION RANGES: Failed due to overcurrent

FINAL CONDITIONS: Safety injection activated, SI pump 1A supplying Loop A, SI pump 1C supplying Loop B with discharge valve to Loop A closed, SI pump 1B tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/16/90

DURATION OF TEST: 0.5 hour

CRITICAL PARAMETERS MONITORED:

"B" Loop SI Flow
"A" Loop SI Flow
"B" Loop SI Header Pressure
"A" Loop SI Header Pressure

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulf Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.18.4 Test Title: RWST Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) passive malfunction in systems such as: Engineered Safety System

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A RWST Leak (malfunction SIS-4) is inserted at a severity of 50,000 gpm with a 60 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: SIS-4

MALFUNCTION RANGES: Select leak rate - 0-50,000 gpm, Select ramp time 0-3600 seconds

FINAL CONDITIONS: RWST level decreasing, RWST HI-LO LEVEL alarm actuated, Aux. bldg sump high level alarm actuated, Aux bldg sump pumps 1A and 1B started, Waste Disposal Panel Alarm actuated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/22/86

DURATION OF TEST: Not available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.18.5 Test Title: Accumulator Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) passive malfunction is systems such as: Engineered Safety Systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. An Accumulator Leak (malfunction SIS-5) is inserted at a severity of 100 gpm with a 60 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SIS-5A "Accumulator 1A", SIS-5B "Accumulator 1B"

TESTED OPTIONS: SIS-5A "Accumulator 1A"

MALFUNCTION RANGES: Select leak rate - 0-100 gpm, Select ramp time 0-3600 seconds

FINAL CONDITIONS: Accumulator 1A pressure and level decreasing, ACCUMULATOR 1A LEVEL and PRESSURE alarms actuated, Containment sump A level increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/89

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED: Accumulator 1-A Level
Accumulator 1-A Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.18.6 Test Title: Safety Injection Header Leak

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) passive malfunction in systems such as: Engineered Safety Systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-19, 100% Power, EOL. An Safety Injection Header Leak (malfunction SIS-6, leak downstream of flow transmitter upstream of MOV) is inserted at a severity of 600 gpm with a 0 second ramp time. Safety injection is manually initiated. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: SIS-6A "RCS Loop 1A (SIP 1B)", SIS-6B "RCS Loop 1B (SIP 1A)"

TESTED OPTIONS: SIS-6A "RCS Loop 1A (SIP 1B)"

MALFUNCTION RANGES: Select leak rate - 0-600 gpm, Select ramp time 0-3600 seconds

FINAL CONDITIONS: SI Loop A Flow increases, SI Loop B flow remains zero, SI pump B discharge pressure corresponds to amount of flow, SI pump A discharge pressure increases to near shut-off head, Containment sump A level increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.5 hour

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.1 Test Title: Steam Flow Channel Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Steam flow transmitter FT-464 (S/G 1A-1) is selected for control. A Steam Flow Channel Failure (malfunction STM-1A - flow transmitter fails to selected value) is inserted at a severity of 4 x 10^6 lbm/hr with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until S/G A level increases so the S/G level error offsets the flow error. The S/G A steam flow transmitter in control is transferred to FT-465 (S/G 1A-2). The exercise is terminated when the steam generator level returns to normal. This test is repeated STM-1A for a steam flow channel failure at a severty of 0 lbm/hr with a 60 second ramp time.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-1A "FT-464 (1A-1)", STM-1B "FT-465 (1A-2)", STM-1C "FT-474 (1B-1)", STM-1D "FT-475 (1B-2)"

TESTED OPTIONS: STM-1A "FT-464 (1A-1)" (Fail high and low)

MALFUNCTION RANGES: Selected failed value of 0-4x10^6 lbm/hr, Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: IC-12, 100% power, BOL, S/G A steam flow transmitter FT-465 in control, S/G A level restored to normal

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 0.25 hour

CRITICAL PARAMETERS MONITORED:

S/G "A" Steam Flow
S/G "A" Feed Flow
S/G "A" Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.2 Test Title: Steamline Break Outside Containment Upstream of MSIV's

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20.b) - Main steam line break outside of containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A non-isolable steamline break outside of containment upstream of MSIV's (malfunction STM-2B) is activated with a severity of 1.2×10^7 lbm/hr at a 240 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the affected steam generator boils dry.
If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-2A - "Steamline Break S/G 1A"; STM-2B - "Steamline Break S/G 1B"

TESTED OPTIONS: STM-2B - "Steamline Break S/G 1B"

MALFUNCTION RANGES: Leak rate - 0-1.2×10^7 lbm/hr; Ramp time - 0-3600 seconds

FINAL CONDITIONS: Reactor tripped, turbine tripped, Containment pressure remains constant, S/G 1B steam flow remains high after reactor trip and MSIV closure until the steam generator boils dry, SI initiated, S/G 1B boils dry.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/23/86

DURATION OF TEST: Not available

CRITICAL PARAMETERS MONITORED:

S/G "A" Level	S/G "B" Level
S/G "A" Steam Flow	S/G "B" Steam Flow
S/G "A" Feed Flow	S/G "B" Feed Flow
S/G "A" Pressure	S/G "B" Pressure
Nuclear Power	AVG TAVG
Pressurizer Pressure	Pressurizer Level
RCS Loop A TAVG	RCS Loop B TAVG
RCS Loop A DT	RCS Loop B DT

TEST DEFICIENCIES:

TR 1862 TAVG Decrease

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.3 Test Title: Steamline Break Outside Containment Downstream of MSIV's

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20.b) - Main steam line break outside of containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% power, MOL. An Isolable steamline break outside of containment downstream of MSIV's (malfunction STM-3) is activated with a severity of $1x10^7$ lbm/hr at a 240 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the MSIV's close, steam flow decrease to zero, steam generator levels, recover, and RCS pressure and T_{ave} stop decreasing and commence increasing.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select Leak rate - $0\text{-}1.2x10^7$ lbm/hr; Ramp time - 0-3600 seconds

FINAL CONDITIONS: Reactor tripped, turbine tripped, Containment pressure remains constant, steam flow remains high until MSIV closure, SI initiated, steam generator levels recover, and RCS pressure and T_{ave} stop decreasing and commence increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/89

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

S/G A Level	S/G B Level
S/G A Steam Flow	S/G B Steam Flow
S/G A Feed Flow	S/G B Feed Flow
S/G A Pressure	S/G B Pressure
Nuclear Power	Avg Tavg
Pressurizer Pressure	Pressurizer Level
RCS Loop A Tavg	RCS Loop B Tavg
RCS Loop A DT	RCS Loop B DT

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.4 Test Title: Atmospheric Relief Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% Power, BOL. At least one charging pump is in automatic. An Atmospheric Relief Valve Failure (malfunction STM-4) is inserted at a severity of 100% open (Manual Available) with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the plant has stabilized with RCS Tavg returned to the initial value, Steam flow approx. 5% higher, PR NI's show increased power. The affected atmospheric relief valve is place in manual and the valve is closed. The exercise is terminated when the plant stabilizes at normal parameters.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-4A "Valve 3411 (Manual Available)", STM-4B "Valve 3411 (Manual not Available)", STM-4C "Valve 3410 (Manual Available)", STM-4D "Valve 3410 (Manual not Available)"

TESTED OPTIONS: STM-4A "Valve 3411 (Manual Available)"

MALFUNCTION RANGES: Select failed position - 0-100% open, Select ramp time 0-3600 seconds

FINAL CONDITIONS: (In Auto) S/G A atmospheric relief 100% open, Plant stabilized with RCS Tavg at its initial value, Steam flow increased approximately 5%, Power Range NIs show an increase of several percent; (In Manual) S/G A atmospheric relief closed, Plant stabilized at normal plant parameters.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/17/90

DURATION OF TEST: 0.75 hours

CRITICAL PARAMETERS MONITORED:

S/G A Steam Flow
S/G B Steam Flow
RCS Tavg
Power Range NI

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.5 Test Title: Main Steam Isolation Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-19, 100% power, EOL. A Main Steam Isolation Valve Failure (malfunction STM-5B) is inserted at a severity of inadvertent closure with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the plant stabilizes after the low pressure SI and reactor trip.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-5A "Valve 3517", STM-5B "Valve 3516"

TESTED OPTIONS: STM-5B "Valve 3516"

MALFUNCTION RANGES: Selected failed position - 0 = "Inadvertent Closure", or 1 = "Fails to close on demand", Selected ramp time of 0-3600 seconds.

FINAL CONDITIONS: Low pressure SI activated, Reactor Tripped, Main Steam Isolated

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

S/G A Level	S/G B Level
S/G A Steam Flow	S/G B Steam Flow
S/G A Feed Flow	S/G B Feed Flow
S/G A Pressure	S/G B Pressure
Nuclear Power	Avg Tavg
Pressurizer Pressure	Pressurizer Level
RCS Loop A Tavg	RCS Loop B Tavg
RCS Loop A DT	RCS Loop B DT

TEST DEFICIENCIES: SM 91-009 Annunciator G-27/29 lo lo steam pressure channel alert do not alarm

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.6 Test Title: Main Steam Header Pressure Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-7, 5% power, BOL. Steam dump control is placed in the manual mode. A Main Steam Header Pressure Transmitter Failure (malfunction STM-6) is activated with a severity of 1200 psig at a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the reactor trips. When the reactor trips, the MSIV's are shut and steam flow terminates. The exercise is terminated after the MSIV's are closed, and steam flow decrease to zero.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: STM-6

MALFUNCTION RANGES: Select failed pressure - 0-1200 psig, Ramp time - 0-3600 seconds

FINAL CONDITIONS: Pressure indicator PI-484 indicates 1200 psig, RCS T_{ave} decreases, RCS loop delta T's increase, pressurizer level and pressure decrease, Reactor tripped, MSIV's closed, Steam flow terminated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/23/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

S/G A Level	S/G B Level
S/G A Steam Flow	S/G B Steam Flow
S/G A Feed Flow	S/G B Feed Flow
S/G A Pressure	S/G B Pressure
Nuclear Power	Avg Tavg
Pressurizer Pressure	Pressurizer Level
RCS Loop A Tavg	RCS Loop B Tavg
RCS Loop A DT	RCS Loop B DT

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.9 Test Title: Main Steam Safety Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20) Main Steam Line Break

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The auxiliary feed pumps are prevented from starting, steam dump control is placed in manual, and atmospheric reliefs are isolated. A Main Steam Safety Valve Failure (malfunction STM-9A) is inserted at a severity of 5% open. Pressure setpoint is increased. Reactor is manually tripped. The malfunction severity is increased to 100% after steam flow increases to the safety valve capacity. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the affected steam generator boils dry and the non-affected steam generator pressure verified consistent with RCS temperature.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-9A "Valve 3508", STM-9B "Valve 3509", STM-9C "Valve 3510", STM-9D "Valve 3511", STM-9E "Valve 3512", STM-9F "Valve 3513", STM-9G "Valve 3514", STM-9H "Valve 3515"

TESTED OPTIONS: STM-9A "Valve 3508"
The following Local Operator Actions were used during the performance of this test:
LOA STM-1 Valve 3506 - Open, Closed and LOA STM-2 Valve 3507 - Open, Closed

MALFUNCTION RANGES: Selected failed position 0-100% Open - 0 = Gagged Shut, 1-5 = Clogged Seat, any selection greater than 5 = 100% open (Broken Spring)

FINAL CONDITIONS: Reactor Tripped, Main Steam Isolated, Low pressure SI activated, S/G A pressure is consistent with RCS temperature, S/G B boiled dry

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

S/G A Level	S/G B Level
S/G A Steam Flow	S/G B Steam Flow
S/G A Feed Flow	S/G B Feed Flow
S/G A Pressure	S/G B Pressure
Nuclear Power	Avg Tavg
Pressurizer Pressure	Pressurizer Level
RCS Loop A Tavg	RCS Loop B Tavg
RCS Loop A DT	RCS Loop B DT

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Huff Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.10 Test Title: Steam Dump Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-16, 100% Power, MOL. A Steam Dump Failure (malfunction STM-10) is inserted at a severity of 100% open. A reactor trip is manually initiated to cause the steam dump valves to open. The simulator is allowed to run with NO OPERATOR ACTION until all the steam dumps close except the affected valve. The affected steam dump valve is isolated using local operator actions. The exercise is terminated when the affected steam dump is isolated.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-10A "A1 (3350)", STM-10B "A2 (3349)", STM-10C "B1 (3352)", STM-10D "B2 (3351)", STM-10E "C1 (3354)", STM-10F "C2 (3353)", STM-10G "D1 (3356)", STM-10H "D2 (3355)",

TESTED OPTIONS: STM-10B "A2 (3349)", The local operator action to operate steam dump A2 isolation valve 4171 is used during the performance of this test.

MALFUNCTION RANGES: Select failed position - 0-100% open, Select ramp time 0-3600 seconds

FINAL CONDITIONS: Reactor manually tripped, All steam dumps valves open until RCS Tave approaches 547°F, then all steam dumps except affected valve (3349) close, Steam Dump A2 (3349) isolated by LOA valve 4171.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 04/06/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SDR 89-67 Malfunction occurred on Valve 3355 instead of 3349.
Valve 4171 did however stop scram flow in LOA

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulott Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.19.11 Test Title: Steamline Break Upstream of Flow Element Inside Containment

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (20a) - Main steam line break inside of containment.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-19, 100% power, EOL. A steam line rupture inside the containment (malfunction STM-11B) is inserted at a severity of 1.9×10^7 lbm/hr with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION until the pressurizer low pressure alarm and bistables actuate. The AFW flow to steam generator B is isolated. The exercise is terminated after steam generator B boils dry.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: STM-11A "S/G 1A", STM-11B "S/G 1B"

TESTED OPTIONS: STM-11B "S/G 1B"

MALFUNCTION RANGES: Select leak rate - 0-1.9×10^7 lbm/hr, Ramp time - 0-3600 seconds

FINAL CONDITIONS: Containment temperature and pressure increases, No radiation level increase in containment, RCS T_{ave} decreases, pressurizer level and pressure decrease, Reactor tripped, SI initiated, Containment Spray initiated, MSIV's closed, S/G 1A level slowly recovering, AFW flow isolated to S/G 1B, S/G 1B boils dry

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 12/11/89

DURATION OF TEST: 2 hours

CRITICAL PARAMETERS MONITORED:

S/G A Level	S/G B Level
S/G A Steam Flow	S/G B Steam Flow
S/G A Feed Flow	S/G B Feed Flow
S/G A Pressure	S/G B Pressure
Nuclear Power	Avg Tavg
Pressurizer Pressure	Pressurizer Level
RCS Loop A Tavg	RCS Loop B Tavg
RCS Loop A DT	RCS Loop B DT
B IR Power	

TEST DEFICIENCIES:

SM 89-43 Test 14.4.7.19.11 RPS did not sense FF/SF mismatch during Malfunction STM-11B
SDR 89-252 Annunciators G-3, G-7 should light

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulett Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.1 Test Title: Inadvertent Turbine Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (15) - Turbine Trip

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. An Inadvertent Turbine Trip (malfunction TUR-1) is activated. The simulator is allowed to run with NO OPERATOR ACTION until T_{ave} decreases below 554°F. The feed flow controllers are placed in manual and regulated to maintain steam generator level at the no load level. The shaft turning gear is engaged and started (local operator action) when the turbine shaft has stopped. The exercise is terminated after the main turbine has been placed on the shaft turning gear and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Turbine tripped, Reactor tripped, Generator tripped, Steam dumps modulate to maintain T_{avg} at no load T_{avg}, Feed water controllers in manual maintaining steam generator level at the no load level, Main turbine is on the shaft turbine gear

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 01/24/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Tavg
Turbine Impulse Pressure
S/G Level
S/G Steam Flow
S/G Feed Flow
Gen MW
Gen Amps

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.2 Test Title: Turbine Failure to Auto Trip

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Turbine Failure to Auto Trip (malfunction TUR-2) is inserted. The reactor is manually tripped. The simulator is allowed to run with NO OPERATOR ACTION until all automatic turbine trip signals have failed to trip the main turbine. The turbine is manually tripped. The exercise is terminated after verifying the turbine manual trip generates a turbine trip.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Reactor manually tripped (turbine does not trip), SI actuates on low Pzr pressure, MFP's trip, MSIV's close, Condenser Vacuum decreases, Turbine low vacuum trip alarm actuates, Turbine Latch Trip Actuation alarm does not actuate, Generator MW decreases, 4 KV Main or Tie Bkr trip, Gen Volt Reg manual, Gen Reverse Power, Gen Exciter Field Bkr Trip, Turbine REFER and SETTER indicate 1800 RPM, Turbine shaft speed decreasing (turbine does not trip), (Manual Trip) - Stop Valves close, Control Valves close, Reheat Stop/Intercept Valves close.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/27/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED:

Steam Flow
Impulse Pressure
S/G Pressure
Gen MW
RCS Tavg
PZR Pressure
PZR Level

TEST DEFICIENCIES: SM 90-81 Test 14.4.7.3.7, Alarm I-5 came in

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.3 Test Title: Turbine Lube Oil Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Turbine Lube Oil Failure (malfunction TUR-3) is inserted at a severity of 0 psig with a 300 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the turbine trips on low turbine bearing oil pressure.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-3

TESTED OPTIONS: TUR-3

MALFUNCTION RANGES: Select Final Pressure - 0-15 psig, Select ramp time - 0-3600 seconds

FINAL CONDITIONS: Turning gear oil and H.P. seal oil pumps started when oil pressure decreased to 8 psig, Emergency oil pump started, Vital battery monitoring system indicates increased load, Turbine Tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/16/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None.

TEST DEFICIENCIES: SM 90-20 No affect on vital battery system

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hutt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.4 Test Title: Turbine High Eccentricity

ANSI/ANS 3.5 RELATIONSHIP:

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-6, Warming Steam Lines, Turbine rotating at less than 600 rpm. A Turbine High Eccentricity (malfunction TUR-4 - rotor bowing) is inserted at a severity of 15 mils with a 300 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-4

TESTED OPTIONS: TUR-4

MALFUNCTION RANGES: Selected final eccentricity - 0-15 mils, Selected ramp time - 0-3600 seconds.

FINAL CONDITIONS: IC-6, Warming Steam Lines, Turbine rotating at less than 600 rpm with TURBINE ECCENTRICITY OR VIBRATION alarm active

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: SM 90-04 Test 14.4.7.20.4

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.5 Test Title: Turbine High Vibration

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Turbine High Vibration (malfunction TUR-5) is inserted at a severity of 15 mils with a 200 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated after the affected turbine bearing vibration increases to the Rotor Eccentricity or Vibration alarm setpoint and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-5A "Brg 1 horizontal", TUR-5B "Brg 2 vertical", TUR-5C "Brg 3 horizontal", TUR-5D "Brg 4 vertical", TUR-5E "Brg 5 horizontal", TUR-5F "Brg 6 vertical", TUR-5G "Brg 7 horizontal", TUR-5H "Brg 8 vertical", TUR-5I "Brg 9 horizontal",

TESTED OPTIONS: TUR-5F "Brg 6 vertical"

MALFUNCTION RANGES: Select vibration amplitude - 0-15 mils, Select ramp time - 0-3600 seconds

FINAL CONDITIONS: Affected bearing vibration increases to 15 mils over a period of 200 seconds, Bearing vibration of the bearings on either side of the affected bearing indicated an increase in vibration at a decreased amplitude, ROTOR ECCENTRICITY OR VIBRATION alarm actuates when the affected bearing vibration increases to 7 mils.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/18/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.6 Test Title: Turbine Lube Oil Temperature Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Turbine Lube Oil Temperature Control Valve Failure (malfunction TUR-6) is inserted at a severity of 0% open with a 0 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select fail position - 0-100% open, Select ramp time - 0-3600 seconds

FINAL CONDITIONS: Turbine lube oil temperature increasing, Turbine oil cooler controller output zero, TURBINE OIL RESERVOIR OUT HI TEMP alarm actuated, Turbine vibration increasing.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 04/06/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.7 Test Title: Turbine Thrust Bearing High Wear

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Turbine Thrust Bearing High Wear (malfunction TUR-7) is inserted at a severity of 100 lbs oil pressure buildup with a 200 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the turbine trips and all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Select amount of wear - 0-100 lbs of oil pressure buildup, Select ramp time - 0-3600 seconds

FINAL CONDITIONS: Turbine supervisory monitor thrust position increasing, Turbine thrust bearing temperature increasing, Turbine vibration increasing, THRUST BEARING FAILURE alarm actuated, Turbine tripped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/17/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.8 Test Title: TSI Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. A TSI Failure (malfunction TUR-8B - Loss of power to TSI components) is inserted. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-8A "Loss of power to Turbine Generator Temperature Recorders", TUR-8B "Loss of power to Turbine Generator Vibration Recorder, Valve Movement Recorder, Multiple Valve Position Power Drawer, Additive Valve Position Power Drawer, Generator Vibration Indicator, Generator Expansion Indicator"

TESTED OPTIONS: TUR-8B "Loss of power to Turbine Generator Vibration Recorder, Valve Movement Recorder, Multiple Valve Position Power Drawer, Additive Valve Position Power Drawer, Generator Vibration Indicator, Generator Expansion Indicator"

MALFUNCTION RANGES: None

FINAL CONDITIONS: IC-12, 100% Power, BOL

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.9.1 Test Title: Turbine EHC Failure - EHC Leak

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL, with 1A EHC pump running and 1B EHC pump in standby. A Turbine EHC Failure - EHC Leak (malfunction TUR-9) is inserted as a leak on the pump discharge header at a severity of 100% with a 200 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the lockout relay trips, the EHC pumps trip, and all other expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-9A "EHC System leak on pumps discharge header", TUR-9B "Failure of electronic reference counter output", TUR-9C "Faulty output from speed error summer", TUR-9D "Failure in control unit shifts turbine to manual control"

TESTED OPTIONS: TUR-9A "EHC System leak on pumps discharge header"

MALFUNCTION RANGES: Select % of output - 0-100% for TUR-9A & TUR-9D; 0-200% for TUR-9B & TUR-9C, Select ramp time - 0-3600 seconds (For TUR-9A only)

FINAL CONDITIONS: Standby EHC Pump started, EH SYSTEM TEMPERATURE PRESSURE alarm actuated, Turbine control and stop valve rapidly drift closed, Reactor tripped, Lock out relay trips, EHC pump tripped, MOTOR OFF CW-EH-EMERG OIL-SEAL OIL BU alarm actuated.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/18/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.9.2 Test Title: Turbine EHC Failure - Load Reference Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. A Turbine EHC Failure - Load Reference Failure (malfunction TUR-9) is inserted at a severity of 0% output. The simulator is allowed to run with NO OPERATOR ACTION until turbine control transfers to manual. Manual load control is verified in effect for the turbine. The exercise is terminated when turbine control transfers to manual, manual load control is verified, and all other expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-9A "EHC System leak on pumps discharge header", TUR-9B "Failure of electronic reference counter output", TUR-9C "Faulty output from speed error summer", TUR-9D "Failure in control unit shifts turbine to manual control"

TESTED OPTIONS: TUR-9B "Failure of electronic reference counter output"

MALFUNCTION RANGES: Select % of output - 0-100% for TUR-9A & TUR-9D; 0-200% for TUR-9B & TUR-9C, Select ramp time - 0-3600 seconds (For TUR-9A only)

FINAL CONDITIONS: TURBINE MANUAL lite energized, OPER AUTO lite de-energized, LOAD REF CHAN monitor lite energized, Reference and Setter digital displays go to maximum, CV tracking display bottom of scale, IMP IN lite remains energized, Manual load control in effect.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 04/06/89

DURATION OF TEST: 0.25 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hiedt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.10 Test Title: AMSAC Failures

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (23) - Passive malfunctions in systems, such as engineered safety features, emergency feedwater systems

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL. An AMSAC Failures (malfunction TUR-10A) is inserted at a severity of failure to activate. Malfunctions are activated for S/G level channel failures for Channels I, II, III, & IV failing to 50% level, and Reactor Trip Failure for both breakers. Feed flow is reduced to both S/G's. The AMSAC status lights energize, the automatic actions do not occur (Turbine trip, MDAFW and TDAFW pumps start). Malfunction TUR-10 is cleared. The AMSAC automatic actions occur. The AMSAC Failures (malfunction TUR-10B) is re-inserted at a severity of failure to reset. The AMSAC reset push buttons are depressed. The status lights remain on, the MDAFW and TDAFW pumps cannot be stopped. The exercise is terminated after verifying the AMSAC signals cannot be reset.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-10A AMSAC Fails to Actuate, TUR-10B AMSAC Fails to Reset.

TESTED OPTIONS: TUR-10A AMSAC Fails to Actuate, and TUR-10B AMSAC Fails to Reset.

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Active AMSAC signal cannot be reset, MDAFW and TDAFW pumps cannot be stopped.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/90

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED: None

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.11 Test Title: Turbine Control Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL, with turbine control in OPER AUTO, IMP IN, and the valve position limit set at 100%. Turbine load is reduced to allow turbine CVL-2 to be at approximately 90% open. A Turbine Control Valve Failure (malfunction TUR-11) is inserted at a severity of 0% open with a 100 second ramp time. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when the plant stabilizes at a lower power level.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-11A "Valve 3462 CVL-4", TUR-11B "Valve 3463 CVL-2", TUR-11C "Valve 3464 CVR-1", TUR-11D "Valve 3465 CVR-3"

TESTED OPTIONS: TUR-11C "Valve 3464 CVR-1"

MALFUNCTION RANGES: Select fail position - 0-100% open, Select ramp time - 0-3600 seconds

FINAL CONDITIONS: CVR-1 closed, CVL-2 100% open, Turbine first stage pressure decreased, Steam header pressure increased, S/G pressure increased, Steam flow decreased, Tref decreased, Tavg increased, Bank D rods step in to reduce Tavg to Tref, Gen MW output decreased, Plant stable are lower power level.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 11/17/89

DURATION OF TEST: 0.5 hours

CRITICAL PARAMETERS MONITORED:

Gen MW
Turbine 1st Stage Pressure
S/G A Pressure
S/G B Pressure
S/G A Steam Flow
S/G B Steam Flow
Nuclear Power
Tref

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.12 Test Title: Reheat Stop/Intercept Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (22) - Process Instrumentation, alarms, and control system failures

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The turbine control is verified to be in automatic IMP IN mode of control. A Reheat Stop/Intercept Valve Failure (malfunction TUR-12B - valve fails to selected position due to EHC system fault) is inserted to a fail position of closed at a ramp time of 100 seconds. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-12A - "Valve 3558 (MSR-1B) IV1B"; TUR-12B - "Valve 3559 (MSR-1A) IV1A"; TUR-12C - "Valve 3560 (MSR-2B) IV2B"; TUR-12D - "Valve 3561 (MSR-2A) IV2A"; TUR-12E - "Valve 3554 (MSR-1B) RV1B"; TUR-12F - "Valve 3555 (MSR-1A) RV1A"; TUR-12G - "Valve 3556 (MSR-2B) RV2B"; TUR-12H - "Valve 3557 (MSR-2A) RV2A"

TESTED OPTIONS: TUR-12A, Valve 3558 (MSR 1A) 1V1B

MALFUNCTION RANGES: Selected fail position closed or open, Selected ramp time 0-3600 seconds.

FINAL CONDITIONS: Reactor power stabilized lower than initial value, Generator megawatt output stabilizes 10% below initial value, BOL

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/15/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

Impulse Pressure
Gen MW
Nuclear Power
Steam Flow
Tavg

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.16 Test Title: First Stage Pressure Transmitter Failure

ANSI/ANS 3.5 RELATIONSHIP: Section 3.1.2 (11) - Loss of Protective system channel; Section 3.1.2 (22) - Process Instrumentation, alarms, and control system failures; Section 3.1.2 (17) Failure in automatic control system that affect reactivity and core heat removal.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-10, 75% power. Power is reduced to 50%. A First Stage Pressure Transmitter Failure (malfunction TUR-16A - transmitter fails to selected value) is inserted at a severity of 575 psig with a ramp time of 30 seconds. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have been verified and plant conditions have stabilized.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-16A - "PT-485"; TUR-16B - "PT-486"

TESTED OPTIONS: TUR-16A - "PT-485"

MALFUNCTION RANGES: Selected fail value 0-575 psig, Selected ramp time 0-3600 seconds.

FINAL CONDITIONS: Reactor power stabilized higher than initial value, Steam Generator level remains at 52% level, T_{ave} increases to full load T_{ave}, Pressurizer level and pressure increase

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 10/14/90

DURATION OF TEST: 1 hour

CRITICAL PARAMETERS MONITORED:

Tref
Tavg
Nuclear Power
S/G A Level
S/G B Level

TEST DEFICIENCIES: None

R. E. GINNA
FORM GSS-2.5-2
MALFUNCTION PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.7.20.17 Test Title: Turbine Stop Valve Failure

ANSI/ANS 3.5 RELATIONSHIP: None

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% Power, BOL, with turbine control in AUTO, IMP IN, and the valve position limit set at 100%. A Turbine Stop Valve Failure (malfunction TUR-17) is insert to fail closed. The simulator is allowed to run with NO OPERATOR ACTION for the remainder of this exercise. The exercise is terminated when all expected indications have be verified and the plant has stabilized at a lower power.

If a step is performed and the response of the simulator does not meet the acceptance criteria, or if a step can not be performed, or if an alarm annunciates but shouldn't or doesn't annunciate but should, then a Simulator Discrepancy Report is written.

The simulator response is evaluated against the R. E. Ginna Simulator Design Basis Documentation, and best estimate judgement where R. E. Ginna plant data is not available.

AVAILABLE OPTIONS: TUR-17A "Valve 3545 Right", TUR-17B "Valve 3544 Left"

TESTED OPTIONS: TUR-17B "Valve 3544 Left"

MALFUNCTION RANGES: Select failed position - Closed or Open, Select ramp time 0-3600 seconds

FINAL CONDITIONS: TURBINE VALVES CHANNEL ALERT alarm actuates, SVR CLOSED status light lights, Generator Megawatt output decreased, S/G and Steam Hdr Pressure increase, Steam flow decreases, S/G Level shrinks, Tref decreases, Tavg increases, Steam dumps open to reduce Tavg to Tref mismatch, S/G level swells, Bank D rods step in, Pzr Level increases, B/U heaters energize, Pzr pressure increases, Spray valves open, Reactor Power decreases, Tavg reaches a peak and decreases, Pzr level and pressure decreases, Steam dumps close when Tavg is within 6° of Tref, Plant stabilizes at a lower power level.

TEST FREQUENCY: Once per four years

DATE CONDUCTED: 02/20/86

DURATION OF TEST: Not Available

CRITICAL PARAMETERS MONITORED:

Gen MW
S/G A Steam Flow
S/G B Steam Flow
RCS Tavg
Turbine First Stage Pressure

TEST DEFICIENCIES: None

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA

TRANSIENT PERFORMANCE TEST LIST

PERFORMANCE TEST NUMBER	TITLE OF PERFORMANCE TEST
14.4.8 BE 1	Manual Reactor Trip
14.4.8 BE 2	Simultaneous Trip of all Feedwater Pumps
14.4.8 BE 3	Simultaneous Closure of Both MSIV's
14.4.8 BE 4	Simultaneous Trip of Both RCP's
14.4.8 BE 5	Single RCP Trip
14.4.8 BE 6	Main Turbine Trip
14.4.8 BE 7	Maximum Rate Power Ramp
14.4.8 BE 8	Maximum Size RCS Rupture with Loss of All Offsite Power
14.4.8 BE 9	Maximum Size Unisolable Main Steam Line Rupture
14.4.8 BE 10	Slow RCS Depressurization using PORV or Safety (activation of ECCS inhibited)

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 1 Test Title: Manual Reactor Trip

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (1) - Transient performance, Manual Reactor Trip

DESCRIPTION OF TEST: This test simulates the Ginna reactor trip of May 10, 1990 including plant conditions and operator actions. The operator action times are based on the actual plant trip action times. The Ginna simulator is initialized to IC-12, 87% power, BOL. The "A" feedwater control valve is ramped closed at a constant rate (malfunction FDW-7A) 100 seconds (SIMTIME 100) after the simulator is placed in run. The pressurizer heaters are reset (following letdown isolation and heater cutout on low Pressurizer level) at SIMTIME 240. The TD AFW Pump is stopped at SIMTIME 262. The Main Feed Pump discharge valves are closed at SIMTIME 300, and the Main Feed Pumps are stopped at SIMTIME 400. The steam dump system is placed in steam pressure control at SIMTIME 420. Step 14 of ES-0.1 ("Establish Normal Shutdown Alignment") is performed at SIMTIME 480. The "B" AFW flow is reduced to 140 gpm at SIMTIME 689 and further reduced to 50 gpm at SIMTIME 902. The "B" AFW flow is then increased to 150 gpm at SIMTIME 1080. The Main Steam Isolation Valves are closed and the Atmospheric Relief Valve controller is set to 1000 psig in "AUTO" at SIMTIME 1200. The "B" AFW flow is reduced to 40 gpm at SIMTIME 1644. The exercise is terminated at SIMTIME 1900.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates, reference plant transient data or thermal hydraulic/fluid flow principles.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS:

FDW7A Feed Regulating Valve Control Failure :FCV-466 Auto Only
FDW7B Feed Regulating Valve Control Failure :FCV-466
FDW7C Feed Regulating Valve Control Failure :FCV-476 Auto Only
FDW7D Feed Regulating Valve Control Failure :FCV-476
FDW7E Feed Regulating Valve Control Failure :FCV-4271 Auto Only
FDW7F Feed Regulating Valve Control Failure :FCV-4272
FDW7G Feed Regulating Valve Control Failure :FCV-4272 Auto Only
FDW7H Feed Regulating Valve Control Failure :FCV-4272

TESTED OPTIONS: FDW7A Feed Regulating Valve Control Failure :FCV-466 Auto Only

MALFUNCTION RANGES: Failed Position (0-100% open), Ramp Time (0-3600 seconds)

FINAL CONDITIONS: Reactor tripped, Turbine tripped, MD AFW Pumps running, primary and secondary parameters stabilized at or trending to no-load values

Test Number: 14.4.8 BE 1 Test Title: Manual Reactor Trip

REFERENCE DATA: The Ginna plant trip of May 10, 1990

RESULTS: Overall, the simulator response does not detract from operator training. Two characteristics of the response, however, do warrant further evaluation:

- The response of the feedwater control valves to a turbine trip differs from that of the actual control valves. The flow increase to opening stroke time ratio is significantly greater in the simulator than in the plant. This is an observable difference which affects critical parameters that may be used as a basis for operator diagnosis and action.

- The simulated steam dump control system response may be more severe than that of the plant. This is an observable difference which can affect an operator's diagnosis and actions early in a transient based on the trend in T_{avg}.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 12, 1990

DURATION OF TEST: 30 minutes after malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 2 Test Title: Simultaneous Trip of all Feedwater Pumps

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (2) - Transient performance; Simultaneous Trip of all feedwater pumps

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Both Main Feed Pumps are tripped (malfunctions FDW-2A and FDW-2B) 100 seconds (SIMTIME 100) after the simulator is placed in run. The pressurizer control group heaters are reset (following letdown isolation and heater cutout on low Pressurizer level) at SIMTIME 190. The steam dump system is placed in steam pressure control at SIMTIME 300. The Turbine Driven Auxiliary Feed Pump is stopped and the Motor Driven Auxiliary Feed Pumps are throttled to 100 gpm each at SIMTIME 1234. The Motor Driven Auxiliary Feed Pumps are throttled to 50 gpm each at SIMTIME 1400. The exercise is terminated at SIMTIME 1900.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates, reference plant transient data or thermal hydraulic/fluid flow principles.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: FDW-2A "Pump 1A"; FDW-2B "Pump 1B"

TESTED OPTIONS: FDW-2A and FDW-2B

MALFUNCTION RANGES: Tripped

FINAL CONDITIONS: Turbine tripped, Reactor tripped, MD AFW Pumps running, primary and secondary parameters stabilized near no-load values

REFERENCE DATA: Ginna Setpoint Study, Ginna Procedure P-1, Ginna plant trip of May 10, 1990

RESULTS: Overall, the simulator response does not detract from operator training. Two characteristics of the response, however, do warrant further evaluation:

- The simulated steam dump response upon turbine trip may be too severe. This could be attributed to the sensitivity of the control system to a T_{avg}-T_{ref}(no-load) error or the ratio of steam flow to valve position.
- A heat balance performed at selected times for the primary and secondary systems yielded inconsistencies between heat produced and heat transferred to the steam generators. Further evaluation should be done to determine if transient parameter effects, such as changes in steam flow, steam generator recirculation flow, and AFW flow, may account for these discrepancies.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 14, 1990

DURATION OF TEST: 30 minutes after malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hudt Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 3 Test Title: Simultaneous Closure of Both MSIV's

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (3) - Transient performance; Simultaneous closure of all Main Steam Isolation Valves

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Both Main Steam Isolation valves are closed (malfunctions STM-5A and STM-5B) 100 seconds (SIMTIME 100) after the simulator is placed in run. Operator action is simulated to control steam generator level at SIMTIME 200, when the SG level indicates ≈50% the TDAFW pump is stopped and the MDAFW is throttled to 0 gpm. At SIMTIME 1540, feed flow is reinitiated to maintain SG B level. The exercise is terminated at SIMTIME 1900.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates, reference plant transient data or thermal hydraulic/fluid flow principles.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: STM-5A "Valve 3517"; STM-5B "Valve 3516"

TESTED OPTIONS: STM-5A and STM-5B

MALFUNCTION RANGES: Failed position - "Closed" or "Open"; Ramp time - 0-3600 seconds

FINAL CONDITIONS: Stable plant conditions at Hot Shutdown; S/G ARV's controlling RCS temperature

REFERENCE DATA: Basic nuclear power plant principles

RESULTS: Two anomalies that do not detract from operator training were noted:

- Approximately 475 seconds after the malfunction, the flow from SG B ARV increased due to an increase in SG B pressure. The RCS T_{hot}, T_{cold} and T_{avg} also increased and the pressurizer level showed a slope change due to the temperature change. These phenomena indicate a change in the system heat balance; it appears more heat is entering the system than is being removed.

- All feedwater control valves (FCV) should remain open until T_{avg} fall below 554°F at 74.5 seconds when the FCVs throttle close. The simulator response shows the feed flow beginning to decrease at 62 seconds while T_{avg} is above 554°F.

TEST FREQUENCY: Annually

DATE LAST CONDUCTED: September 14, 1990

DURATION OF TEST: 30 minutes after malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulst Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 4 Test Title: Simultaneous Trip of Both RCP's

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (4) - Transient performance; Simultaneous Trip of all Reactor Coolant Pumps

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. Both Reactor Coolant Pumps are tripped (malfunctions RCS-5A and RCS-5B) 100 seconds (SIMTIME 100) after the simulator is placed in run. The following operator actions are simulated: at SIMTIME 600, MDAFW flow is throttled to 50 gpm per SG as indicated on the control panel; at SIMTIME 1380, RCP oil lift pump is started; SIMTIME 1500, RCP A is started; SIMTIME 1560, RCP A oil lift pump is stopped. The exercise is terminated 30 minutes after the RCP's are tripped.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates or reference plant transient data.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: RCS-5A "RCP-1A"; RCS-5B "RCP-1B"

TESTED OPTIONS: RCS-5A and RCS-5B

MALFUNCTION RANGES: Pump tripped

FINAL CONDITIONS: Stabilized at Hot Shutdown, Natural Circulation RCS cooling established

REFERENCE DATA: UFSAR Table 15.2-2; Letter from R.W. Jurgensen to P.S. Check, St. Lucie Cooldown Event Report, OG-57, April 20, 1981; Ginna Station Natural Circulation demonstration Procedure No. O-8.2, March 1980; ANSI/ANS-5.1-1979.

RESULT: Two anomalies that do not distract from operator training are noted:

- The steam flow 1400 seconds after the malfunction is ≈30% low based on a heat balance.
- Feed flow began to decrease significantly 10 seconds after the malfunction while T_{avg} is greater than 554°F (T_{avg} decreases to 554°F 24 seconds after the malfunction). This behavior is inconsistent with the plant design.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 12, 1990

DURATION OF TEST: 30 minutes after malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 5 Test Title: Single RCP Trip

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (5) - Transient performance; Trip of any single reactor coolant pump

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-43, 39.6% power, BOL. The rod control system is in the manual mode. One Reactor Coolant Pump is tripped (malfunction RCS-5A) 100 seconds (SIMTIME 100) after the simulator is placed in run. The simulator is allowed to run with no operator action until SIMTIME 1500 when "A" MDAFW pump is stopped. The exercise is terminated 30 minutes after the simulator is placed in run.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates or reference plant transient data.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: RCS-5A "RCP-1A"; RCS-5B "RCP-1B"

TESTED OPTIONS: RCS-5A "RCP-1A"

MALFUNCTION RANGES: Pump tripped

FINAL CONDITIONS: Plant parameters trending to or at stable Hot Shutdown conditions following safety injection.

REFERENCE DATA: UFSAR Figure 15.3-5

RESULTS: Overall, the simulator response does not detract from operator training. One characteristic of the response, however, does warrant further evaluation:

- The steam flow from the affected SG is not terminated till after the turbine stop valves are closed upon turbine trip.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 28, 1990

DURATION OF TEST: 30 minutes after malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 6 Test Title: Main Turbine Trip

ANSI/ANS 3.5 RELATIONSHIP: Appendix B.2.2 (6) Main Turbine Trip (maximum power level which does not result in immediate reactor trip)

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-13 (45.2% power, beginning of core life). The turbine is tripped 100 seconds (SIMTIME 100) after the simulator is placed in run. The reactor does not trip immediately since reactor power is below the P-9 setpoint. Operator actions performed include start of the "B" MDAFW pump at SIMTIME 620, start of "A" MDAFW pump at SIMTIME 920, and AFW flow is throttled to 100 gpm per steam generator at SIMTIME 1260. The exercise is terminated 30 minutes after the malfunction is activated.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates or reference plant transient data.

If the response of the simulator does not meet the acceptance criteria, a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: None

TESTED OPTIONS: N/A

MALFUNCTION RANGES: Turbine tripped

FINAL CONDITIONS: Reactor power 0% and remaining plant parameters at no-load conditions

REFERENCE DATA: WCAP-7293 "Setpoint Study for the RGE Robert Emmett Ginna Nuclear Generating Station," Ginna Station Procedure No. P-1 Rev. No. 48 "Reactor Control and Protection System," Ginna plant trip of May 10, 1990.

RESULTS: The simulator responded favorably compared to the selected reference data. Thus, the simulator performance of this malfunction is appropriate for operator training. One characteristic of the response, however, should be further evaluated:

- The sensitivity of SG level to changes in steam flow with no feedwater flow may be excessive. Although this element of the response does not adversely impact training in this transient, it warrants further evaluation because of the importance to training of SG level behavior during transient and accident conditions.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 16, 1990

DURATION OF TEST: 30 minutes following malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 7 Test Title: Maximum Power Rate Ramp

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (7) - Transient performance; Maximum rate power ramp (100% down to approximately 75% and back up to 100%)

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The transient begins 100 seconds (SIMTIME 100) after the simulator is placed in run. The Turbine EHC setter is reduced by 25%, the load rate is set at 5%/minute, and the EHC "GO" button is depressed. When the load decrease is completed, the simulator is allowed to stabilize at the reduced load for 10 minutes. The EHC setter is then returned to its original value, the load rate maintained at 5%/minute, and the EHC "GO" button is depressed. A dilution of 150 gallons (at 40 gpm) is also initiated as this time. The exercise is terminated at SIMTIME 3000, after the EHC setter has returned to its orginal value and plant conditions have stabilized.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates, reference plant transient data or thermal hydraulic/fluid flow principles.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: N/A

TESTED OPTIONS: N/A

MALFUNCTION RANGES: N/A

FINAL CONDITIONS: Primary and secondary parameters are stable at or trending to their initial full power values.

REFERENCE DATA: WCAP-7293 "Setpoint Study for the RGE Robert Emmett Ginna Nuclear Generating Station," Ginna Station Procedure No. P-1 Rev. No. 48 "Reactor Control and Protection System."

RESULTS: Overall, the simulator response does not detract from operator training. One characteristic of the response, however, does warrant further evaluation:

- The simulated SG feedwater control system response to the changes in steam flow may not be appropriate. The significant lag in feedwater flow response following the steam flow changes cause SG level to reach excessive values. Although this phenomenon is not detrimental to manual or automatic actions in this transient, it may be for load changes of greater magnitude or rate.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 16, 1990

DURATION OF TEST: 50 minutes

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulet Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 8 Test Title: Maximum Size RCS Rupture with Loss of All Offsite Power

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (8) - Transient performance; Maximum size reactor coolant system rupture combined with loss of all offsite power.

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The turbine is placed in manual (override TUR-5BO). The malfunction occurs 100 seconds (SIMTIME 100) after the simulator is placed in run. A maximum size LOCA (malfunction RCS-2D) at a severity of 400,000 gpm, and loss of offsite power (malfunctions EDS-1B) are simultaneously initiated. The only operator actions simulated are at SIMTIME 250, the TDAFW pump is stopped and flow from the MDAFW pumps is reduced to 50 gpm/SG at SIMTIME 2000. The exercise is terminated 2700 seconds after the simulator is placed in run.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates or reference plant transient data.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: RCS-2A - "Loop A Hot Leg", RCS-2B - "Loop A Cold Leg", RCS-2C - "Loop B Hot Leg", or RCS-2D - "Loop B Cold Leg"; and EDS-1A - "Trip of CKT 751", or EDS-1B - "Trip of CKT 767"

TESTED OPTIONS: RCS-2D - "Loop B Cold Leg"; EDS-1B - "Trip of CKT 767"

MALFUNCTION RANGES: RCS-2 - Leak rate 0-400,000 gpm, ramp time 0-3600 seconds
EDS-1 - Time between losses

FINAL CONDITIONS: The conditions of key plant equipment when the simulator is stopped is as follows: safety injection system is in the injection mode, containment heat removal systems are operating and AFW flow is throttled to 50 gpm/SG.

REFERENCE DATA: Ginna UFSAR LOCA analysis; "Simulator Validation Report for the Rochester Gas and Electric Corporation Robert E. Ginna Nuclear Station Operator Training Simulator" by Westinghouse Electric Corporation.

RESULTS: The comparison between the simulator response and the reference cases indicated that in general the simulator adequately modelled the transient for operator training. However, several parameters show unusual responses that warrant additional evaluation. These parameters are:

- The steam generators depressurize more rapidly than expected;
- The "long term" containment response depressurizes extremely rapidly;
- RVLIS indications were not available for evaluation;
- The core exit thermocouple response shows unusual and erratic behavior.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 16, 1990

DURATION OF TEST: 2700 seconds

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hulot Title: Supervisor Simulator Training Date: 2/13/91

Test Number 14.4.8 BE 9 Test Title: Maximum Size Unisolable Main Steam Line Rupture

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (9) - Transient performance; Maximum size unisolable main steam line rupture

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power BOL. A non-isolable maximum steamline rupture (malfunction STM11A) is activated with a breakflow of 1.9 X 10^7 lbm/hr 100 seconds (SIMTIME 100) after the simulator is placed in run. The following operator actions are simulated: at SIMTIME 400, the TDAFW pump is stopped; the "A" MDAFW pump is stopped at SIMTIME 700. The test is stopped 1800 seconds after the malfunction (SIMTIME 1900).

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates or reference plant transient data.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: STM-2A - "Steamline Break S/G 1A"; STM-2B - "Steamline Break S/G 1B"

TESTED OPTIONS: STM-2A - "Steamline Break S/G 1A"

MALFUNCTION RANGES: Leak rate - 0-1.9x10^7 lbm/hr; Ramp time - 0-3600 seconds

FINAL CONDITIONS: Stable plant conditions with both MSIVs closed; S/G A depressurized to containment atmospheric pressure

REFERENCE DATA: Ginna UFSAR; Appendix B of Ginna RTSR;

RESULTS: The comparisons of simulator predictions for a large steam line break to trends predicted in the UFSAR for a similar type of event indicate no potential for inappropriate operator training due to incorrect or inaccurate predications by the simulator. However, there are several minor characteristics of the simulator response that could not be explained but that may deserve investigation. These are noted below.

- The feedwater flow to the faulted SG is shown to decrease immediately following the break. During this interval, steam pressure is dropping rapidly, which will tend to cause an inrush of feedwater. Since the feedwater control valves are relatively slow acting valves and since feedwater measurements are made downstream of these valves anyway, it is likely that feedwater flow indication in the faulted loop will increase initially. The increasing trend is likely to continue until the feedwater isolation valve closes sufficiently to limit flow.

- The faulted loop steam flow initially drops to zero consistent with the assumption that the break is upstream of the steam flow measurement. However, the signal shows a brief period of positive flow indication following the initial break initiation. The flow through the measuring device will be reverse flow because the break is upstream of measurement device.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 27, 1990

DURATION OF TEST: 30 minutes after malfunction

R. E. GINNA
FORM GSS-2.7-2
TRANSIENT PERFORMANCE TEST ABSTRACT

Approved by: Dan Hill Title: Supervisor Simulator Training Date: 2/13/91

Test Number: 14.4.8 BE 10

Test Title: Slow RCS Depressurization using PORV or Safety (activation of ECCS inhibited)

ANSI/ANS 3.5 RELATIONSHIP: Appendix B Section 2.2 (10) - Transient performance; Slow primary system depressurization to saturated condition using pressurizer relief or safety valve stuck open. (Inhibit activation of high pressure Emergency Core Cooling Systems)

DESCRIPTION OF TEST: The Ginna simulator is initialized to IC-12, 100% power, BOL. The turbine is placed in manual (override TUR-5BO). The SI pumps are prevented from starting (malfunctions SIS-3A, SIS-3B, and SIS-3C, SI pump trip). The malfunction occurs 100 seconds (SIMTIME 100) after the simulator is placed in run. The pressurizer relief valves are failed to a severity of 100% open with a 15 second ramp time (malfunction PZR-5A and PZR-5B, PCV-430 and PCV-431C). The exercise is terminated 60 minutes after the malfunction.

The only operator actions simulated are the stopping of the TDAFW pump at SIMTIME 360, stopping of both RCPs due to cavitation at SIMTIME 900, reducing MDAFW flow to 60 gpm/SG and 0 gpm/SG at SIMTIME 1900 and 2700 respectively.

The simulator transient performance data is collected on magnetic tape media for comparison with results predicted by the Simulator Validation Program Best Estimates or reference plant transient data.

If the response of the simulator does not meet the acceptance criteria a Simulator Discrepancy Report is written.

AVAILABLE OPTIONS: PZR-5A, Fail PCV-430; PZR-5B, Fail PCV-431C; SIS-3A, Pump 1A; SIS-3B, Pump 1B; SIS-3C, Pump 1C

TESTED OPTIONS: PZR-5A, Fail PCV-430; SIS-3A, Pump 1A; SIS-3B, Pump 1B; SIS-3C, Pump 1C

MALFUNCTION RANGES: PZR-5 - fail position 0-100% open, ramp time 0-3600 seconds
SIS-3 - Pump tripped

FINAL CONDITIONS: Containment heat removal systems are operating, the RCS pressure is approximately equal to the secondary pressure and the SGs indicate ≈40-50% narrow range levels.

REFERENCE DATA: Ginna Simulator Validation Report, TMI-2 Event on March 28, 1990, WCAP 9600, WCAP 9753

RESULTS: The comparison between the simulator response and the reference case indicated, in general, the simulator adequately modelled the transient for operator training. However, two parameters warrant further evaluations:

- The steam generator depressurized without any operator actions which is contrary to the expected response.
- RVLIS indications were not available for this evaluation. Since this is a key indication for this event, future evaluations should include this parameter.

TEST FREQUENCY: Annually

DATE CONDUCTED: September 12, 1990

DURATION OF TEST: 3600 seconds after malfunction

TRANSIENT EVALUATION PROGRAM
OVERVIEW

The preferred means for qualifying a simulator's transient response is to compare simulator results to actual plant data. Because actual plant data is scarce, an analytic simulator qualification methodology has been proposed by EPRI. The EPRI approach proposes that the trends and values of key plant parameters, as calculated by an engineering reference code, be compared to the simulator response for selected transients. In this approach, the selection of simulator transients is constrained by the domain of applicability and the capability of the analytical models that are available for transient simulation.

A simulator certification program was developed at RG&E to qualify the Ginna simulator for operator training and to do so in a way that satisfies current industry and regulatory guidelines. This report describes the portion of the certification program that compares the simulator transient performance to reference data.

The Ginna certification program is intended to meet the simulator design control requirements of ANSI/ANS-3.5. The operability test scenarios listed in Appendix B of ANSI/ANS-3.5 and endorsed by the NRC in NUREG-1258 were used in the validation program an are listed in Table 1.

Appendix B of ANSI/ANS-3.5 recommends the transient scenarios be initiated from conditions of "approximately 100% power, steady state xenon and decay heat with no operator follow-up action." This prescription was followed in the Ginna certification program. Seven events were initialized with steady state xenon and decay heat at approximately 100% power. The three events that were initialized from less than 100% power were the trip of one reactor coolant pump, turbine trip, and the reactor trip. The RCP trip and turbine trip events were initialized below the P-8 and P-9 permissive setpoints respectively to avoid the occurrence of an immediate reactor trip once the

transient began. The P-8 permissive is intended to permit continued power operation below 49% power with one reactor coolant pump idle and still meet the plant's safety and design criteria. Similarly, the P-9 permissive allows continued power operation without a direct reactor trip on turbine trip below 50% power while satisfying the plant's safety and design criteria. This provided the opportunity to examine the simulator behavior under conditions other than those following a reactor trip.

The ANSI/ANS guidelines also suggest no operator follow-up actions be used. At Ginna, this constraint was followed with the exception that operator action to maintain steam generator level within the narrow range span was simulated. Level control was retained in the simulations to maintain consistency with plant emergency operating procedures. Level control was accomplished using the auxiliary feedwater system. The simulator run replicating the plant trip of May 10, 1990 included additional operator actions reflecting the actions of the plant operators when responding to the actual event.

In general, all plant systems were operable during the transient tests except those that were intentionally disabled for the prescribed event. For example, to simulate the approach to inadequate core cooling conditions, it is necessary to inhibit the safety injection pumps from delivering cold, borated water to the reactor coolant system. Thus, simulated startup of all safety injection pumps is blocked at the beginning of the event through the instructor interface module.

SIMULATOR TRANSIENT REVIEW COMMITTEE

The analysis of the transient data was conducted in two phases. The data obtained was forwarded to the RG&E Engineering Department. A contractor, Volian Enterprises, was retained to compare the data with reference plant data. Draft reports were prepared and presented to the Simulator Transient Review Committee (STRC), composed of individuals from Engineering, Operations, Computer Support, and Training. Each transient was reviewed in detail, and the reports corrected as necessary. Resumes of the individuals conducting the anlaysis are provided of the end of this overview.

EVALUATION METHODOLOGY

The guidelines of ANSI/ANS-3.5 recommend that "the response of the simulator shall be compared to actual plant response or best estimate plant response." For the Ginna performance test scenarios, the only available plant data was the plant trip information of May 10, 1990 and the trip for both RCPs scenario. The reference data for the remaining scenarios was taken from UFSAR analyses, information from events at other sites, and/or by application of basic nuclear power plant principles (e.g., heat transfer, fluid flow, reactor physics). Although safety analysis calculated response is based on conservative initial conditions and assumptions and may not accurately reflect realistic plant response, the trends for selected parameters may be appropriate for comparing to simulator parameter response.

The simulator fidelity program at Ginna attempts to critically evaluate key process parameters that operators use to diagnosis and control the response to off-normal events during those periods when the parameters are important to that accident response. For example, following all reactor trips, the immediate operator actions include verifying nuclear flux is decreasing, that at least one train of reactor trip breakers are open, and that the rod position indicators display MRPI all control and shutdown rods are on bottom. Once these are verified, the operator does not monitor those parameters again during the event. Thus, it is only germane for the assessor to compare these parameters to reference data during the simulator's initial response to the event. In particular, the assessor examines the nuclear flux to determine if it is decreasing appropriately. The remaining immediate operator actions, i.e., the automatic actions, are verified elsewhere in the Ginna Simulator Certification program.

Appendix B of the ANSI standard also lists parameters to be evaluated for each test transient. Each of these parameters as well as other selected parameters were evaluated in the Ginna program. Additional parameters were selected to evaluate their suitability for triggering major operator actions prescribed by the plant's emergency operating procedures for each simulated transient. (Major operator actions, for the purposes of simulator certification, are defined as those operator manipulations that may produce a detectable change in a measured process parameter.) Using as an example an inadequate core cooling scenario, depressurizing the secondary side to cause injection from the safety injection accumulators is considered a major operator action because it will cause a significant change in reactor coolant system pressure and temperature. Minor actions, such as verifying automatic actions, were not relevant to this portion of the simulator fidelity assessment and are examined elsewhere in the Ginna simulator certification program.

In addition to the parameters suggested by ANSI/ANS-3.5, the Ginna program also examined "critical action" values for each transient over appropriate "comparison intervals." Critical action values are defined as the values of the key process parameters which, being attained or exceeded, should cause specified actions to occur. The actions may involve automatic or manual operation of plant equipment, or they may simply reflect an operator's selection of one course of action from several alternatives. Comparison intervals are defined as transient time segments between major changes in plant response. The major changes may be caused by operator action, automatic actions, or physical phenomena.

Separate comparison intervals were defined for each critical parameter considered for a particular transient. Evaluation of the response of other parameters during the same comparison interval was used to substantiate the validity of the critical parameter's response in certain instances.

ACCEPTANCE CRITERIA

The overall purpose of the simulator assessment is to verify that the simulator behavior is acceptable for operator training. Therefore, duplication of the plant's response is not required but simulator response should be a reasonable facsimile of it. Thus, only the parameter trends, extreme values, and duration of comparison intervals were deemed important. This is consistent with the acceptance criteria delineated in ANSI/ANS-3.5-1985 paragraph 4.2.1(b) which states:

> "...that the observable change in the parameter correspond in direction to those expected from a best estimate for the simulated transient and do not violate the physical laws of nature."

Using this approach, the simulator response during the comparison intervals for each critical parameter was classified as:

- Acceptable for operator training,
- Detracts from operator training, or
- Requires further evaluation.

Classification as "acceptable for operator training", indicates that the simulator performance for that parameter is adequate to allow the operator to perform the proper actions to respond to the transient. Parameter response that detracts from operator training means that the simulator predictions could cause the operator to perform improper or inappropriate actions or that the simulator response is contrary to actual or expected results. Items classified as needing further evaluation can mean either of two things: the parameter response is not consistent with the reference data but the response does not detract from operator training, or insufficient information is available to evaluate the simulator performance of that parameter.

RESULTS OF COMPARISONS

The transients were run on the Ginna simulator and compared to the reference data listed on the individual Transient Performance Test Abstracts. With the exceptions of items listed in Table 1, the simulator was found to predict adequately expected plant response of the simulated events for operator training exercises. The items listed in Table 1 were judged either to detract from operator training for the particular event or require further evaluation. The basis for classifying each item detracting from operator training is discussed below.

Reactor Trip:	The comparison of the simulated feed flow to the plant data found the ratio of the feed flow increase to feed control valve stroke time significantly greater than the plant. This could cause the operator to preform recovery actions during training exercises different from those actually needed in the plant because of the simulator exhibiting greater primary side cooling than found in the plant. (Exception 26)
LOCA and Inadequate Core Cooling:	Both the LOCA and Inadequate Core Cooling simulations depressurized both steam generators contrary to reference data. During training exercises, the operator might assume the steam generators are faulted and make an unnecessary transition from the intended recovery procedure to isolate the apparent faulted steam generators. Also, during an ICC event, the operator would not be familiar with the actions necessary to depressurize the steam generators to inject the accumulators because the simulator does not maintain the proper steam generator pressure. (Exception 32)
LOCA:	The simulated containment response was found to depressurize extremely rapidly. Because of this, the operator might not use setpoints in the plant's emergency operating procedures appropriate for adverse environmental conditions when he should. (Exception 31)

The items requiring further investigation were not judged to detract from training. A fidelity problem may or may not exist, thus no discrepancy or exception is taken for these. The normal process for discprepancy resolution will be followed once the dispositions are made.

TABLE 1: SIMULATOR ASSESSMENT OBSERVATIONS

TRANSIENT	OBSERVATION	DETRACTS FROM OPERATOR TRAINING	REQUIRES FURTHER EVALUATION
Reactor Trip	Feed flow increase to opening stroke time ratio is significantly greater than the plant.	X	
	Steam dump response may be more severe than plant		X
Main Feedwater Pump Trip	Steam dump response following turbine trip is too severe possibly due to the sensitivity of the control system to a T_{avg} - T_{ref} error on the ratio of steam flow		X
	Calculated heat balance yielded inconsistencies between primary and secondary thermal conditions.		X
MSIV Closure	A change in the system energy balance occurred causing the SG ARV to open ≈475 seconds after the malfunction.		X
	Feed flow begins to decrease while T_{avg} > 554°F		X
Trip of Both RCPs	A heat balance indicates the steam flow is ≈30% low at 1900 seconds.		X
	Feed flow decreased significantly while T_{avg} was greater than 554°F.		X
Trip of 1 RCP	The steam flow from the affected SG is not terminated till after the turbine stop valves are closed.		X
Main Turbine Trip	Sensitivity of SG level to changes in steam with no feed flow appear excessive.		X
Maximum Power Rate Ramp	Large lag in feed flow decreases following steam flow decrease allows SG level to reach an excessive maximum value.		X
	T_{avg} overshoot of the program value occurs in each temperature increase.		X

TABLE 1: SIMULATOR ASSESSMENT OBSERVATIONS

TRANSIENT	OBSERVATION	DETRACTS FROM OPERATOR TRAINING	REQUIRES FURTHER EVALUATION
LOCA	SG depressurize more rapidly than expected.	X	
	The containment depressurizes extremely rapidly.	X	
	Core exit TC response should be evaluated for erratic behavior.		X
	RVLIS indications were not available and should be provided.		X
Main Steamline Break	Feedwater flow to faulted SG decreases immediately following the break versus increasing due to the pressure decrease.		X
	Following MSIV closure, positive steam flow is indicated in the faulted loop.		X
Inadequate Core Cooling	SG depressurized without operator action.	X	
	RVLIS indications were not available and should be provided.		X

RESUMES

A resume of technical experience is provided for selected individuals who participated in the analysis of transients run on the Ginna Simulator. Both of the Senior Reactor Operators hold active licenses.

Volian Enterprises, Inc.

Harold V. Julian
Donald M. Rochlich
Paul Linn
Mark R. Adler

Rochester Gas and Electric
Simulator Transient Review Committee

Dan Hudnut	Supervisor - Simulator Training
Bruce Zollner	Senior Licensed Instructor
Rex Smith	Software Analyst
Robert Eliasz	Senior Engineer
Peter Sidelinger	Senior Reactor Operator
Douglas Peterson	Senior Reactor Operator

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ROBERT W. ELIASZ

Professional Qualifications

Mr. Eliasz is a Senior Engineer with Rochester Gas and Electric Corporation. He has had responsibilities for reload safety analysis and ex-core fuel management. He specializes in evaluating plant responses to accidents, nuclear plant safety analysis, Technical Specifications, instrument uncertainty analysis, and containment analysis.

Education

Rensselaer Polytechnic Institute	M.S. Nuclear Engineering
Rutgers University	B.S. Electrical Engineering

Professional Experience

1973 - Present — Senior Engineer - Nuclear Safety & Licensing, Rochester Gas & Electric

At RG&E Mr. Eliasz is the lead engineer for reload safety analysis and ex-core fuel management. These activities include FSAR accident analysis, plant response modeling, safety analysis generation and review, instrument uncertainty analysis, Technical Specification changes, and resolution of various licensing issues.

1972 - 1973 — Shift Test Engineer - Knoll's Atomic Power Laboratory

While Shift Test Engineer, Mr. Eliasz completed Nuclear Power School and was responsible for acceptance testing of prototype systems.

1966 - 1972 — Engineer - Knoll's Atomic Power Laboratory

As an Engineer in the Plant Analysis group, Mr. Eliasz performed FSAR type accident analysis for the A1G project and developed various system models.

HAROLD V. JULIAN

Professional Qualifications

Mr. Julian is the President and founder of Volian Enterprises, Inc. which produces quality computer software products and engineering services. He has extensive experience in the areas of safety analysis, emergency response, and licensing for nuclear power plants. His duties require extensive technical, management, and marketing capabilities.

Education

MS Industrial Engineering, University of Pittsburgh, Pittsburgh, PA, 1980
MS Nuclear Engineering, Carnegie Mellon University, Pittsburgh, PA, 1977
BS Nuclear Engineering, University of Florida, 1974

Experience

1984-present <u>President, Volian Enterprises, Inc.</u>

Mr. Julian, as President of Volian Enterprises, Inc., assumes many roles supporting the management, marketing, and production function of the Company. Under his leadership, Volian Enterprises, Inc. has established itself as a quality provider of computer software for plant procedure maintenance and engineering services. His areas of technical expertise, which he exercises as a consultant, include nuclear power plant operations procedures, safety analyses, and licensing.

His experience during this period has included:

- Participated in the Emergency Procedure Upgrade based on Revision 1A of the ERGs at the North Anna Power Station;
- Supported the Simulator Fidelity Project for Rochester Gas & Electric Company;
- Participated in training course given to Portland General Electric personnel on safety analyses;
- Provided management and marketing support to VE-PROMS software development effort;
- Provided technical input to design difference document effort supporting Emergency Operating Procedures for Yankee Rowe;
- Supported the Independent Technical Review of the Kewaunee Nuclear Plant Emergency Operating Procedures;
- Provided technical support to Northern States Power Company on maintenance and upgrading of the Emergency Operating Procedures for the Prairie Island Nuclear Plants;
- Provided consultation support to EPRI Scram Reduction, Relief Valve Drift, and Chernobyl Analysis Programs;

- Participated in development of a database for Procedure Maintenance (VE-PROMS). Contributed to publication of the VE-PROMS Version 1.00 Users Manual provided to Wisconsin Electric Power Company;
- Provided technical input to Technology Applications, Inc. on the EPRI Artificial Intelligence Project for Emergency Action Level (EAL) monitoring;
- Involved in the generation of EOP Setpoints for Virginia Power Company;
- Provided technical support to Wisconsin Electric Power Corp. in implementing ERG Revision 1 based Emergency Operating Procedures for the Point Beach Nuclear Plants;
- Assisted in the review of the Salem Nuclear Plant EOP setpoints.
- Provided an evaluation of Reg. Guide 1.97 "Type A" variables for the Surry and North Anna Nuclear Plants.

1981-1984 <u>Manager, Westinghouse Electric Corporation.</u>
<u>Project Management</u>

In this position Mr. Julian managed Operational Safeguards Analysis Group was responsible for Emergency Procedure development, SGTR analyses, LOCA mass and energy releases, containment analysis, Monroeville Technical Center, TREAT code development, emergency drill support, thermal hydraulic input to Pressurized Thermal Shock (PTS) issue, simulator validation, and other emergency response projects.

Mr. Julian's experience in this position included:

- Instrumental in the successful resolution of the PTS issue in 1982. Involved in definition of overall program and licensing strategy for the WOG program;
- Conceptualized, proposed, and managed development of computer application programs for transient analysis and emergency response expert systems.

1979-1981 <u>Senior Engineer, Westinghouse Electric Corporation</u>
<u>Emergency Response</u>

Mr. Julian was a key individual involved in the development of the Westinghouse Owners Group Emergency Response Guidelines.

His experience during this period included:

- Involved in all emergency guideline revisions made since TMI;
- Gave numerous related technical presentations to various industry groups and regulatory agencies;
- Personally involved in developing programs and positions to resolve post-TMI emergency procedure issues, e.g. ERG format, critical safety function monitoring, and technical input to all phases of program;

- Participated in technical resolution of numerous post-TMI issues including Small Break LOCA, RCP Trip, SI Termination, Inadequate Core Cooling, Loss of Steam Generator Heat Sink, Natural Circulation, and Reactor Vessel Level Instrumentation System;
- Participated in Westinghouse support to utilities for recovery from plant transients e.g. TMI, Prairie Island SGTR, and Ginna SGTR.

1974-1979 <u>Thermal Hydraulics Analysis, Westinghouse Electric Corporation</u>

Mr. Julian was a Lead Engineer in the Safeguards Engineering Group within the Nuclear Safety Department. He was involved in licensing activities relating to LOCA, SGTR, and Containment Analysis. He worked on several non-standard licensing issues relating to plant emergency response such as Post Accident Monitoring and LOCA long term cooling.

Mr. Julian's specific experience during this period included:

- Assigned for one year, as the Nuclear Safety Department representative, to the New Reactor Model Design Group. Provided coordination and input into the New Reactor Model design criteria and functional requirements. Performed small and large break LOCA analysis which were factored into the design process;
- Involved in programs related to resolving the post accident monitoring and environmental qualification issues;
- Participated in early development efforts for the NOTRUMP computer code and Westinghouse advanced simulator software.
- Extensive background in evaluation, licensing, and performance of safety analysis for LOCA
  - -- Performed the small break spectrum LOCA analysis for the WOG post-TMI evaluation submitted to the NRC in 1979 (WCAP-9601);
  - -- Involved in the initial 10CFR50 Appendix K model development documentation process. Participated in the evaluation and documentation of all LOCA ECCS Evaluation Models submitted to the NRC through 1978;
  - -- Performed small and large break LOCA PSAR and FSAR analysis for Westinghouse PWRs;
  - -- Lead responsibility in resolving licensing questions on LOCA long term cooling.
- Participated in ACRS, NRC, and customer meetings on LOCA related subjects;
- Responsible for coordination and evaluation of LOCA mass and energy release and containment analysis.

DONALD M. ROEHLICH

Professional Qualifications

Mr. Roehlich is a Senior Engineer specializing in Nuclear Operations and Plant Technical Staff training support. He has participated in numerous Emergency Operating Procedure-related projects including simulator validation and preparation of plant-specific lesson plans and background documents. His utility experience was primarily focused on Engineered Safety Features systems and plant thermal-hydraulic response training for NRC license candidates, licensed Reactor Operators and Shift Technical Advisors.

Education

Senior Reactor Operator Instructor Certification, Beaver Valley Power Station, Shippingport, Pennsylvania; 1988

B.S., Mechanical Engineering, University of Pittsburgh, Pittsburgh, Pennsylvania; 1981

Experience and Background

1989-Present <u>Senior Engineer, Volian Enterprises, Inc</u>. Responsible for development and modification of various utility Emergency Operating Procedures and supporting documentation; preparation and/or presentation of EOP and Safety Analysis training courses. Experience during this period includes:

- Development of EOP background documents for Indian Point 3.
- Presentation of a LOCA Safety Analysis training course to the Trojan Engineering staff.
- Preparation of EOP training lesson plans for V. C. Summer.
- Participant in simulator and table-top EOP validation efforts at V. C. Summer.
- Independent review of EOPs and supporting documentation for North Anna.

1985-1989 <u>Nuclear Operations and Maintenance Instructor, Beaver Valley Power Station</u>. Responsible for development and presentation of specific topics within the Licensed Operator Retraining and Operator Training programs including Thermodynamics, Heat Transfer and Fluid Mechanics, Engineered Safety Features systems, Loss of Coolant Accidents, and Power Distribution Limits. Experience during this period includes:

- Development and presentation of the Thermodynamics, Heat Transfer, and Fluid Mechanics training programs for the Plant Technical Staff and Operations Department.

- Development and presentation of sessions on integrated plant response to normal evolutions and abnormal/emergency transients for Reactor Operators and Shift Technical Advisors.
- Administration of Job Performance Measures for the Unit 1 Operations Department.
- Development of an initial training program for Shift Technical Advisors.
- Development of the Root Cause Analysis training program for the Plant Technical Staff.

1981-1985 Engineer Instructor, Beaver Valley Power Station. Responsible for specific plant systems within the Licensed Operator and Shift Technical Advisor training programs including lesson plan development, system walkdown and technical research, classroom instruction, and continued integration of pertinent information for lesson plan maintenance. Experience during this period includes:

- Participation in the initial development and validation of plant specific Emergency Operating Procedures based on the Westinghouse Emergency Response Guidelines.
- Development and presentation of the initial training program on the Safety Parameter Display System.
- Participant in the Emergency Response Organization as an Operations Communicator. Responsibilities included constant monitoring of communications between the Control Room and the Technical Support Center, maintenance of significant event information status logs/board, and alerting the Emergency Director to significant conditions or changes in plant status.
- Development and presentation of the Thermodynamics, Heat Transfer, and Fluid Mechanics training program for Licensed Operator candidates.

PAUL A. LINN

Professional Qualifications

Mr. Paul Linn is the Lead Engineer responsible for EOP Services at Volian Enterprises. Mr. Linn has 10 years experience in the Nuclear field in the areas of thermal hydraulic analyses, EOP support, and instrumentation. Prior to his employment with Volian, he was a lead engineer at Westinghouse responsible for performing thermal hydraulic safety analyses, primarily relating to containment issues. Mr. Linn was a key member of the ANS 56.4, Containment Analysis for LWRs, writing group which provided guidance on how to perform design basis containment integrity analyses for LWRs.

Education

Carnegie-Mellon University	M.S. Chemical Engineering (1985)
Carnegie-Mellon University	B.S. Chem. Eng. - Nuclear Option (1980)

Professional Experience

1985-1990 Senior Engineer, Volian Enterprises, Inc.

Mr. Linn has worked as technical and project leads on several EOP upgrade programs while at Volian. These EOP projects included calculating plant specific EOP setpoints, providing written deviations and justifications for differences between the EOPs and the generic guidelines, determining the design differences and the generic analysis applicability of the generic plant to specific plants, and providing input into writing specific EOP steps. He also has been responsible for the resolution of engineering issues related to the EOPs.

In addition to his EOP work, Mr. Linn has provided training on the technical basis of the FSAR accident analyses (LOCA, Steam Generator Tube Rupture, and Containment) for the Trojan Nuclear Power Plant. While at Volian, Mr. Linn has written numerous engineering computer codes using FORTAN, C, and dBase III+ programming languages. He also developed a margin assessment program that determines the margin between the Technical Specifications trip setpoints and the FSAR safety analyses values. Currently, this PC based program is being utilized at one nuclear utility. Mr. Linn also was a technical lead to determine the uprated operating conditions at a nuclear plant based upon operating data collected at lower power.

Paul A. Linn

1980-1985 Senior Engineer, Westinghouse Nuclear Technology Div.

At Westinghouse, Mr. Linn was a Senior Engineer in the Nuclear Safety department. His primary responsibility was as the technical lead on all FSAR-type containment issues. Mr. Linn was directly responsible in the successful resolution of the containment superheat issue following a steamline break for both dry containments and ice condenser containments. He also developed methodology that refined computer codes to relax plant technical specifications relating to systems impacted by the containment analyses. Mr. Linn was a member of the ANS 56.4 writing group which provided guidance on performing design basis containment integrity analyses for LWRs.

Mr. Linn also performed numerous SGTR analyses, including a best-estimate SGTR analysis to support the development of generic emergency response guidelines. He also was involved in answering numerous questions concerning SGTR events, both large and small break LOCAs, and the containment response following LOCAs, steamline breaks and feedline breaks.. While at Westinghouse, Mr. Linn was responsible for developing plant specific environmental qualification envelopes for equipment located inside containment for numerous utilities.

Key Experience And Projects

- Project manager and technical lead on the Indian Point Unit 3 EOP Upgrade program at Volian.
- Provided support to the Surry and North Anna nuclear power stations during their NRC audit on emergency procedures.
- Technical lead on performing numerous safety analyses for inclusion in licensing documents plant upgrades, and responding to potential safety issues.
- Performed instrument uncertainty analyses on numerous safety related instrument channels for several nuclear power plants.

MARK R. ADLER

Professional Qualifications

Mr. Adler is a senior engineer and a lead engineer in the company's engineering division. He is a specialist in thermal hydraulics and nuclear plant safety analysis, Technical Specifications, instrumentation uncertainty analysis, and project management. Mr. Adler is also experienced in safety systems design and the development of plant specific symptom based procedures for responding to nuclear plant transients.

EDUCATION

University of Illinois	M.S. Nuclear Engineering
University of Illinois	B.S. Nuclear Engineering

Professional Experience

1987-present Senior Engineer, Volian Enterprises.

At Volian, Mr. Adler is the lead engineer for design, analysis and training activities related to nuclear power. These activities include instrument setpoint analysis, FSAR accident analysis, system design studies, and simulator fidelity. He has developed and presented safety analysis training material to utility engineers and responded to industry organizations requests for plant safety and analysis information. Mr. Adler has been the Volian project manager for an emergency operating procedures upgrade program and has used his thermal analysis capabilities to correlate the reactor coolant system behavior during a natural circulation cooldown based on generic analysis supporting the WOG Emergency Response Guidelines.

1981-1987 Senior Engineer, Westinghouse Nuclear Safety Department

In the Nuclear Safety department, Mr. Adler worked as a senior engineer analyzing non-LOCA plant transients. His major responsibilities included analyses of reactivity induced transients (rod withdrawal and rod ejection accidents) and secondary side induced plant transients (loss of normal feedwater - station blackout, feedline break, steamline break core response). He was the program director responsible for the development and licensing of the Westinghouse system to comply with the NRC promulgated ATWS rule. Mr. Adler prepared the initial draft of technical specifications for Westinghouse designed NSSS plants and was a member of multi-disciplinary teams formed to address plant operating issues.

1978-1981 Engineer, Westinghouse Bettis

Mr. Adler began his professional career as a thermal - hydraulic engineer on the Light Water Breeder Reactor program. His responsibilities included the thermal modeling and temperature calculations of complex fuel designs while

located in spent fuel shipping containers. Conduction, thermal radiation, and natural convection heat transfer mechanisms were represented. Mr. Adler also performed thermal hydraulic calculations for nuclear fuel during varying plant operating conditions.

KEY EXPERIENCE AND PROJECTS

- Project manager for an emergency operating procedure upgrade program at the V. C. Summer Nuclear Station which includes review of procedures for technical adequacy, participation in the verification and validation exercises, contributor to the plant specific technical guidelines justifing the plant specific differences from the generic guidelines and a contributor for the NRC audit.

- Project manager and lead engineer for the instrument uncertainty analysis of selected channels for the Kewaunee Nuclear Power Plant.

- Project manager and lead developer for the safety analysis training course presented to Portland General Electric engineers.

- Performed feasibility study of a safety system monitoring system at Prairie Island.

- Member of the Instrument Society of America committee for the recommended practice of the "Methodologies for the Determination of Setpoints for Nuclear Safety Related Instrumentation"

- Volian Enterprises' Quality Assurance manager.
- Lead engineer at Westinghouse for all Non-LOCA Safety Analysis with emphases on analyses affected by the auxiliary feedwater system, nuclear reactivity transients, and ATWS. Revised several procedures for performing safety analysis inlcuding the loss of normal feedwater, feedline break and rod ejection events.

- Program manager and lead engineer for the Westinghouse Owners Group AMSAC program. This included setting the design criteria, developing functinal logics and obtaining regulatory approval. It also involved commenting on proposed NRC policies relating to ATWS.

- Member of task team to assess feasability of plants operating with one loop out of service.

- Member of design review team for the environmental allowance modifier to the steam generator level trip setpoint.

- Developed and presented safety analysis training programs to several utilities.

Daniel Hudnut
Supervisor-Simulator Training

Experience Highlights

- Sixteen years of experience in the nuclear power field with ten years of experience in the commercial industry in the training area.
- Specific experience includes the development and implemetation of classroom and simulator training programs and related materials.
- Certified Senior Reactor Operator and as Simulator Instructor.

Professional Experience

Present — Rochester Gas & Electric Corporation

As Supervisor-Simulator Training, responsible for simulator training effectiveness and certification. Responsible for all aspects of Initial License and License Upgrade programs.

2/83-9/88 — Interfacts, Inc; Columbia, Maryland

(8/86-9/88) Assigned to Rochester Gas and Electric Corporation's R. E. Ginna Generating Station. Responsible for delivery and revision of training material in the Licensed Operator Requalification and Upgrade programs, both in the classroom and on the simulator.

(6/85-6/86) Assigned to Indiana & Michigan Electric Company's Donald C. Cook Nuclear Generating Station (W-PWR). Reporting directly to the Supervisor of Operator Training, responsible for the development and delivery of training course-ware to licensed operators. Developed lesson materials for plant systems and procedures. Responsible for conduct and delivery of instruction on revised emergency operating procedures to license holders as a part of operator requalification training.

(2/83-6/85) Assigned to Public Service Electric & Gas Company's Salem Generating Station. Responsible for revising Emergency Operating Procedures to meet NRC/INPO/Owner Group Guidelines, validate the procedures on the Salem simulator, provide classroom/simulator training to the licensed operators, and assist Training department in checkout and acceptance testing of Salem simulator.

10/82-1/83 Westinghouse Electric Corporation

Assigned to Carolina Power & Light Company's Shearon Harris Nuclear Power Plant Training Center. Assigned to the Training Staff as a classroom and simulator instructor and developer of training courses and material. Was responsible for Senior Operator License Candidate Training in the areas of theory and plant systems.

1/81-9/82 Westinghouse Electric Corporation

Assigned to the Westinghouse Nuclear Training Center in Zion, Illinois. Completed initial instructor training courses and instructed PWR systems and delivered simulator training. Developed site specific lesson materials and training programs for customers. Completed SRO Instructor Certification.

3/72-11/80 United States Navy

Assigned to Submarine NR-1 from 6/77 to 11/80. Qualified as Senior Reactor Plant Operator, and Engineering Laboratory Technician. Duties included monitoring and maintaining chemistry in all reactor plant systems and supervising radiological monitoring and controls. As Auxiliary Division Officer, was responsible for preparation and implementation of work packages associated with both nuclear and non-nuclear ship support systems during three partial overhauls. Supervised ship's quality control program including deep diving capability certification. As Senior Ship's Diver, was responsible for maintenance on all of ship's underwater hydraulic and mechanical equipment. Received two Navy achievement medals and three letters of commendation during tour of duty.

From 9/74 to 6/77 stationed onboard the USS John Adams (SSBN620). Qualified on all mechanical watch stations associated with the operation of the nuclear power plant. Supervised preventive and corrective maintenance on reactor plant fluid systems. Participated in the overhaul and refueling of a PWR reactor plant. Received a letter of commendation for outstanding performance while onboard.

From 3/72 to 9/74 was stationed at various school commands as a student.

Education

- WNTC Instructor Certification Program
- Lake Michigan College Associates Degree 6/86
- University of Illinois at Chicago Circle
- U.S. Navy Nuclear Power School and Prototype Training
- U.S. Navy Machinist Mate Class "A" School

Licenses and Certification

- Simulator Instructor Certification
- Senior Reactor Operator Ceritification - R. E. Ginna Station

BRUCE ZOLLNER

EDUCATION HISTORY

1981 - 1983	A.A.S. Nuclear Reactor Technician, Joliet Junior College
1981 - 1982	M.A. Business Administration and Personnel Management, Webster University
1976 - 1978	Officer Candidate School, U.S. Navy Submarine Officer School, U.S. Navy Quality Assurance School, U.S. Navy Nuclear Power School, U.S. Navy Nuclear Prototype Training, U.S. Navy
1974 - 1975	Secondary Education Certification, University of Arizona
1973 - 1974	B.S. Mathematics, Michigan Technological University
1969 - 1973	B.S. Physics, Michigan Technological University

EMPLOYMENT HISTORY

1989 - Present	Senior Licensed Instructor; Rochester Gas and Electric
1981 - 1989	Senior Nuclear Operations Instructor; Westinghouse Electric Corporation - NRC SRO Instructor Certification - NRC SRO License; Westinghouse Training Reactor
1976 - 1981	Engineering Officer of the Watch; Lt(SS) U.S. Navy
1974 - 1976	Secondary School Teacher, Mathematics
1972 - 1974	College Teaching Assistant, Chemistry and Physics, Michigan Technological University

Rex L. Smith
Analyst-Simulator
Job Description and Previous Experience
Feb 11, 1991

Position Purpose

The purpose of this position is to optimize the functional operation of the Ginna Station Simulator.

Key Result Areas

- o Optimize Simulator Fidelity
- o Maximize Training Effectiveness of Simulator Systems
- o Increase Effectiveness of Documentation of Software
- o Maximize Self-Developement

Ginna Previous Experience

- o Simulator Software Analyst - 1.5 years (July 1, 1989)
- o Licensed Operator Instructor - 3.5 years (Jan. 1, 1986)
- o Head Control Operator - 2.0 years (about Jan. 84)
- o Control Operator - 5.0 years (1979)
- o Auxiliary Operator - 1.5 years (June 1977)
- o Contract Health Physics - 0.7 years (Nov. 1976)

Ginna Operating License

- o Received Senior Reactor Operating License Nov. 9, 1983. This License was discontinued as of Oct. 26 1989 as no longer needed to perform job as Anaylst.
- o Received Reactor Operators License in 1978.

Navy Background

- o Six year nuclear program in submarine duty aboard SSBN-602 Abraham Lincoln. Participated in 2 deterrant patrols and a two year shipyard overhaul.

- Qualified on all engineering watch stations through EWS (Engineering Watch Supervisor). Also qualified as ELT (Engineering Laboratory Technician).
- Navy experience occurred from August of 1968 until discharge in July 1974.

Other non nuclear experience

- During the last 3 years of military term (1971-1974) until the time I started working at Ginna in 1976 I received Flight Training. This included work as a Flight Instructor for Multi-Engine, Instruments, Commercial and Instuctor ratings as allowed by FAA rules and regulations. It also included obtaining an FAA license for teaching Advanced Ground School and exposure to use of LINK simulation in the aviation environment.

Non Technical Schooling

- Graduated from Stow High School in Stow, Ohio in Jun 1967.

LICENSEE EVENT REVIEWS

This section contains evaluations of Ginna LER's for applicability to the Simulator Test Program or Transient Evaluation Program.

EVENT MARCH 23, 1990
REACTOR TRIP FROM NIS SOURCE RANGE DURING S/D

Evaluated 12/17/90

Related Simulator Test - 14.4.7.4.10.1 Source Range Failure

This evaluation determined that the failure of the source range high can be reproduced on the simulator using test 14.4.7.10.1 and is currently tested. It should be noted that the simulator Test Coordinator was present in the control room at the time of the trip and that nothing abnormal to the simulator tested response occured. The only incorrect malfunction response that was noted is that when the malfunction is activated above the level when the source range is automatically reenergized, the source range channel indicates the high failure event even though the channel is not yet active and does not result in trip until actually automatically energized. SDR 90-052 was submitted.

Submitted: Scott Alpin Date: 12-20-90
Simulator Test Coordinator

Approved: C. van Hulst Date: 1/2/91
Supervisor - Simulator Training

EVENT APRIL 16, 1990
S/G TUBE DEGENERATION EXCEEDS CRITERIA

Evaluated 12/18/90

This evaluation determined that the only effect on the simulator is the effect of S/G tube plugging on RCS flow and secondary steam pressure. This data is collected post outage when the actual tube plugging results are known. A portion of data is incorporated into the simulator by Software Group by the use of Plant Performance Parameters SGN-1,2,3,&4 which adjust S/G tube plugging and tube heat transfer efficiencys. This is done prior to the 100% Steady State Test to ensure secondary side data is correct for current plant conditions. RCS flow is not affected by this and is a function of the RCS model. The only action for this will be to add statement to the 100% SSA test requiring the collection and update of tube plugging and secondary side pressure prior to the start of the test.

Submitted: Scott Alijor Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT APRIL 25, 1990
AUTO START OF "A" DIESEL GENERATOR
DUE TO LOW VOLTAGE ON RCP START

Evaluated 12/17/90

This evaluation determined that the cause of the inadvertant start of the D/G on low emergency bus voltage was the result of inadequate system design. Normally, when power control is called for RCP start, they take manual control of the voltage regulation and increase system voltage. This was because of poor voltage regulation on CKT751. The voltage regulator was upgraded and tested and the event should not have occurred. In the event that occured, system voltage was increased, however the automatic voltage regulator was not blocked. This was not guided by procedure and has since been added to Ginna Plant Operating Procedure O-1.1 precautions. As a result, the CKT 751 voltage regulator reduced plant voltage to normal levels resulting in the voltage decrease on the RCP start sufficient to start the D/G. Since this problem is procedurally driven to prevent recurrence, it has been determined to have no impact on the simulator.

Submitted: Scott Clyp — Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet — Date: 1/2/91
Supervisor - Simulator Training

EVENT MAY 5, 1990
SAFETY INJECTION WHILE VENTING
PRESSURIZER PRESSURE INSTRUMENT

Evaluated 12/17/90

Related Simulator Test - 14.4.7.11.2 Pressurizer Pressure Channel Failure

This evaluation determined that although the specific valves manipulated to cause the failure do not exist on the simulator, the failure can be reproduced using Malfunctions PZR-2 and tested per the above referenced simulator test. The addition to the test procedure was to fail pressure transmitter PT-431 low first followed by the failure low of PT-430 and verification of resulting SI.

Submitted: _____ Date: 12-20-90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT MAY 10, 1990
REACTOR TRIP DUE TO
MAIN FEED REGULATING VALVE FAILURE

This reactor trip had been evaluated for simulator response by Volian. See the Volian Report.

Submitted: Scott Dup Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hutt Date: 1/2/91
Supervisor - Simulator Training

EVENT MAY 29, 1990
GENERIC CONCERN FOR WESTINGHOUSE OT-2 SWITCHES

Evaluated 12/17/90

This concern was evaluated by Training for impact on operations. Simulator configuration was checked and found to be somewhat different than the plant for the Safety Injection Switch. The plant switch has more terminal blocks associated with it than the one in the simulator. The reason is that the simulator accomplishes the same task with less and was not found to be a problem during construction. the operation of the switch was verified to be identical in the actions it performs and the configuration of the plunger tips during its operation. As a result, there is no further action required for this event.

Submitted: _____ Date: 12-20-90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT SEPTEMBER 26, 1990
REACTOR TRIP BREAKER OPENED
WHEN FLASHLIGHT DROPPED INTO RELAY RACK

Evaluated 12/17/90

Related Simulator Tests -

14.4.7.6.7 Feed Regulating Valve Fail
14.4.7.10.5 IR Gamma Comp Fail
14.4.7.16.5 Reactor Trip Failure
14.4.7.19.5 MSIV Failure
14.4.7.20.2 Turbine Failure To Trip

This evaluation determined that although the plant transient could be reproduced on the simulator using existing malfunctions, the reactor trip of 12/13/90 will provide better data for duplication on the simulator and due to time and effort required and the multiple failures, that the event would not be plotted for evaluation of simulator response.

Noted event was msiv closure in 5 minutes due to the operators believing that a cooldown was still in progress. Steam leakage is modeled on the simulator but may require tuning as a result of further evaluation of plant events.

Submitted: _____ Date: 12-20-90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT JANUARY 21, 1989
LOSS OF CONTROL POWER NIS CH N-41
CAUSES TURBINE RUNBACK

Evaluated 12/17/90.

RELATED TEST

Test 14.4.7.10.7 - Power Range Channel Failure high and low

Test 14.4.7.10.6 - Power Range Detector Failure

Neither of these tests are "control power" failures to the related channel. There currently is no Blown Contol Power Fuse On Power Range malfunction.

This event did not have a normal response to many automatic systems (EHC, SGWLC, STEAM DUMP, Rx Makeup).

Although these events can be reproduced on the simulator, the only item that seems to be in question is the reverse power alarm J-11.

The following test will be performed:

Place the simulator in a condition of @47% power.
Set malfunction TUR-17A to close conditional on T:N42B.LE.35
This will simulate the inadvertant closure of the stop valve on the runback.
Pull the control power fuses for channel N-41.
Note whether the combination of 20% runback and stop valve closure causes alarm J-11 Generator Reverse Power alarms.
Yes/No NO
(Reverse Power For 1 minute will trip the generator)

This was tested 12/17/90 on the master training disk. Generator MW decreased to 80 MW and stabalized while rod control reduced Tavg. Alarm J-11 did not annunciate. The simulator performed correctly for turbine runback at this power level. It is presumed that the further reduction in Generator Megawatts in the plant was a result of the exact combination of the stop valve closure and simultaneous runback which was not reproducable. It is also noted that the ability to place the turbine to speed control in the simulator does not currently exist. An enhancement request for this malfunction*****

* ADD A COPY THE RESULTS OF THIS TO THE SIMULATOR TEST PREP FILE 14.3.6.2 TO INCLUDE REVERSE POWER GENERATOR TRIP THE NEXT TIME THE TEST IS RUN.

This evaluation determined that the tape of the event would not be run and compared against simualtor response since it was not a runback showing normal response and not enough data was available

to properly duplicate the failures of the automatic actions or show timed response of operator actions.

Submitted: Scott Cup Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT FEBRUARY 6, 1989
DC GROUND TURBINE RUNBACK

Evaluated 12/17/89

This evaluation determined that the tape of the event would not be run and compared against simulator response since DC grounds cannot be reproduced in the simulator. Other turbine runbacks with sufficient plant data are being evaluated. Insufficient data was collected on failures to allow proper duplication of the event.

Submitted: Scott Orr Date: 12-20-89
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT JULY 29, 1989
MRPI FAILURE REQUIRES PLANT SHUTDOWN

Evaluated 12/17/89

This evaluation determined that although the plant failure is not a simulator malfunction, similar MRPI failures are available using malfunctions ROD 13 and 14. One response of the simulator that was modeled was based upon best guess estimate by the MRPI system engineer. This is the actuation of turbine runback due to ROD ON BOTTOM. Although this did not occur in the plant transient, it is felt that operator training does not suffer as a result. Appropriate alarm response is available by the malfunctions with the exception of HDLC PROTOCAL STATUS which is specific to the grounding failure. Additionally, the MRPI CRT can be shut down by turning off the power or reducing the brightness. In this manner, a MRPI CRT failure can be reproduced with direct instructor interface.

This was determined to be sufficient for the simulator.

Submitted: Scott Ohs Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT AUGUST 28, 1989
ROD CONTROL PROBLEMS CAUSE POWER REDUCTION

Evaluated 12/18/90

Related Simulator Test - 14.4.7.15.4 Control Banks Fail To Move

The plant failure involved a power cabinet 2AC Failure which is modeled and tested in the above related malfunction. The only difference in simulator response is the alarm of an urgent failure upon attempted rod movement. This did not accompany the plant failure and is a fuction of the specific failure. This was determined to be sufficient for th simulator.

Submitted: Scott Dy
Simulator Test Coordinator
Date: 12-20-90

Approved: Dan Hulet
Supervisor - Simulator Training
Date: 1/2/91

EVENT SEPTEMBER 20, 1989
SPURIOUS ACTIVATION OF
CONTAINMENT VENTILATION ISOLATION

Evaluated 12/17/89

This evaluation determined that the simulator test 14.3.4.23 Process and Area Radiation Monitor System test currently tests the response of a failure of the R-12 monitor using malfunction 14.4.7.14.2 Process Monitor Malfunction. The resulting containment ventilation isolation is verified.

Submitted: Scott Ow Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT NOVEMBER 19, 22, 1989
TAVG CHANNEL DUE TO ELECTRONIC PROBLEM
CAUSES TURBINE RUNBACK

Evaluated 12/17/89

Related simulator Test - 14.4.7.12.11 RTD Failure

This evaluation determined that although the malfunction that caused the plant transients could not be reproduced on the simulator, the malfunction of RTD Channel 401 failing high can be reproduced using malfunction test 14.4.7.12.11 RTD Failure. To reproduce this, the malfunction would need to be removed after only one turbine runback hit signal is recieved. The malfunction test criteria requires the verification of alarms that annuciated during the event. Since other plant runbacks of greater than 5% are being evaluated using plant tape vs. simulator tape, this runback will not be evaluated on tape.

Submitted: Scott Crump Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT JUNE 1, 1988
RX TRIP, "B" S/G <30% AND SF>FF
MISMATCH DUE TO BLOWN FUSE

12/18/90

Related Simulator Test - 14.4.7.6.10 Feed Regulating Valve Fail

This event was previously evaluated soon after the trip occured. The result of that evaluation was that the transient was reproducable on the simulator but the combination of overfeeding the S/G and steam leakage did not result in Safety Injection. SDR 89-104/SM 89-095 was written and tested 3/21/90 to verify that this response occurs. As a result, no further action is required for this event.

Submitted: Scott Cy _____ Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hull _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT JULY 16, 1988
LOSS OF OFFSITE POWER DUE TO
MAIN SUBSTATION FAULT

Evaluated 12/18/90

Related Simulator Test - 14.4.7.5.1 Loss of Offsite Power
14.4.7.15.3 Stuck Rod

This evaluation determined that the plant transient can be reproduced by the simulator. There was insufficient data to evaluate alarm response. The above related malfunctions are tested and correctly simulate the plant response corresponding to available data. As a result, no further action is required.

Submitted: Scott Clyp Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT DECEMBER 11, 1988
SIMULTANEOUS LOSS OF TWO "B" S/G
PRESSURE CHANNELS DUE TO FREEZING

Evaluated 12/18/90

Related Simulator Test - 14.4.7.17.3 S/G Pressure Channel Failure

This evaluation determined that the existing simulator malfunction can duplicate the drifting pressure response due to freezing and that the two channels can be failed high simultaneously. The failure is not actual freezing but with instructor interface, the plant event can be duplicated satisfactorily.
No further action is required.

Submitted: Scott Ow
Simulator Test Coordinator
Date: 12-20-90

Approved: Dan Hulet
Supervisor - Simulator Training
Date: 1/2/91

EVENT MARCH 24, 1987
INADVERTANT CONTAINMENT ISOLATION
DUE TO PERSONNEL ERROR

Related Simulator Test - 14.4.7.16.1 Inadvertant Containment Isol

This evaluation determined that although the simulator does not have a malfunction to provide a single train Containment Isolation, as was the case in the plant event, the simulator malfunction does not detract from operator training. Although the event was due to a single relay being activated, the simulator malfunction is sufficient to train the operators in the operation and restoration of these affected functions.

Submitted: _____ Date: 12-20-90
Simulator Test Coordinator

Approved: Dan Hulst Date: 1/2/91
Supervisor - Simulator Training

EVENT JUNE 19 & 22, 1989
"B" & "C" SI PUMPS INOPERABLE
CONTROLLED SHUTDOWN TO CSD

Evaluated 12/21/90.

This evaluation determined that the inoperable pumps can be simulated on the simulator by malfunction or instructor interface. The data to CSD need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdwon to CSD and is performed by plant operators. No anomolies were noted. No further action is required.

Submitted: Scott Clupp
Simulator Test Coordinator
Date: 12/21/90

Approved: Dan Hulot
Supervisor - Simulator Training
Date: 1/2/91

EVENT OCTOBER 7, 1989
NIS ROD DROP CIRCUITRY ON N-44
RUNBACK TO 80%

Evaluated 12/21/90.

This evaluation determined that the event of 7/6/89, dropped rod, will yield better transient data for simulator comparison. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT MID NOVEMBER, 1989
POWER REDUCTION FOR REPAIRS OF 13A BUSHING

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT FIRST WEEK DECEMBER, 1989
POWER REDUCTION FOR CONDENSER TUBE LEAK

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The condenser tube leak was too little to result in any simulated effect. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT MARCH 11, 1988
S/G LEVEL TRANSIENTS; MANUAL SHUTDOWN

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The transient could not be exactly reproduced in the simulator due to little data available and alot of manual operator action. Malfunctions are available on the simulator to reproduce oscillating S/G levels requiring the operator to take manual control of feedwater. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENT MARCH 14, 1988
S/G TUBE LEAK; MANUAL SHUTDOWN

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The plant leakage was calculated to be .14 gpm and is insignificant to simulated response being evaluated for duplication. S/G Tube Rupture malfunction is available and tested as required. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT MARCH 24, 1988
PUMP IMPELLER DAMAGE POWER REDUCTION

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The pump damage did not alter the power reduction. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT AUGUST 25, 1988
N-44 ROD DROP/TRIPPED BISTABLE POWER REDUCTION

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The plant failure can not be reproduced on the simulator. Control rod drop malfunctions are available and tested as required. They are sufficient for operator training. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT AUGUST, 1988
HEATER DRAIN PUMP SEAL FAILURE POWER REDUCTION

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The plant failure can not be reproduced on the simulator. Heater drain pump malfunctions are available and tested as required. The plant event can be simulated with instructor interface. They are sufficient for operator training. No further action is required.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: _____ Date: 1/2/91
Supervisor - Simulator Training

EVENT DECEMBER, 1988
POWER REDUCTION FOR CONDENSER WATER BOX TUBE LEAK

Evaluated 12/21/90.

This evaluation determined that the power reduction data need not be compared to the simulator since the Normal Operations test 14.4.2 covers a controlled shutdown to CSD and is performed by plant operators. No anomolies were noted. The condenser tube leak was too little to result in any simulated effect. No further action is required.

Submitted: Heather Dr Date: 12/21/90
Simulator Test Coordinator

Approved: Dan Hulet Date: 1/2/91
Supervisor - Simulator Training

EVENTS 1986
STEAM LEAK/MANUAL RX TRIP
RX TRIP DUE TO INTERMEDIATE RANGE CHANNEL FAILURE
GROUNDED INSTRUMENT BUS/RUNBACK/MANUAL TRIP
INADVERTANT MSIV CLOSURE/RX TRIP

Evaluated 12/21/90

Related Simulator Tests - 14.4.7.19.2 Steam Leak
14.4.7.5.7 Loss Of Instrument Bus

This evaluation determined that the data available from the events was not current enough for inclusion in the transient evaluation process. Each of the events are reproducable on the simulator using simulator malfunctions and overrides and instructor interface. No further action is required for these events.

Submitted: _____ Date: 12/21/90
Simulator Test Coordinator

Approved: Dan Hulst Date: 1/2/91
Supervisor - Simulator Training

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR CERTIFICATION REPORT

ATTACHMENT 5

CONFIGURATION MANAGEMENT

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

CONFIGURATION MANAGEMENT

SIMULATOR DESIGN DATA BASE LISTING:

DRAWINGS

NUMBER	SHEET	TITLE
)000-37900	2	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
)000-37900	3	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
)000-37900	4	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
)000-37916	3	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
)000-37918	3	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
)000-37942	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET SYSTEM
)7051834812	....	AVP 9A COND. BOOSTER PERFORMANCE TEST
)7051834813	....	AVP 9B COND. BOOSTER PERFORMANCE TEST CURVE
)7051834813	....	AVP 9C COND. BOOSTER PUMP PERFORMANCE TEST CURVE
1-1/2K-365	....	FIRE SERVICE BOOSTER PUMP CURVE
10904-1	....	METEOROLOGICAL TOWER INSTRUMENT RECORDERS MOUNTING PLATE
10904-10	....	SUPPLEMENTAL CORE COOLING - MOD. TO SI SYSTEM
10904-100	....	TURBINE AFW PUMP VALVES
10904-101	....	TURBINE AFW PUMP VALVES - PIPE SUPPORT MK-MS-143
10904-102	....	FIRE BARRIER PENETRATION SEALS INSTALLED BY IN-HOUSE SEALS
10904-103	....	TURBINE AFW PUMP VALVES - PIPE SUPPORT MK-MS-138
10904-104	....	CONTAINMENT SUMP A LEVEL
10904-105	....	AUX FW FLOW INDICATION POWER SUPPLY
10904-106	....	BISCO SF-20 SEALS IN RATED WALLS
10904-107	....	CROSBY SAFETY VALVE GRID HC-65 POSITION SWITCH DETAIL
10904-11	....	WASTE POLISHING DEMINERALIZERS - VALVE HANDLE EXTENSION
10904-110	....	AUXILIARY RELAY RACK DETAIL BUS BAR
10904-114	....	AUXILIARY RELAY RACK DETAIL, GROUND BUS BAR
10904-115	....	AUX. RELAY RACK RELAY MODIFICATION
10904-116	....	AUX. RELAY RACK RELAY MODIFICATION
10904-117	....	AUX. RELAY RACK RELAY MODIFICATION
10904-118	....	AUXILIARY RELAY RACK TERMINAL STRIP MARKER
10904-119	....	AUXILIARY RELAY RACK DETAIL TERMINAL BOARD
10904-12	....	1G EXHAUST FAN - ACOUSTIC TREATMENT
10904-120	....	AUXILIARY RELAY RACK SILKSCREEN ARTWORK - TERMINAL BOARD
10904-121	....	AUX. RELAY RACK ASSEMBLY, COMPONENT BOARD (A1, B1)
10904-122	....	AUX. RELAY RACK ASSEMBLY, COMPONENT BOARD (A2, B2)
10904-123	....	AUXILIARY RELAY RACK SILKSCREEN ARTWORK - TERMINAL BOARD MARKER STRIP
10904-124	....	AUXILIARY RELAY RACK DETAIL TERMINAL BLOCK MARKER STRIP
10904-125	....	AUX. RELAY RACK ASSEMBLY CABLE
10904-13	....	1973 REVISIONS TO PIPE SUPPORT MS-146 ON 30" O MAIN STEAM LINE FROM SG B
10904-130	....	AUXILIARY RELAY RACK DETAIL, TERMINAL BOARD

NUMBER	SHEET	TITLE
10904-131	....	AUXILIARY RELAY RACK SILKSCREEN - TERMINAL BOARD
10904-132	....	AUX. RELAY RACK ASSEMBLY, COMPONENT BOARD
10904-133	....	AUXILIARY RELAY RACK DETAIL,BRACKET, CONNECTOR
10904-134	....	AUXILIARY RELAY RACK DETAIL ADAPTER PLATE
10904-135	....	AUX. RELAY RACK MODIFICATION
10904-136	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL RIGHT BUS #14 (A1)
10904-137	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL LEFT BUS #14 (A1)
10904-138	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL RIGHT BUS #16 (B1)
10904-139	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL LEFT BUS #16 (B1)
10904-14	....	1973 REVISION TO BOX FRAME ON 30" O MAIN STEAM LINE FROM SG B NEAR SUPP
10904-140	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL RIGHT BUS #18
10904-141	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL LEFT BUS #18 (A2)
10904-142	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL RIGHT BUS #17
10904-143	....	AUX. RELAY RACK WIRE LIST TERMINAL BLOCK PANEL LEFT BUS #17
10904-145	....	AUX. RELAY RACK WIRE LIST HEAT SINK ASSEMBLY #1
10904-146	....	AUX. RELAY RACK WIRE LIST HEAT SINK ASSEMBLY #2
10904-147	....	AUX. RELAY RACK WIRE LIST HEAT SINK ASSEMBLY #3
10904-148	....	AUX. RELAY RACK WIRE LIST HEAT SINK ASSEMBLY #4
10904-149	....	AUXILIARY RELAY RACK DETAIL ADAPTER PLATE
10904-150	....	AUX. RELAY RACK U.V. RELAY MODIFICATION
10904-151	....	AUXILIARY RELAY RACK DETAIL ADAPTER PLATE MOUNTING PLATE POWER SUPPLY
10904-152	....	AUXILIARY RELAY RACK DETAIL ADAPTER PLATE
10904-153	....	AUX. RELAY RACK RELAY MODIFICATION
10904-154	....	AUX. RELAY RACK WIRE LIST FUSE PANEL
10904-155	....	AUX. RELAY RACK WIRE LIST RELAY PANEL
10904-156	....	AUXILIARY RELAY RACK MOUNTING DETAIL RACK MOUNTING DETAIL (A2, B2)
10904-157	....	AUXILIARY RELAY RACK PAWL DETAIL
10904-158	....	AUXILIARY RELAY RACK FRONT DOOR LOCK BRACKET DETAIL
10904-159	....	AUXILIARY RELAY RACK LEXAN DOOR LOCK MODIFICATION
10904-15B	....	CAUSTIC & REACTOR MAKEUP WATER EXTENSIONS
10904-160	....	480 VOLT MOTOR CONTROL CENTER 1A
10904-161	....	480 VOLT MOTOR CONTROL CENTER 1A
10904-162	....	490 VOLT MOTOR CONTROL CENTER 1B
10904-163	....	ELECTRICAL 480 VOLT MOTOR CONTROL CENTER 1B (PART 2 OF 2)
10904-164	....	480 VOLT MOTOR CONTROL CENTER 1C
10904-165	....	480 VOLT MOTOR CONTROL CENTER 1C
10904-166	....	480 VOLT MOTOR CONTROL CENTER 1C

NUMBER	SHEET	TITLE
10904-167	....	480 VOLT MOTOR CONTROL CENTER 1D
10904-168	....	480 VOLT MOTOR CONTROL CENTER 1D
10904-169	....	480 VOLT MOTOR CONTROL CENTER 1D
10904-16A	....	CAUSTIC & REACTOR MAKEUP WATER RETENTION
10904-17	....	EMERGENCY GENERATORS 1A & 1B LUBE OIL SWITCHES
10904-170	....	480 VOLT MOTOR CONTROL CENTER 1E
10904-171	....	480 VOLT MOTOR CONTROL CENTER 1E
10904-172	....	480 VOLT MOTOR CONTROL CENTER 1F
10904-173	....	480 VOLT MOTOR CONTROL CENTER 1F
10904-174	....	480 VOLT MOTOR CONTROL CENTER 1G
10904-175	....	480 VOLT MOTOR CONTROL CENTER 1H
10904-176	....	480 VOLT MOTOR CONTROL CENTER 1J & 1K
10904-177	....	480 VOLT MOTOR CONTROL CENTER 1L
10904-178	....	480 VOLT MOTOR CONTROL CENTER 1M
10904-18	....	SPOOL PIECE FOR REDUNDANT SW LINE FROM SF COOLER TO DISCHARGE CANAL
10904-181	....	ARRANGEMENT AMMONIA INJECTION PUMP LOCAL CONTROL PANEL
10904-182	....	ARRANGEMENT AMMONIA INJECTION PUMP 3 REMOTE CONTROL STATION & VENT VLV
10904-183	....	ARRANGEMENT AMMONIA INJECTION SYSTEM HEAT TRACE ALARM BOX AND INJ PUMPS
10904-184	....	ONE LINE DIAGRAM AMMONIA INJECTION PUMPS
10904-185	1	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM
10904-185	2	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM
10904-185	3	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM
10904-185	4	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM
10904-185	5	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM
10904-186	1	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM HEAT TRACE SYSTEM
10904-186	2	BLOCK DIAGRAM AMMONIA INJECTION SYSTEM HEAT TRACE
10904-188	....	INTERNAL WIRING DIAGRAM AMMONIA INJECTION PUMPS LOCAL CONTROL PANEL
10904-189	....	WIRING DIAGRAM REVISIONS TO VENDOR WIRING DRAWINGS OF AVC-1 CONTROL PANL
10904-190	....	GRIPPER MODIFICATION - ZR GUIDE TUBE F/A
10904-191	....	BLOWDOWN HX CONDENSATE PIPING MODIFICATION P&ID
10904-192	....	INSTALLATION OF E-SYSTEM SNUBBERS MS-146
10904-193	....	CONDENSATE STORAGE TANK LEVEL & BLOCK DIAGRAM
10904-194	....	CONDENSATE STORAGE TANK LEVEL INSTRUMENT WIRING DIAGRAM
10904-196	....	ONSITE TECHNICAL SUPPORT CENTER TSC-3 POWER PANELS
10904-197	....	ONSITE TECHNICAL SUPPORT CENTER CRT MISC. POWER
10904-199	....	MAIN STEAM SAFETY VALVE POSITION SWITCH FIELD WIRING
10904-2	....	FENCE ENCLOSURE FOR INSTRUMENT BLDG. & METEOROLOGICAL TOWER

NUMBER	SHEET	TITLE
10904-200	....	BLOCK DIAGRAM BUSSES 17 & 18 SCREEN HOUSE
10904-201	....	BLOCK DIAGRAM BUSSES 14 & 16 AUX. BLDG., RELAY ROOM, CONTAINMENT ROOM
10904-203	....	TDAFP LUBE OIL COOLER MODIFICATION MKAF-7
10904-204	....	ZIRCONIUM GUIDE TUBE INTERLOCK EXTERNAL WIRING DIAGRAM
10904-205	....	ZIRCONIUM GUIDE TUBE INTERLOCK INTERNAL WIRING DIAGRAM
10904-206	....	SINGLE CONDUCTOR PENETRATION CONFIGURATION PENETRATION TYPE E
10904-207	....	PIPE STRESS MODEL TDAFP 1ST STAGE DRAIN CONNECTION
10904-208	....	RCP OIL COLLECTION SYSTEM "B" RCP #1 SEAL BYPASS LINE PIPE SUPPORT H-145
10904-209	....	RCP OIL COLLECTION SYSTEM "B" RCP #1 SEAL BYPASS LINE PIPE SUPPORT H-145
10904-21	....	SECTION A-A & B-B TEMPORARY CHARGING PUMP FILTER VENT SUPPORT
10904-210	....	HYDROGEN SUPPLY SYSTEM - P&ID DRAWING
10904-211	....	ISOLATION VALVE 9227 WIRING DIAGRAM
10904-212	....	RELAY ROOM SATELLITE STATION A RESET PANEL
10904-213	....	RELAY ROOM SATELLITE STATION A RESET PANEL MOUNTING DETAIL
10904-216	....	TURBINE BLDG. BLOWDOWN HEAT EXCHANGER CONDENSATE BYPASS SOLENOID VLV INS
10904-217	....	ALTERNATE WATER SUPPLY TO STANDBY AUXILIARY FEEDWATER PUMPS P&ID
10904-219	....	BUS 17 UNDERVOLTAGE JUNCTION TERMINAL BOX
10904-22	....	LIQUID WASTE MONITOR ADDITION
10904-220	1	PIPE LINE DESIGNATION TABLE
10904-220	2	PIPE LINE DESIGNATION TABLE
10904-220	3	PIPE LINE DESIGNATION TABLE
10904-220	4	PIPE LINE DESIGNATION TABLE
10904-221	1	VALVE LIST
10904-221	2	VALVE LIST
10904-221	3	VALVE LIST
10904-221	4	VALVE LIST
10904-221	5	VALVE LIST
10904-221	6	VALVE LIST
10904-221	7	VALVE LIST
10904-23	....	HANGER DETAIL FOR CONDENSATE LINE
10904-233	1	WIRING DIAGRAM PASS FAIL OPEN NUPRO VALVES
10904-233	10	PASS TRANSMITTERS AND THERMOCOUPLE
10904-233	11	PASS HP ORIFICE ALARM
10904-233	12	WASTE TRANSFER PUMP PAS-P-203
10904-233	13	WIRING DIAGRAM EVACUATING COMPRESSOR PAS-C-200
10904-233	14	PASS HEAT TRACING
10904-233	15	PASS 480VAC SUPPLY

NUMBER	SHEET	TITLE
10904-233	16	PASS AUXILIARY RELAY CABINET
10904-233	17	PASS CVCS & CC TIE-IN VALVES
10904-233	2	WIRING DIAGRAM PASS FAIL CLOSE NUPRO VALVES
10904-233	3	WIRING DIAGRAM PASS FAIL OPEN GRINNEL VALVES
10904-233	4	WIRING DIAGRAM PASS FAIL CLOSE GRINNEL VALVES
10904-233	5	WIRING DIAGRAM PASS FAIL OPEN WHITEY VALVES
10904-233	6	WIRING DIAGRAM PASS CVCS & CC TIE-IN VALVES
10904-233	7	WIRING DIAGRAM PASS CONTAINMENT SUMP VALVES
10904-233	8	PASS LS301
10904-233	9	PASS LE301
10904-234	....	SINGLE LINE DIAGRAM PASS
10904-235	0	INSTRUMENT INDEX - REVISION STATUS SHEET
10904-235	1	INSTRUMENT INDEX
10904-235	10	INSTRUMENT INDEX
10904-235	11	INSTRUMENT INDEX
10904-235	12	INSTRUMENT INDEX
10904-235	2	INSTRUMENT INDEX
10904-235	3	INSTRUMENT INDEX
10904-235	4	INSTRUMENT INDEX
10904-235	5	INSTRUMENT INDEX
10904-235	6	INSTRUMENT INDEX
10904-235	7	INSTRUMENT INDEX
10904-235	8	INSTRUMENT INDEX
10904-235	9	INSTRUMENT INDEX
10904-236	1	CONSTRUCTION DETAILS PASS AUXILIARY RELAY CABINET
10904-236	2	CONSTRUCTION DETAILS 480V TERMINAL BOX
10904-24	....	CHARGING PUMP FILTER VENT RELOCATION
10904-240	....	MAIN STEAM PORV DRAIN LINE SUPPORT FOR PORV 3506 & 3507
10904-245(164)	....	MSR UPGRADE MILESTONE SCHEDULE & PAYMENT SCHEDULE
10904-246	....	FW TEMPERATURE RTD'S - WIRING DIAGRAM
10904-247	....	INTERMEDIATE BUILDING SOLENOID VALVE REPLACEMENT
10904-248	....	PRESEPARATOR DRAIN SYSTEM COLD FUNCTION CALIBRATION TEST P&ID "B" TANK
10904-249	....	PRESEPARATOR DRAIN TANKS SWAY SUPPRESSORS SN-1 AND SN-2
10904-250	....	PRESEPARATOR DRAIN SYSTEM COLD FUNCTION CALIBRATION TEST P&ID "A" TANK
10904-251	....	PANEL LAYOUT DRAWING OT2 RESET SWITCHES - DRILLING DIMENSIONS INVERTER
10904-252	....	PRESEPARATOR TANKS A & B INSTRUMENT SWAY STRUTS
10904-253	....	PRESEPARATOR DRAIN HANGER S4

NUMBER	SHEET	TITLE
10904-255	....	STEAM GENERATOR TUBE SHEET LAYOUT
10904-258	....	SUMP "A" AND "B" VOLUMES
10904-259	....	LETDOWN ISOLATION WIRING DIAGRAM FOR LCV-427
10904-26	....	POWER OPERATED RELIEF VALVES NITROGEN SUPPLY
10904-260	....	INSTRUMENT TUBING SUPPORTS
10904-262	....	ECN-2507-1
10904-263	....	SOLENOID VALVE REPLACEMENT TYPICL VALVE WIRING INSTALLATION
10904-264	....	RCS OVERPRESSURIZATION PROTECTION AIRLINE STRAINER INSTALLATION
10904-265	....	TURBINE BUILDING HYDROGEN SEAL OIL SUMP PUMP CONTROL BLOCK DIAGRAM
10904-267	....	CONSTRUCTION DETAILS HEAT TRACE CONTACTOR ENCLOSURE
10904-268	....	CONSTRUCTION DETAILS HEAT TRACE CONTROL PANEL
10904-27	....	FEEDWATER CONTROL VALVES TEMP. OPERATOR MOD.
10904-270	....	PENETRATION P305 P&ID
10904-271	....	BLOCK DIAGRAM AUXILIARY BUILDING BASEMENT & INTERMEDIATE FLOORS
10904-272	....	BLOCK DIAGRAM TECHNICAL SUPPORT CENTER
10904-273	....	BLOCK DIAGRAM AUXILIARY BUILDING OPERATING FLOOR
10904-274	....	CONDUCTIVITY INDICATOR MOUNTING PLATE DETAIL
10904-275	....	PRESEPARATOR VENTS/DRAINS P305 PIPE SUPPORT S1
10904-276	....	PENETRATION VENTS/DRAINS P305 PIPE SUPPORT S2
10904-277	....	PENETRATION VENTS/DRAINS PIPE SUPPORT S4 P305 PIPING
10904-278	....	PENETRATION VENTS/DRAINS PIPE SUPPORTS S3 & S5 P305 LINE
10904-279	....	STOP LOG GUIDE & SCREEN WELL SECURITY FRAME
10904-280	....	BLOCK DIAGRAM AUXILIARY PANEL MCC "1C" & "1D" AUXILIARY BUILDING
10904-281	....	TSC POWER & GROUNDING DETAIL
10904-282	....	AUXILIARY BUILDING POWER GROUNDING DETAIL
10904-283	....	D.C. THROWOVER MODIFICATION TO U.V. SYSTEM
10904-284	....	RTD REPLACEMENT WIRING DIAGRAM
10904-285	....	PRESSURIZER SAMPLE VALVE 953 RESUPPORT AND PIPING MODIFICATION
10904-286	....	OT2 SWITCH DRILLING DIMENSIONS MOISTURE PRESEPARATOR MOV-1908
10904-287	....	MOISTURE PRESEPARATOR ELECTRICAL CONTROL & INDICATION BLOCK DIAGRAM
10904-288	....	S/G CABLE PENETRATION MODIFICATION FCR NO. 3107-2
10904-289	....	GENERATOR DIFFERENTIAL EXPANSION CONTROL PANEL LOCATION AND ASSOCIATED
10904-29	....	MODIFICATION WASTE DISPOSAL SYSTEM P&ID
10904-290	....	NAME PLATES AUXILIARY BREAKER CABINET
10904-291	....	AUXILIARY BREAKER CABINET NAMING OF RELAY CONTACTS
10904-292	....	NAMETAG AUXILIARY BREAKER CABINET
10904-293	....	COUNT ROOM A/C UNIT WIRING DIAGRAM

NUMBER	SHEET	TITLE
10904-294	....	ISOLATION DAMPER POSITION INDICATION (SCHEMATIC)
10904-295	....	ISOLATION DAMPER CONTROL
10904-296	....	ADMINISTRATIVE COMPUTER ROOM A/C SYSTEM SERVICE WATER TIE-IN
10904-297	....	OVERVOLTAGE CABINETS DC POWER SUPPLY OVER VOLT PROTECTION SCHEMATIC
10904-298	....	AMMONIA SYSTEM MODIFICATION HANGER TYPE 22
10904-299	....	FIRE CONTROL PANEL BENCHBOARD PANEL FACE LAYOUT
10904-30	....	WASTE DISPOSAL SYSTEM - GENERAL ARRANGEMENT DRAWING
10904-300	....	PRESEPARATOR DRAIN TANKS DELTA P CELLS & TAPS
10904-301	....	150KVA TRANSFORMER WIRING DIAGRAM
10904-302	....	MCB WIRING TURBINE SUPERVISORY
10904-303	....	AOV 1599 WIRING DIAGRAM
10904-304	....	CONTROL AND COMPUTER ROOM - 40KW HEATER COIL - WIRING DIAGRAM
10904-305	....	RELOCATION OF MAGNETROL MODEL 249C ON PRESEPARATOR TANK "A"
10904-306	....	AOV 1592 & 1599 SOLENOID MOUNTING DETAIL
10904-308	....	REHEATER HEAD THERMOCOUPLE INSTRUMENTATION CONDUIT LAYOUT
10904-309	....	RELOCATION OF MAGNETROL MODEL 249C ON PRESEPARATOR TANK "B"
10904-31	....	WESTINGHOUSE KV-1 UNDER-VOLTAGE RELAY MOUNTING HOLES ON 4160V SWITCHGEAR
10904-310	....	MSR STUB BARRELL REPAIR: NCR-G84-43
10904-311	....	ANCHORAGE & WIRING OF DG1CP (BOX) 1A DG CABINET
10904-312	....	CONTROL BUILDING MASONARY WALL RELAY ROOM WALL 7C
10904-32	....	DIESEL GENERATORS JACKET WATER SYSTEM
10904-33	....	DIESEL GENERATORS FUEL OIL SYSTEM
10904-34	....	DIESEL GENERATORS LUBE OIL SYSTEM
10904-345	....	R.W.S.T. LEVEL MODIFICATION
10904-346	....	LAUNDRY ROOM DRYER & DUCT DAMPER MOTOR WIRING SCHEMATIC
10904-347	....	HIGH RANGE EFFLUENT MONITOR CONTROL CONSOLE #2 LOCATION
10904-348	....	SEAL OIL UNIT FIRE ENCLOSURE S.G.B. LINE TO COND. DRAIN PIPE SUPPORT
10904-35	....	SPENT FUEL POOL COOLING MODIFICATION TRUNION ATTACHMENT WELD SUPPORT
10904-36	....	SPENT FUEL PIT - D1 PRESSURE GAUGE
10904-4	....	CONDUIT & CONDUCTOR LIST
10904-40	....	AUXILIARY BOILER OIL CONVERSION FOR CLEAVER BROOKS CB760-700 BOILER
10904-41	....	AUX. BOILER CONVERSION
10904-42	....	FULL LENGTH ROD CONTROL SYSTEM SAMPLING RESISTOR MOD
10904-43	....	UNDERVOLTAGE LOGIC DIAGRAM - FIGURE 111
10904-44	....	WELD PREPARATION FOR CARBON STEEL OPEN BUTT WELD JOINT
10904-45	....	ELECTRICAL WIRING DIAGRAM - S/G POWER LEVEL CONTROL
10904-49	....	CONTROL BUILDING VENTILATION CONTROL BLDG. HVAC SYSTEM P&ID

NUMBER	SHEET	TITLE
10904-5	....	INTAKE TUNNEL - PVC JACKET
10904-50	....	CONTROL BUILDING VENTILATION DUCT WORK REPLACEMENT
10904-51	....	SPRAY ADDITIVE TANK - VALVE "V-3" ADDITION
10904-52	....	MAIN FEED PUMP CONTROLLER - P&ID
10904-53	....	MAIN FEED PUMP CONTROLLER - BLOCK DIAGRAM
10904-54	....	MAIN FEED PUMP CONTROLLER - BLOCK DIAGRAM
10904-55	....	FIRE PUMP DIESEL ENGINE - WATER HTR & FILTER INSTALLATION
10904-56	....	1G CHARCOAL FILTER STATION MONITOR SM-100 NAME PLATES - DETAILS
10904-57	....	CONTROL ROOM AIR HANDLING UNIT CHARCOAL FILTER UNIT DUCT MODIFICATION
10904-58	....	BLOCK DIAGRAM - AUX. BUILDING ESHAUST FAN 1G
10904-59	....	P&ID SPRAY ADDITIVE TANK PIPING
10904-6	....	PANEL J - ANNUNCIATOR WINDOWS - MAIN CONTROL BOARD
10904-60	....	MAGNETIC SWITCH MOUNTING BRACKET
10904-61	....	SFP COOLING BACKUP SYSTEM - RETURN LINE FLANGE - CONNECTION DETAIL
10904-62	....	SFP COOLING BACKUP SYSTEM - INSTRUMENTATION FOR PUMPS
10904-63	....	SFP COOLING BACKUP SYSTEM - SFP SHX INSTR. & VALVES
10904-64	....	SFP COOLING BACKUP SYSTEM - ALTERNATE HOSE ROUTING
10904-65	....	INTERMEDIATE BLDG. - AUX. FEED PUMPS BYPASS MOD. PIPE SUPPORT H1 - H6
10904-66	....	1G CHARCOAL FILTER - FIRE HEADER JUNCTION TERMINAL BOX
10904-67	....	TYPICAL PENETRATION SPLICE DETAILS
10904-68	....	TYPICAL RECIRCULATION FAN MOTOR POWER 480V CABLE PENETRATION - INSIDE
10904-69	....	ORIGINAL PENETRATION SPLICE DETAILS
10904-7	....	PANEL L - ANNUNCIATOR WINDOWS - MAIN CONTROL BOARD
10904-70	....	TYPICAL CONFIGURATION OF SPLICES MODIFIED UNDER EWR 2271
10904-71	....	"B" GAS STRIPPER PUMP PIPING MODIFICATION RELOCATING DIAPHRAGM VALVE
10904-72	....	SPENT FUEL PIT COOLING BACKUP SYSTEM - UPPER PUMP SECTION - STRAINER
10904-73	....	AFW BYPASS SYSTEM JUNCTION BOX DETAILS
10904-75	....	BLOCK DIAGRAM FOR CKT SCHEDULE AFW BYPASS LOOPS A & B
10904-76	....	LEVEL TRANSMITTER MOUNTING
10904-77	....	CONTROL BOARD MODIFICATION CUTOUT DETAILS
10904-78	....	RELAY ROOM SUPPORT DETAILS FOR 2" CONDUIT TO RA3 RACK
10904-79	....	INSTRUMENT RACK CONDUIT LAYOUT FOR AUX FR PUMPS INTERMEDIATE BLDG. BSMNT
10904-8	....	CONDUIT & CONDUCTOR LIST
10904-81	....	GSM-9 DAMPER TRANSFORMER
10904-82	1	DISCHARGE & INTAKE FOR GINNA STATION
10904-82	2	DISCHARGE AT GINNA STATION
10904-83	....	INTAKE & STRUCTURE DETAIL FOR GINNA STATION

NUMBER	SHEET	TITLE
10904-84	....	DIRECT INDICATION OF VALVE POSITION LVDT HOLDER
10904-85	....	FIRE BARRIER PENETRATION SEALS WORK SCOPE
10904-86	....	PENETRATION MOUNTING - INTERFACE
10904-87	....	TURBINE AUX FW PUMP VALVES - PIPE SUPPORTS MK- MS-138 & -139
10904-88	....	TURBINE AUX FEEDWATER PUMP VALVES - PIPE SUPPORTS MK-MS-136 & 137
10904-89	....	TURBINE AUX FW PUMP VALVES - PIPE SUPPORTS: MK-MS-141 & 142
10904-9	....	SERVICE BUILDING - PROPOSED ADDITIONAL LOCKERS
10904-90	....	TURBINE AFW PUMP VALVES - PIPE SUPPORT RAD-760
10904-91	....	TURBINE AFW PUMP VALVES - SUPPORT ANC-430
10904-92	....	DETECT INADEQUATE CORE COOLING RCS SUBCOOLING MONITORING SYSTEM
10904-93	....	PURGE VALVE AIR CYLINDER TRAVEL STOPS
10904-94	....	PANEL CUTOUT FOR WESTINGHOUSE RACK
10904-95	....	TURBINE AFW PUMP VALVES - PIPE SUPPORT MK-NIS-133
10904-96	....	TURBINE AFW PUMP VALVES PIPE SUPPORT MS-134
10904-97	....	TURBINE AFW PUMP VALVES PIPE SUPPORT MS-135
10904-98	....	TURBINE AUX FW VALVES - PIPE SUPPORT MK-MS-140
10904-99	....	TURBINE AUX FW PUMP VALVES - MOTOR DRIVEN AFW PUMP CONDUIT SUPPORT
10905- 1	....	INDEX
10905- 2	....	INDEX
10905- 3	....	INDEX
10905- 10	1	SWITCH DEVELOPMENT
10905- 11	1	SWITCH DEVELOPMENT
10905-0078A	....	480V BUS 14 - UNIT 22A RHR PUMP 1A
10905-0078B	....	480V BUS 16 - UNIT 15A RHR PUMP 1B
10905-0230	....	.....
10905-0231	....	.....
10905-0232	....	.....
10905-0233	....	.....
10905-0240	....	MOTOR OPERATED VALVE
10905-0383	....	ANNUNCIATOR PANEL-E
10905-0586	....	MOV 720 RHR COLD LEG DISCHARGE TO LOOP B
10905-0586	....	.....
10905-0587	....	MOV-721 RHR COLD LEG DISCHARGE TO LOOP B
10905-0587	....	.....
10905-0588	....	MOV-V738A RHR HX INLET
10905-0588	....	.....
10905-0589	....	MOV-738B RHR HX INLET

NUMBER	SHEET	TITLE
10905-0589	....	.....
10905-605	....	MOV 850A CONTAINMENT SUMP PUMP SUCTION
10905-606	....	MOV 850B CONTAINMENT SUMP PUMP SUCTION
10905-0607	....	MOV 851A CONTAINMENT SUMP SUCTION CS
10905-0608	....	MOV 851 B CONTAINMENT SUMMP SUCTION
10905-0609	....	MOV 852A RHR LOOP INLET TO R VESSEL.
10905-0610	....	MOV 852 B
10905-0611	....	MOV 856 REFUELING WATER TO RHR PUMP.
10905-10	2	ELEMENTARY WIRING DIAGRAM SWITCH DEVELOPMENT
10905-10	3	.....
10905-100	....	MOTOR CONTROL CENTER 1G2
10905-101	....	480V EMERGENCY GEN. 1A BUS 14
10905-102	....	480V EMERGENCY GEN. 1B BUS 16
10905-103	....	480V EMERGENCY GEN. 1A BUS 18
10905-104	....	480V EMERGENCY GEN. 1B BUS 17
10905-105	....	SPARE FEEDER BUS 13 & 15
10905-106	....	SPARE FEEDER BUS 13 & 15
10905-107	....	FUTURE FEEDER BUS 13 & 15
10905-108	....	SPARE FEEDER BUS 16
10905-109	....	SPARE FEEDER BUS 16 UNIT 17B
10905-109A	....	MULTIAMP DISCONNECT BUS 14
10905-10A	....	SWITCH DEVELOPMENT
10905-11	2	.....
10905-110	....	FUTURE FEEDER BUS 14 & 16
10905-111	....	FUTURE FEEDER 17 & 18
10905-112	....	AUX. BLDG. EXHAUST FAN 1G
10905-114	....	TURBINE TRIP AUX RELAY
10905-115	....	TURBINE SOLENOID CONTROL
10905-116	....	114KV BKR AUX RELAYS
10905-117	....	BORIC ACID BATCH TANK TRANSFER PUMP
10905-118	....	MCC 1C & 1D LOAD SHEDDING
10905-119	....	AUX. BLDG. AIR VENT PARTICULATE & GAS MONITOR PUMP
10905-12	....	SWITCH DEVELOPMENT
10905-120	....	BORIC ACID TANK 1A & 1B HEATERS
10905-121	....	BORIC ACID TRANSFER PUMP 1A & 1B
10905-122	....	CHEMICAL DRAIN TANK PUMP
10905-123	....	CONCENTRATE HOLDING TANK HEATER

NUMBER	SHEET	TITLE
10905-124	....	CONC. HOLD TANK TRANSFER PUMPS 1A & 1B
10905-125	....	CONT. AIR PARTICULATE MONITOR PUMP
10905-126	....	GAS STRIPPER FEED PUMP 1A (1B)
10905-127	....	LAUNDRY PUMP
10905-128	....	MONITOR TANK DISCHARGE PUMP
10905-129	....	RCP OIL LIFT PUMP 1A & 1B
10905-12A	....	SWITCH DEVELOPMENT
10905-13	....	SWITCH DEVELOPMENT
10905-130	....	REACTOR COOLANT DRAIN PUMP 1A & 1B
10905-131	....	REACTOR MAKEUP WATER PUMP 1A & 1B
10905-132	....	RECIRCULATION PUMP
10905-133	....	REFUEL WATER PURIFICATION PUMP
10905-134	....	SPENT FUEL PIT PUMP
10905-135	....	SPENT FUEL PIT SKIM PUMP
10905-136	....	SUMP TANK PUMPS 1A & 1B
10905-137	....	WASTE CONDENSATE PUMPS 1A & 1B
10905-138	....	WASTE EVAPORATOR FEED PUMP
10905-139	....	WASTE GAS COMPRESSOR 1A & 1B
10905-14	....	SWITCH DEVELOPMENT
10905-140	....	HYDROSTAT PUMP
10905-141	....	RCC CHARGE FIXTURE HOIST. DR.
10905-142	....	DIESEL START AIR COMPRESSOR 1A
10905-143	....	DIESEL GENERATOR 1A (1B) PRELUBE PUMP
10905-144	....	DIESEL GENERATOR 1A (1B) JACKET WTR HEATERS
10905-145	....	DIESEL GENERATOR 1A (1B) LUBE OIL HEATERS
10905-146	....	DIESEL GENERATOR RM SUPPLY FAN 1A1 (1A2, 1B1, 1B2)
10905-146	1	.....
10905-146	2	.....
10905-147	....	DIESEL GENERATOR CABLE VAULT SUMP PUMP 1A (1B)
10905-148	....	RADIATION MONITOR 18 TRIPPING RELAY
10905-149	....	NEUTRALIZING TANK PUMP
10905-15	....	UNDERVOLTAGE SCHEME BUS 11A
10905-150	....	DE-SUPERHEATER PUMP
10905-151	....	TURNING GEAR OIL PUMP
10905-152	....	TURNING GEAR
10905-153	....	E-H SUPPLY PUMP 1A
10905-154	....	E-H SUPPLY PUMP 1B

NUMBER	SHEET	TITLE
10905-155	....	VACUUM PRIMING PUMP 1A
10905-156	....	VACUUM PRIMING PUMP 1B
10905-157	....	SEAL OIL BACKUP PUMP
10905-158	....	GEN. AIR SIDE SEAL OIL PUMP
10905-159	....	BLOWDOWN TRANS. PUMP
10905-16	....	UNDERVOLTAGE SCHEME BUS 11B
10905-160	....	CHILLED WATER SUPPLY PUMP 1A & 1B
10905-161	....	FIRE SERVICE BOOSTER PUMP
10905-162	....	HEATING BLR - BLR FEED PUMPS 1A & 1B
10905-163	....	VAPOR EXTRACTOR TURBINE OIL RESERVOIR
10905-164	....	LUBE OIL TRANSFER PUMP
10905-165	....	S/G FWP AUX OIL PUMP 1A1 (1A2)
10905-166	....	S/G FWP AUX OIL PUMP 1B1 (1B2)
10905-167	....	DIESEL F. O. TRANSFER PUMP 1A (1B)
10905-168	....	INT. BLDG. SUMP PUMP
10905-169	....	MOTOR DRIVEN AFP 1A (1B) OIL PUMP
10905-17	....	UNDERVOLTAGE SCHEME BUS 12A & 12B
10905-170	....	TURBINE DRIVEN AUX FWP AC OIL PUMP
10905-171	....	GEN. H2 SIDE SEAL OIL PUMP
10905-172	....	LUBE OIL PURIFIER CIRCULATING PUMP
10905-173	....	VAPOR EXT. GEN. OIL DRAIN
10905-174	....	RADIATION HOT WATER SUPPLY PUMP
10905-175	....	TRAVELING SCREEN MOTORS 1A, 1B, 1C, 1D
10905-176	....	FEED PUMP SEAL DRAIN PUMPS 1A, 1B
10905-177	....	ULTRA FILTRATION TO WASTE EVAPORATOR
10905-178	....	CONDENSER PIT AUX SUMP PUMP
10905-179	....	CONT. ROOM CONDENSATE RETURN PUMP 1A (1B)
10905-179	1	.....
10905-179	2	.....
10905-18	....	TRANSFORMER FEEDER RELAY SCHEME
10905-180	....	VAPOR CONTAINER SUMP PUMP
10905-181	....	CONDENSER PIT MAIN SUMP PUMP
10905-182	....	CONDENSATE PIT SUMP PUMP
10905-183	....	REACTOR AUX BLDG. SUMP 1A & 1B
10905-184	....	AUX BLDG. CONDENSATE RETURN PUMP 1A & 1B
10905-185	....	AUX BLDG. NSSS CONDENSATE RETURN PUMP 1A & 1B
10905-186	....	INT. BLDG. CONDENSATE RETURN PUMP 1A & 1B

NUMBER	SHEET	TITLE
10905-187	....	SERVICE BLDG. CONDENSATE RETURN PUMP 1A & 1B
10905-188	....	GEN. BUS PRESS COOL FANS 1A & 1B
10905-189	....	AUX BLDG. EXHAUST FAN 1E
10905-19	....	MOTOR RELAY SCHEME
10905-190	....	INT. BLDG. EXHAUST RAN 1A (1B)
10905-191	....	SERVICE BLDG. AIR HANDLING UNIT 1A (1C)
10905-192	....	SERVICE BLDG. AIR HANDLING UNIT 1B
10905-193	....	SERVICE BLDG. AIR HANDLING UNIT 1D
10905-194	....	SERVICE BLDG. AIR HANDLING UNIT 1E
10905-195	....	SERVICE BLDG. RETURN AIR FAN 1A (1B)
10905-196	....	CONTROL ROOM AIR HANDLING UNIT
10905-197	....	SPARE FEEDER
10905-198	....	CONTROL ROOM RETURN AIR FAN
10905-199	....	CONT. ACCESS FANS 1A (1B)
10905-20	....	4.16KV BUS TIE 11A TO 12A
10905-200	....	INT. BLDG. EXHAUST FAN 1C
10905-201	....	AUX BLDG. EXHAUST FAN 1C
10905-202	....	CHARCOAL FILTER EXHAUST FAN 1A (1B)
10905-203	....	GLAND STEAM COND. AIR EXHAUST FAN
10905-205	....	RELAY ROOM AIR HANDLING UNIT 1A & 1B
10905-206	....	SERVICE BLDG. BASEMENT EXHAUST FAN 1A & 1B
10905-207	....	S/G FEED PUMP ROOM VENTILATION
10905-208	....	TURBINE ROOM WALL EXHAUST FANS 1B - 1J
10905-209	....	TURBINE ROOM ROOF EXHAUST FAN
10905-21	....	4.16KV BUS TIE 11B TO 12B
10905-210	....	PENETRATION COOL FAN 1A (1B)
10905-212	....	SERVICE BLDG. ROOF EXHAUST FAN 1A
10905-213	....	SERVICE BLDG. ROOF EXHAUST FAN 1B
10905-214	....	SERVICE BLDG. ROOF EXHAUST FAN 1D
10905-216	....	MCC 1E UNITS 1F AND 4F SPARE
10905-218	....	WATER SURFACE SUPPLY (EXHAUST) FANS
10905-219	....	SERVICE BLDG. ROOF EXHAUST FAN 1G
10905-22	....	4.16KV BUS TIE 11A TO 11B
10905-220	....	VAPOR EXTRACTOR TURBINE OIL RESERVOIR
10905-221	....	LUBE OIL PURIFIER VENT FAN
10905-222	....	CONT. PURGE SYSTEM 1A
10905-223	....	CONTAINMENT PURGE SYSTEM 1B

NUMBER	SHEET	TITLE
10905-224	....	CONTROL ROOM CHARCOAL FILTER FAN
10905-225	....	AUX BLDG SUPPLY FAN 1B
10905-226	....	REACTOR COMPT. FAN 1A (1B)
10905-227	....	VAPOR CONTAINER AUX FILTER FAN 1A (1B)
10905-228	....	FW PUMP SEAL DIFF. BOOSTER PUMP 1A (1B)
10905-229	....	ACID PUMP
10905-23	....	4.16KV BUS SUPPLY BREAKER 11A
10905-230	....	CAUSTIC PUMP
10905-231	....	PHOSPHATE PUMP
10905-232	....	DEMINERALIZER RECIRCULATION PUMP
10905-233	....	CONDENSATER TRANSFER PUMP
10905-234	....	DEGASIFIER VACUUM PUMP
10905-235	....	DEGASIFIER BOOSTER PUMP 1A & 1B
10905-236	....	EMERGENCY OIL PUMP
10905-237	....	AIR SIDE DC SEAL OIL BACKUP PUMP
10905-238	....	S/G FW PUMP D.C. AUX OIL PUMP 1A (1B)
10905-239	....	TURBINE DRIVEN AUX S/G FW PUMP DC AUX OIL PUMP
10905-24	....	4.16KV BUS SUPPLY BREAKER 11B
10905-240	....	MOTOR OPERATED VALVE TABLE
10905-241	....	MOTOR OPERATED VALVE TABLE
10905-242	....	MOTOR OPERATED VALVE TABLE
10905-243	....	MOTOR OPERATED VALVE TABLE
10905-244	....	MOTOR OPERATED VALVE TABLE
10905-245	....	MOTOR OPERATED VALVE TABLE
10905-246	....	MOTOR OPERATED VALVE TABLE
10905-247	....	MOTOR OPERATED VALVE TABLE
10905-248	....	MOTOR OPERATED VALVE TABLE
10905-249	....	MOTOR OPERATED VALVE TABLE
10905-25	....	4.16KV BUS SUPPLY BREAKER 12A
10905-250	....	120V AC MOTOR
10905-251	....	120 VAC CIRCUITS
10905-252	....	120 VAC CIRCUITS
10905-254	....	MOTOR OPERATED VALVES
10905-255	....	SOLENOID & SOLENOID PILOT VALVES
10905-256	....	SOLENOID & SOLENOID PILOT VALVES
10905-257	....	SOLENOID & SOLENOID PILOT VALVES
10905-258	....	SOLENOID & SOLENOID PILOT VALVES

NUMBER	SHEET	TITLE
10905-259	1	SOLENOID & SOLENOID PILOT VALVES
10905-259	2	SOLENOID & SOLENOID PILOT VALVES
10905-26	....	4.16KV BUS SUPPLY BREAKER 12B
10905-260	....	SOLENOID & SOLENOID PILOT VALVES
10905-261	....	SOLENOID & SOLENOID PILOT VALVES
10905-262	....	SOLENOID & SOLENOID PILOT VALVES
10905-263	....	SOLENOID & SOLENOID PILOT VALVES
10905-264	....	SOLENOID & SOLENOID PULOT VALVES
10905-265	1	SOLENOID & SOLENOID PILOT VALVES
10905-265	2	SOLENOID VALVE TABLE
10905-266	....	SOLENOID VALVE TABLE
10905-267	....	SOLENOID VALVE TABLE
10905-268	1	SOLENOID VALVE TABLE
10905-268	2	SOLENOID VALVE TABLE
10905-269	....	SOLENOID VALVE TABLE
10905-27	....	STATION SERVICE TRANS. #14 (16)
10905-270	....	CONTROL VALVE TABLE
10905-270A	....	CONTROL VALVE TABLE
10905-271	....	CONTROL VALVE TABLE
10905-272	....	CONTROL VALVE TABLE
10905-273	....	125 VDC SOLENOID VALVE TABLE
10905-274	1	SOLENOID VALVE TABLE
10905-274	2	SOLENOID VALVE TABLE
10905-275	....	SOLENOID VALVE TABLE
10905-276	....	MOTOR OPERATED VALVE
10905-277	....	MOTOR OPERATED VALVE
10905-278	....	MOTOR OPERATED VALVE
10905-279	1	MOTOR OPERATED VALVE
10905-279	2	MOTOR OPERATED VALVE
10905-28	....	STATION SERVICE TRANSFORMER #13 (15)
10905-280	....	MOTOR OPERATED VALVE
10905-281	....	MOTOR OPERATED VALVE
10905-282	....	MOTOR OPERATED VALVE
10905-283	....	MOTOR OPERATED VALVE
10905-284	....	MOTOR OPERATED VALVE
10905-285	....	MOTOR OPERATED VALVE
10905-286	....	MOTOR OPERATED VALVE

NUMBER	SHEET	TITLE
10905-287	....	MOTOR OPERATED VALVE
10905-288	....	MOTOR OPERATED VALVE
10905-289	....	MOTOR OPERATED VALVE
10905-29	....	STATION SERVICE TRANSFORMER #17 (18)
10905-290	....	MOTOR OPERATED VALVE
10905-291	....	DC MOTOR OPERATED VALVE
10905-292	....	DC MOTOR OPERATED VALVE
10905-293	....	DC MOTOR OPERATED VALVE
10905-294	....	DC MOTOR OPERATED VALVE
10905-295	....	REMOTE OPERATED VALVES
10905-295A	....	REMOTE OPERATED VALVES
10905-296	....	REMOTE OPERATED VALVES
10905-297	....	SOLENOID VALVE TABLE
10905-297	1	.....
10905-297	2	.....
10905-298	....	REMOTE OPERATED VALVES
10905-299	....	DAMPER SOLENOID ELEMENTARY
10905-30	....	STEAM GENERATOR FEEDWATER PUMP 1A (1B)
10905-300	....	REMOTE OPERATED VALVE
10905-301	....	REMOTE OPERATED VALVE
10905-301A	....	REMOTE OPERATED VALVE
10905-303	....	MOTOR OPERATED VALVE
10905-304	....	MOTOR OPERATED VALVE
10905-305	....	MOTOR OPERATED VALVE
10905-307	....	REACTOR TRIP BREAKER
10905-308	....	REACTOR TRIP BYPASS BREAKER
10905-309	....	REMOTE OPERATED VALVES
10905-31	....	CIRCULATION WATER PUMP 1A (1B)
10905-311	....	REMOTE OPERATED VALVES
10905-312	....	REMOTE OPERATED VALVES
10905-313	....	MOTOR OPERATED VALVES
10905-314	....	SWITCH DEVELOPMENT
10905-315	....	REACTOR AUXILIARY RELAYS
10905-316	....	TURBINE AUXILIARY RELAYS
10905-317	....	STEAM AUXILIARY RELAYS
10905-318	....	AUXILIARY RELAYS
10905-319	....	AUX BLDG. VENT CONTROL PANEL

NUMBER	SHEET	TITLE
10905-32	....	CONDENSATE PUMP 1A
10905-320	....	REACTOR AUXILIARY RELAYS
10905-321	....	WATER TREATMENT AUX RELAYS
10905-322	....	DC MOTOR OPERTED VALVE
10905-323	....	FIRE CONTROL PANEL
10905-324	....	FIRE CONTROL PANEL
10905-325	....	FIRE CONTROL PANEL
10905-326	....	FIRE CONTROL PANEL
10905-327	....	FIRE CONTROL PANEL
10905-328	....	FIRE CONTROL PANEL
10905-329	....	SWITCH DEVELOPMENT
10905-33	....	CONDENSATE PUMP 1B
10905-330	....	REACTOR COOLANT MAKEUP CONT.
10905-331	....	LAUNDRY & CHEMICAL DRAIN TANK PUMP CONTROL
10905-332	....	WASTE CONDENSATE PUMP CONTROL
10905-333	....	REACTOR COOLANT DRAIN TANK LEVEL CONTROL
10905-334	....	GAS DECAY TANK CONTROL
10905-335	....	STEAM DUMP CONTROLLER
10905-336	....	STEAM DUMP AUXILIARY RELAYS
10905-337	....	BLOWDOWN HEAT RECOVERY VALVES
10905-338	....	BLOWDOWN HEAT EXCHANGER CONDENSATE BYPASS SOLENOID VALVE
10905-34	....	CONDENSATE PUMP 1C
10905-340	....	CHARGING PUMP FAN 1A (1B) (1C)
10905-341	....	RESIDUAL HEAT PUMP FAN 1A (1B)
10905-342	....	SAFETY INJECTION PUMP FAN 1A (1B)
10905-343	....	SAFETY INJECTION PUMP FAN STARTER 1C1
10905-344	....	SAFETY INJECTION PUMP FAN STARTER 1C2
10905-345	....	CONDENSER HOTWELL SAMPLE PU 1A (1B)
10905-346	....	ELEVATOR MACHINE ROOM EXHAUST FAN
10905-347	....	ANNUNCIATOR
10905-348	....	ANNUNCIATOR
10905-349	....	ANNUNCIATOR PANEL AA
10905-35	....	HEATER DRAIN PUMP
10905-350	....	ANNUNCIATOR PANEL AA
10905-36	....	AUXILIARY BUILDING EXHAUST FAN 1A (1B)
10905-360	....	ANNUNCIATOR PANEL A
10905-361	....	ANNUNCIATOR PANEL A

NUMBER	SHEET	TITLE
10905-362	....	ANNUNCIATOR PANEL A
10905-363	....	ANNUNCIATOR PANEL A
10905-365	....	ANNUNCIATOR PANEL B
10905-366	....	ANNUNCIATOR PANEL B
10905-367	....	ANNUNCIATOR PANEL B
10905-369	....	ANNUNCIATOR PANEL C
10905-37	....	REACTOR COOLANT PUMP 1A & 1B
10905-370	....	ANNUNCIATOR PANEL C
10905-371	....	ANNUNCIATOR PANEL C
10905-372	....	ANNUNCIATOR PANEL C
10905-374	....	ANNUNCIATOR PANEL D
10905-375	....	ANNUNCIATOR PANEL D
10905-376	....	ANNUNCIATOR PANEL D
10905-377	....	ANNUNCIATOR PANEL D
10905-378	....	ANNUNCIATOR PANEL D
10905-379	....	ANNUNCIATOR PANEL D
10905-37A	....	REACTOR COOLANT PUMP 1A & 1B
10905-38	....	CONDENSATE BOOSTER PUMP 1C. AVP-9C BUS 11A
10905-380	....	ANNUNCIATOR PANEL D
10905-381	....	ANNUNCIATOR PANEL D
10905-383	....	ANNUNCIATOR PANEL E
10905-384	....	ANNUNCIATOR PANEL E
10905-385	....	ANNUNCIATOR PANEL E
10905-386	....	ANNUNCIATOR PANEL E
10905-388	....	ANNUNCIATOR PANEL F
10905-389	....	ANNUNCIATOR PANEL F
10905-39	....	CONDENSATE BOOSTER PUMP 1A. AVP-9A BUS 12A
10905-390	....	ANNUNCIATOR PANEL F
10905-392	....	ANNUNCIATOR PANEL G
10905-393	....	ANNUNCIATOR PANEL G
10905-394	....	ANNUNCIATOR PANEL G
10905-395	....	ANNUNCIATOR PANEL G
10905-396	....	ANNUNCIATOR PANEL G
10905-397	....	ANNUNCIATOR PANEL G
10905-399	....	ANNUNCIATOR PANEL H
10905-4	....	INDEX
10905-40	....	CONDENSATE BOOSTER PUMP 1B. AVP-9B BUS 11B

NUMBER	SHEET	TITLE
10905-400	....	ANNUNCIATOR PANEL H
10905-401	....	ANNUNCIATOR PANEL H
10905-402	....	ANNUNCIATOR PANEL H
10905-403	....	ANNUNCIATOR PANEL I
10905-404	....	ANNUNCIATOR PANEL I
10905-405	....	ANNUNCIATOR PANEL I
10905-407	....	ANNUNCIATOR PANEL J
10905-408	....	ANNUNCIATOR PANEL J
10905-409	....	ANNUNCIATOR PANEL J
10905-41	....	BRUSHLESS EXCITATION FOR SYN. MTR.
10905-410	....	ANNUNCIATOR PANEL J
10905-411	....	ANNUNCIATOR PANEL J
10905-412	....	ANNUNCIATOR PANEL J
10905-412	1	.....
10905-412	2	.....
10905-413	....	ANNUNCIATOR PANEL J
10905-415	....	ANNUNCIATOR PANEL K
10905-416	....	ANNUNCIATOR PANEL K
10905-417	....	ANNUNCIATOR PANEL K
10905-418	....	ANNUNCIATOR PANEL K
10905-42	1	GENERATOR BACKUP LOCKOUT RELAY
10905-42	2	GENERATOR BACKUP LOCKOUT RELAY
10905-420	....	ANNUNCIATOR PANEL L
10905-421	....	ANNUNCIATOR PANEL L
10905-422	....	ANNUNCIATOR PANEL L
10905-423	....	ANNUNCIATOR PANEL L
10905-424	....	ANNUNCIATOR PANEL L
10905-425	....	NITROGEN STORAGE BLDG. HEATER
10905-426	....	REVERSE OSMOSIS PUMP
10905-427	....	INDUCED DRAFT FAN - REVERSE OSMOSIS
10905-428	....	WATER HEATER
10905-429	....	WATER HEATER SUPPLY WATER PUMP
10905-43	1	GEN. PRIMARY & AUX. LOCKUP RELAYS
10905-43	2	GEN. PRIMARY & AUX. LOCKUP RELAYS
10905-430	....	MAIN TRANSFER COOLING FANS 1A, 1AB, AND 1C
10905-431	....	ANNUNCIATOR POWER TRANS. & HORN SILENCE
10905-432	....	ANNUNCIATOR PANEL - LEFT SECTION

NUMBER	SHEET	TITLE
10905-433	....	ANNUNCIATOR PANEL - CENTER SECTION
10905-434	....	ANNUNCIATOR PANEL - RIGHT SECTION
10905-435	....	EMERGENCY FLOODING DISTRIBUTION PANEL 1A AND COMPUTER ROOM PANEL
10905-436	....	COMPUTER POWER SUPPLY
10905-437	....	EVACUATION ALARM LIGHT SCHEMATIC
10905-438	....	LOGIC CABINET SCHEMATIC & FIELD WIRING FOR 1G CHARCOAL FILTER
10905-439	....	FIRE CONTROL PANEL 1G CHARCOAL FILTER
10905-44	....	NO. 11A BUS DIFF. LOCKOUT RELAYS
10905-440	....	AVT DEMINERALIZER AREA EXHAUST FANS AVA 4A, 4B, 4C, & 4D
10905-441	....	AFW BYPASS CONTROL
10905-442	....	AFW BYPASS INDICATION ELEMENTARY
10905-443	....	OVERPRESURIZATION PROTECTION
10905-444	....	#1 GENERATOR CT & PT SCHEMATIC
10905-445	....	MOTOR DRIVEN SAFWP 1C
10905-446	....	MOTOR DRIVEN SAFWP 1D
10905-447	....	FIRE SIGNALING SYSTEM SATELLITE STATION "A" LOCKOUT
10905-448	....	BATTERY CHARGING SYSTEM - TWO LINE
10905-44A	....	NO. 11B BUS DIFF. LOCKOUT RELAYS
10905-45	....	NO. 12A & 12B BUS DIFF. LOCKOUT RELAYS
10905-451	....	INSTRUMENT LOOP DIAGRAM WASTE TANK PRESSURE LOOP 300
10905-452	....	INSTRUMENT LOOP DIAGRAM SAMPLE INLET TEMPERATURE LOOP 302
10905-453	....	INSTRUMENT LOOP DIAGRAM SAMPLE INLET FLOW LOOP 303
10905-454	....	P.A.S.S. - EWR-2606
10905-455	....	P.A.S.S. - EWR-2606
10905-456	....	P.A.S.S. - EWR-2606
10905-457	....	P.A.S.S. - EWR-2606
10905-458	....	P.A.S.S. - EWR-2606
10905-459	....	P.A.S.S. - EWR-2606
10905-46	....	NO. 12 TRANS. & 34.5KV BUS DIFF LOCKOUT RELAY
10905-460	....	P.A.S.S. - EWR-2606
10905-461	....	P.A.S.S. - EWR-2606
10905-462	....	P.A.S.S. - EWR-2606
10905-463	....	P.A.S.S. - EWR-2606
10905-464	....	P.A.S.S. - EWR-2606
10905-465	....	P.A.S.S. - EWR-2606
10905-466	....	P.A.S.S. - EWR-2606
10905-47	....	CIRCULATING WATER PUMP AUX TRIP

NUMBER	SHEET	TITLE
10905-476	....	HYDROGEN SEAL OIL SUMP PUMP
10905-477	....	SCHEMATIC DIAGRAM H2 MONITOR "A" 480 VAC SUPPLY & HEAT TRACING
10905-478	....	SCHEMATIC DIAGRAM H2 MONITOR "B" 480 VAC SUPPLY & HEAT TRACING
10905-479	....	ISOLATION VLV 922
10905-48	....	4KV BUS UNDERVOLTAGE
10905-480	....	ISOLATION VLV 921
10905-481	....	ISOLATION VLV 923
10905-482	....	ISOLATION VLV 924
10905-483	....	INT. BLDG. BASEMENT - SUMP PUMPS NO. 1 & 2
10905-485	....	SAFWP RM COOLING UNIT 1A
10905-486	....	SAFWP RM COOLING UNIT 1B
10905-487	....	SAFW DISCH VALVE 9710A
10905-488	....	SAVFW ISOLATION VALVE 9704A
10905-489	....	SAFWP CROSSOVER VALVE 9703A
10905-49	....	SYNCHRO VERIFIER SCHEME
10905-490	....	SAFW SUCTION VALVE 9629A
10905-491	....	AFW CROSSOVER VALVE 4000A
10905-492	....	SAFW RECIRC VALVES 9710A & 9710B
10905-493	....	COOLING WATER VALVES 9632A & 9632B
10905-494	....	SERVICE WATER SUPPLY ISOLATION VALVE 9643A
10905-495	....	CONDENSATE BOOSTER PUMPS RELAYING & CONTROL VALVE 9508D
10905-496	....	SAFW DISCH VALVE 9710B
10905-497	....	SAFW ISOLATION VALVE 9704B
10905-498	....	SAFW CROSSOVER VALVE 9703B
10905-499	....	SAFW SUCTION VALVE 9629B
10905-5	....	INDEX
10905-50	....	480V GROUND DET. SCHEME
10905-500	....	AFW CROSSOVER VALVE 4000B
10905-501	....	SERVICE WARER SUPPLY ISOLATION VALVE 9643B
10905-502	....	CONDENSATE DEMINERALIZER CONTROL PANEL MCC AVC-2
10905-503	....	480 VAC POWER DISTRIBUTION PANEL AVC-10
10905-504	....	MAIN STEAM ISOLATION VALVE 1B (V3516)
10905-505	....	MAIN STEAM ISOLATION VALVE 1A (V3517)
10905-506	....	ISOPHASE - COOLING SYSTEM ALARMS
10905-507	....	CHANNEL I RED TWINCO UNIT
10905-508	....	CHANNEL II WHITE TWINCO UNIT
10905-509	....	CHANNEL III BLUE TWINCO UNIT

NUMBER	SHEET	TITLE
10905-51	....	UNDERVOLTAGE SCHEME BUS 13
10905-510	....	CHANNEL IV YELLOW TWINCO UNIT
10905-511	....	TWINCO MQ 400A DISTRIBUTION PANEL
10905-512	....	TWINCO MQ 400B DISTRIBUTION PANEL
10905-513	....	TWINCO MQ 400C DISTRIBUTION PANEL
10905-514	....	TWINCO MQ 400D DISTRIBUTION PANEL
10905-515	....	TWINCO MQ 400E DISTRIBUTION PANEL
10905-516	....	TWINCO MQ 400F DISTRIBUTION PANEL
10905-518	....	INSTRUMENTATION DISTRIBUTION PANEL BUS 1-B
10905-519	....	INSTRUMENT DISTRIBUTION PANEL BUS 1C
10905-520	....	INSTRUMENT DISTRIBUTION PANEL BUS 1D
10905-521	....	SAFETY INJECTION PUMP 1C BUS 14/16
10905-522	....	MOV ELEMENTARY WIRING DIAGRAM
10905-523	....	MOTOR OPERATED VALVE ELEMENTARY WIRING DIAGRAM
10905-524	....	INSTRUMENT DISTRIBUTION PANEL 1A SCHEMATIC
10905-525	....	ELEMENTARY WIRING DIAGRAM AMMONIA INJECTION PUMP 1
10905-526	....	ELEMENTARY WIRING DIAGRAM AMMONIA INJECTION PUMP 2
10905-527	....	ELEMENTARY WIRING DIAGRAM AMMONIA INJECTION PUMP 3
10905-528	....	AMMONIA TANK VENT VALVE
10905-529	....	AMMONIA INJECTION SYSTEM LEVEL CONTROL
10905-53	....	UNDERVOLTAGE SCHEME BUS 15
10905-536	....	LIGHTING TRANS 1D MCC-1C UNIT 4K
10905-537	....	EYE WASH ALARM CIRCUIT
10905-538	....	REMOTE OPERATED VALVES ELEMENTARY WIRING DIAGRAM
10905-539	....	REMOTE OPERATED VALVES ELEMENTARY WIRING DIAGRAM
10905-54	1	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 14
10905-54	2	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 14
10905-54	3	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 14
10905-540	....	REMOTE OPERATED VALVES ELEMENTARY WIRING DIAGRAM
10905-541	....	TURBINE CYLINDER HEAD STEAM ADMISSION VALVES 3601A & 3602A
10905-542	....	.....
10905-546	....	.....
10905-55	1	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 16
10905-55	2	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 16
10905-55	3	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 16
10905-550	....	EMERGENCY GENERATOR 1A & 1B CT'S AND PT'S
10905-551	....	SI BYPASS SYSTEM (MCC 1C) MCC 1C AUX. PANEL

NUMBER	SHEET	TITLE
10905-552	....	SI BYPASS SYSTEM (MCC 1D) MCC 1D AUX. PANEL
10905-553	....	225 KVA LIGHTING TRANSFORMER
10905-554	....	52/BT 14-16 480V BUS 14 UNIT 19C
10905-555	....	DIESEL GENERATOR 1A CRANKCASE EXHAUST MOTORS
10905-556	....	COMPONENT COOLING SEAL LEAKAGE RETURN PUMP
10905-557	....	BREAKER POSITION INDICATION LIGHTS 52/14
10905-558	....	CONTAINMENT MINI PURGE - SUPPLY FAN
10905-56	1	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 17
10905-56	2	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 17
10905-56	3	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 17
10905-57	1	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 18
10905-57	2	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 18
10905-57	3	AUXILIARY RELAY RACK UNDERVOLTAGE SCHEME BUS 18
10905-58	....	AUX. RELAY RACK - POWER CONNECTIONS & J13 TERMINATIONS
10905-588	....	MOV 738A RHR HEAT EXCHANGER INLET
10905-589	....	MOV 738B RHR HEAT EXCHANGER INLET
10905-59	....	D. C. CONTROL POWER TRANSFER
10905-590	....	MOV 749A R COOLANT PUMP 1A CCW INLET
10905-591	....	MOV 749B R COOLANT PUMP 1B CCW INLET
10905-598	....	MOTOR OPERATED VALVE TABLE
10905-599	....	MOV 825B SAFETY INJECTION PUMP SUCTION
10905-60	....	480V BUS TIE 14 TO 13
10905-600	....	MOV 826A EMERGENCY BORING ACID INJECTION
10905-601	....	MOV 826B
10905-602	....	MOV 826C EMERGENCY BORIC ACID INJECTION VALVE
10905-603	....	MOV 826D
10905-604	....	MOV 841 ACCUMULATOR TANK 1A SHUTOFF
10905-61	....	480V BUS TIE 16 TO 15
10905-612	....	MOV 857A RHR LOOP REFUELING WATER
10905-613	....	MOV 857B RHR LOOP REFUELING WATER
10905-614	....	MOV 857C
10905-615	....	CNMT SPRAY PUMP 1A DISCHARGE
10905-616	....	CNMT SPRAY PUMP 1A DISCHARGE MOV 860B
10905-617	....	MOV860C ENMT SPRAY PMP 1B DISCHARGE
10905-618	....	MOV 860D CNMT SPRAY PUMP 1B DISCHARGE
10905-619	....	MOV 865 ACCUMULATOR TANK 1B SHUTOFF
10905-62	....	480V BUS TIE 16 TO 14

NUMBER	SHEET	TITLE
10905-620	.	MOV 871A SAFETY INJECTION CROSSOVER
10905-621	....	MOV 871B SAFETY INJECTION CROSSOVER
10905-622	....	CHARCOAL FILTER 1A DOUSING
10905-623	....	CHARCOAL FILTER 1A DOUSING
10905-624	....	CHARCOAL FILTER 1B DOUSING
10905-625	....	CHARCOAL FILTER 1B DOUSING
10905-626	....	SAFETY INJECTION LOOP B HOT LEG
10905-627	....	SAFETY INJECTION LOOP B COLD LEG
10905-628	....	SAFETY INJECTION LOOP A HOT LEG
10905-629	....	SAFETY INJECTION LOOP A COLD LEG
10905-63	....	480V BUS TIE 17 TO 18
10905-630	....	MOV 896A RWST TO CONTAINMENT SPRAY
10905-631	....	MOV 896B RWST TO CS & SI PUMPS
10905-632	....	SI RECIRCULATION LINE ISOLATION
10905-633	....	MOV 898 SI RECIRCULATION LINE
10905-636	....	MOV 1815A SAFETY INJ PUMP 1C SUCTION
10905-637	....	MOV 1815B SAFETY INJ PUMP SUCTION
10905-64	....	480V SUPPLY TO 13 & 15
10905-65	....	480V BUS SUPPLY 14
10905-656	....	TURBINE DRIVEN AUX FW PUMP DISCH VLV
10905-657	....	AFW CROSSOVER VALVE
10905-658	....	AFW CROSSOVER VALVE
10905-659	....	MD AFWP 1A DISCHARGE VALVE
10905-66	....	480V BUS SUPPLY 16
10905-660	....	MD AFWP 1B DISCHARGE VALVE
10905-661	....	TD AFWP SERV WTR SUPPLY VALVE
10905-662	....	MOV 4027 MD AFWP 1A SERV WTR SUP VLV
10905-663	....	MOV 4028 MD AFWP 1B SUPPLY VALVE
10905-664	....	MOV 4609 SCREEN WASH SW ISOL VLV 1A1
10905-666	....	MOV 4614 TB SERV WTR ISOL VLV 1A1
10905-667	....	MOV 9629A SAFW SUCTION VALVE
10905-667	....	MOV 4615 AB SERVICE WATER ISOL VLV 1B1
10905-668	....	MOV 4616 AB SERVICE WATER ISOL VALVE 1A1
10905-669	....	MOV 4663 AC CHILL SERV WTR ISOL VLV 1A1
10905-67	....	480V BUS SUPPLY 17
10905-670	....	MOV 4664 TB SERVICE ISOL VLV 1A2
10905-672	....	MOV 4733 AC CHILL SERV WTR ISOL VLV 1A2

NUMBER	SHEET	TITLE
10905-673	....	MOV 4734 AB SERV WATER ISOL VALVE 1B2
10905-674	....	MOV 4735 AB SERVICE WATER ISOL VLV 1A2
10905-675	....	MOV 4780 SCREEN WASH SW ISOL VLV 1A2
10905-678	....	MOV 9629B SAFW SUCTION VALVE
10905-679	....	SAFW DISCHARGE VALVE
10905-68	....	480V BUS SUPPLY 18
10905-680	....	SAFW DISCHARGE VALVE
10905-681	....	SAFW CROSSOVER VALVE
10905-682	....	SAFW CROSSOVER VALVE
10905-683	....	SAFW ISOLATION VALVE
10905-684	....	SAFW ISOLATION VALVE
10905-685	....	STANDBY AUX FEEDWATER VALVE
10905-686	....	NITROGEN SUPPLY VALVE TO SI ACCUM "A"
10905-687	....	NITROGEN SUPPLY VALVE TO SI ACCUM "B"
10905-688	....	SI PUMP TO ACCUMULATOR "A"
10905-689	....	SI PUMP TO ACCUMULATOR "B"
10905-690	....	SI ACCUMULATOR "A" TEST LINE STOP VLV
10905-691	....	SI ACCUMULATOR "A" TEST LINE STOP VLV
10905-692	....	SI ACCUMULATOR "B" TEST LINE STOP VLV
10905-693	....	SI ACCUJMULATOR "B" TEST LINE STOP VLV
10905-694	....	SI ACCUMULATOR "A" TO RCDT
10905-695	....	SI ACCUMULATOR "B" TO RCDT
10905-698	....	AOV 4291
10905-699	....	AOV 4304
10905-7	....	LEGEND
10905-70	....	ROD DRIVEN MOTOR GEN. SET 1A & 1B
10905-700	....	AOV 3410
10905-701	....	AOV 9710A
10905-703	....	SOV 4324 TURB DRVN FW PMP SW STRAUNER BYP VLV
10905-704	....	SOV 4325 1A AUX FW PMP SW STRAINER BYP VLV
10905-705	....	SOV 4326 1B AUX FW PMP SW STRAINER BYP VLV
10905-706	....	AOV 4561 CV OUTLET HX FLOW CONTROL VALVE
10905-707	....	AOV 4562 CV HX OUTLET FLOW CONTROL VLV BYPASS VLV
10905-708	....	AOV 9632A "A" CLG UNIT SERV WTR OUTLET FLOW CNTRL VLV
10905-709	....	AOV 9632B "B" CLG UNIT SERV WTR OUTLET FLOW CNTRL VLV
10905-71	....	CHARGING PUMP 1A, 1B & 1C
10905-72	....	COMPONENT COOLING PUMP 1A & 1B

NUMBER	SHEET	TITLE
10905-727	....	AOV 4297 TURB DRIVEN AFW FLOW CONTROL VALVE
10905-728	....	AOV 4298 TURB DRIVEN AFW FLOW CONTROL VALVE
10905-73	....	SAFETY INJECTION PUMP 1A & 1B
10905-73A	....	SAFETY INJECTION PUMP 1A
10905-73B	....	SAFETY INJECTION PUMP 1B
10905-74	....	SAFETY INJECTION PUMP 1C1
10905-75	....	SAFETY INJECTION PUMP 1C2
10905-76	....	MOTOR DRIVEN AFW PUMP 1A
10905-77	....	MOTOR DRIVEN AFW PUMP 1B
10905-78	....	RESIDUAL HEAT REMOVAL PUMP 1A & 1B
10905-79	....	CONTAINMENT SPRAY PUMP 1A & 1B
10905-79A	....	CONTAINMENT SPRAY PUMP A
10905-79B	....	CONTAINMENT SPRAY PUMP B
10905-8	....	SYMBOLS
10905-80	....	FIRE PUMP
10905-806	....	PAPER CHART DRIVE AND PUMP CONTROL
10905-81	....	SERVICE WATER PUMP 1A (1C)
10905-82	....	SERVICE WATER PUMP 1B (1D)
10905-83	1	INSTRUMENT AIR COMPRESSOR 1A (1B) (1C)
10905-83	2	INSTRUMENT AIR COMPRESSOR 1A (1B) (1C)
10905-84	....	STATION SERVICE AIR COMPRESSOR
10905-85	....	CHILLER COMPRESSORS 1A & 1B
10905-86	....	AUXILIARY BLDG. SUPPLY AIR HANDLING UNIT
10905-87	....	LIGHTING TRANSFORMER 1A
10905-88	....	LIGHTING TRANSFORMER 1B
10905-89	....	PRESS. HEATER CONT. GROUP
10905-9	....	SYMBOLS
10905-90	....	PRESS. HEATER BACK-UP GROUP
10905-91	....	INTAKE HEATERS 1A. (1B) (1C) (1D)
10905-92	....	TURBINE ROOM CRANE
10905-93	....	GEN. TRANS. AUX POWER SUPPLY 1A (1B)
10905-94	....	CONTAINMENT FAN 1A (1C)
10905-95	....	CONTAINMENT FAN 1C (1D)
10905-96	....	CONTROL ROD SHROUD COOLING FAN 1A (1B)
10905-97	....	MOTOR CONTROL CENTERS 1A (1B) (1E) (1F)
10905-98	....	MOTOR CONTROL CENTERS 1C (1D)
10905-99	....	MOTOR CONTROL CENTERS 1G1

NUMBER	SHEET	TITLE
110E053	1	REACTOR PROTECTION SYSTEM RACK LAYOUT DRAWINGS
110E053	2	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	3	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	4	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	5	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	6	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	7	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	8	REACTOR PROTECTION SYSTEM SCHEMATIC
110E053	9	REACTOR PROTECTION SYSTEM SCHEMATIC
110E059	1	SAFEGUARD SYSTEM
110E059	10	SAFEGUARD SYSTEM
110E059	11	SAFEGUARD SYSTEM
110E059	2	SAFEGUARD SYSTEM
110E059	2	SAFEGUARD SYSTEM
110E059	4	SAFEGUARD SYSTEM
110E059	5	SAFEGUARD SYSTEM
110E059	6	SAFEGUARD SYSTEM
110E059	7	SAFEGUARD SYSTEM
110E059	8	SAFEGUARD SYSTEM
110E059	9	SAFEGUARD SYSTEM
110E074	1	MISCELLANEOUS RACKS
110E074	2	MISCELLANEOUS RACKS
110E074	3	MISCELLANEOUS RACKS
110E074	4	MISCELLANEOUS RACKS
110E074	5	MISCELLANEOUS RACKS
110E087	....	ELEMENTARY WIRING DIAGRAM BISTABLE LIGHTS
113	....	.....
11302-172	....	AUX FW PUMP A DISCHARGE FLOW
11302-173	....	AUX FW PUMP B DISCHARGE FLOW
11302-174	....	TURBINE DRIVEN AFW PUMP FLOW
11302-175	....	TURBINE DRIVEN AFW PUMP FLOW
11302-176	....	LOOP FT-2015A
11302-177	....	LOOP FT-2032
11302-178	....	LOOP FT-4084
11302-179	....	LOOP FT-4085
11302-180	....	LOOP FT-2011
11302-181	....	LOOP FT-2012

NUMBER	SHEET	TITLE
11302-182	.....	LOOP FT-2013
11302-183	.....	LOOP FT-2014
11302-184	.....	LOOP FT-2015
11302-185	.....	LOOP PT-2019
11302-186	.....	LOOP PT-2029
11302-188	.....	LOOP PT-4086
11302-189	.....	LOOP PT-4087
11302-2-4	.....	AUX FW PUMP A SERV WTR FILTER DP LOOP DPS - 2084
11302-203	.....	SW CIRC WTR PUMP FILTER DIFF PRESS LOOP DPS - 2054
11302-205	.....	AUX FW PUMP B SERV WTR FILTER DP LOOP DPS - 2085
11302-206	.....	TURB DRIVEN AFW PMP SERV WTR FILT DP LOOP DPS - 2094
11302-207	.....	COMPONENT COOLING HX SERVICE WATER FLOW LOOP FIA - 2005
11302-208	.....	CONT. VENT. COOLING COIL 1A WATER FLOW LOOP FIA - 2033
11302-208	.....	CONT. VENT. COOLING COIL 1A WATER TEMP LOOP TIA - 2010
11302-209	.....	CONT. VENT. COOLING COIL 1B WATER FLOW LOOP FIA - 2034
11302-210	.....	CONT. VENT. COOLING COIL 1C WATER FLOW LOOP FIA - 2035
11302-211	.....	CONT. VENT. COOLING COIL 1D WATER FLOW LOOP FIA - 2036
11302-212	.....	CCW HEAT EXCHANGER A FLOW LOOP FS - 4083
11302-213	.....	SW PUMP A & B HEADER PRESSURE LOOP PT - 2027
11302-214	.....	SW PUMP C & D HEADER PRESSURE LOOP PT - 2028
11302-215	.....	SERVICE AIR COMPR AFTERCOOLER WTR TEMP LOOP TAH - 2016
11302-216	.....	INST AIR COMPR A AFTERCOOLER WTR TEMP LOOP TAH - 2014
11302-217	.....	INST AIR COMPR B AFTERCOOLER WTR TEMP LOOP TAH - 2015
11302-219	.....	CONT. VENT. COOLING 1B WATER TEMP. LOOP TIA - 2011
11302-220	.....	CONT. VENT. COOLING COIL 1C WATER TEMP. LOOP TIA - 2012
11302-221	.....	CONT. VENT. COOLING COIL 1D WATER TEMP. LOOP TIA - 2013
11302-222	.....	REACTOR COMP. COOLING WATER TEMP. LOOP TIA - 2017
14-0855	.....	DUPLEX VACUUM PRIMING UNIT - TWO CL-402 VACUUM PUMPS
14-1124	.....	FLOW DIAGRAM & LIST OF MATERIAL FOR WASTE GAS COMPRESSOR MODEL AL621C
15-477-1180-3	.....	C.W. PUMP DISCHARGE RN-8
15220241-1	.....	AVP 9C COND. BOOSTER HYDRO TEST DATA
15220242-1	.....	AVP 9B COND. BOOSTER HYDRO TEST DATA
15220243-1	.....	AVP 9A COND. BOOSTER HYDRO TEST DATA
162502N659	.....	SPEED/TORQUE PMP CURVE
162502N774	1	TEST CURVE S/N 0275156
162502N774	2	TEST CURVE S/N 0275156
162502N775	1	TEST CURVE S/N 0275156

NUMBER	SHEET	TITLE
162502N775	2	TEST CURVE S/N 0275156
162502NPSH	1	NPSH FOR PUMP S/N 0275156
162502NPSH	2	NPSH FOR PUMP S/N 0275156
21489-118	....	115KV CONTROL PANEL IN CONTROL ROOM - BOX FOR BKR 90912 INDICATOR LITES
21489-141	....	ELECTRICAL PENETRATION PRESSURIZATION SYSTEM
21489-15	....	SCHEMATICS 75112 CLOSE TRIP
21489-159	....	"A" FEEDWATER PIPING ISOMETRIC
21489-16	....	SCHEMATICS 76702 CLOSE TRIP
21489-160	....	"A" FEEDWATER PIPING ISOMETRIC
21489-161	....	"B" FEEDWATER PIPING ISOMETRIC
21489-162	....	"B" FEEDWATER PIPING ISOMETRIC
21489-179	....	STEAM GENERATOR WATER LEVELS
21489-180	....	WESTINGHOUSE MONITOR - RACK INSTALLATION
21489-191	....	FEEDWATER PUMPS 1A & 1B RECIRCULATING WATER MODIFICATION P&ID
21489-194	....	MIAN STEAM TO REHEATERS 1A-1B & 2A-2B ORIFICE PLATES
21489-195	....	ASSEMBLY DWG. - MAIN STEAM 1A-1B & 2A-2B REHEATER ORIFICES
21489-219	....	INTERMEDIATE BLDG. - AUX FW PUMP FLOW CONTROL ISOMETRIC
21489-222	....	P&ID FOR AUX COOLING SYSTEM LOW PRESSURE PURIFICATION MODE
21489-253	....	RCS OVERPRESSURE PROTECTION NITROGEN ACCUMULATOR SYSTEM P&ID
21489-269	....	INSTRUMENT BUS ELECTRICAL ONE LINE DIAGRAM
21489-270	....	INSTRUMENT BUS 1A & 1B DIRCUIT DESIGNATIONS SUPERSEDES (W) 500-B-447 S.2
21489-271	....	INSTRUMENT BUS 1C & 1D CIRCUIT DESIGNATIONS
21489-298	....	CONTAINMENT ISOLATION RESET - PUSH BUTTON PANEL EWR 2605
21489-300	....	CONTAINMENT ISOLATION RESET - PUSH BUTTON PANEL LEGEND/COLOR INFO
21489-302	....	RCS SUB-COOLING MARGIN MONITORING SYSTEM LOOP PT-430
21489-303	....	RCS SUB-COOLING MARGIN MONITORING SYSTEM LOOP PT-429
21489-344	....	CONTAINMENT SUMP LEVEL INDICATOR - ELEV. AND DETAILS
21489-378	....	RMS RACK WIRING DETAIL
21489-440	....	871X RELAY WIRING DIAGRAM
21489-445	....	TRAIN A THERMAL OVERLOAD BYPASS WIRING DIAGRAM
21489-446	....	TRAIN B THERMAL OVERLOAD BYPASS WIRING DIAGRAM
21489-448	....	PRESEPARATOR TANK "A" INTRUMENT PIPING ARRANGEMENT
21489-449	....	PRESEPARATOR TANKK "B" INSTRUMENT PIPING ARRANGEMENT
21489-90	1	ROD CONTROL PROTECTION
21489-91	2	STEAM GENERATOR LEVEL & FEEDWATER CONTROL
21489-92	3	PRESSURIZER LEVEL AND PRESSURE CONTROL
21489-93	....	NIS SOURCE RANGE NO. 1 - FUNCTIONAL BLOCK DIAGRAM

NUMBER	SHEET	TITLE
21489-94	....	NIS POWER RANGE NO. 1 - FUNCTIONAL BLOCK DIAGRAM
21489-95	....	INTERMEDIATE RANGE NO. 1 - FUNCTIONAL BLOCK DIAGRAM
21945-259A	....	SOLENOID OPERATED VALVE 897 INTERNAL/EXTERNAL WIRING DIAGRAM
21945-259B	....	SOLENOID OPERATED VALVE 898 INTERNAL/EXTERNAL WIRING DIAGRAM
21945-481	....	WIRING DIAGRAM ISOLATION VALVE 923
21945-504	....	MAIN STEAM ISOLATION VALVE 1B MSIV1B (3516)
21945-505	....	MAIN STEAM ISOLATION VALVE 1A MSIV 1A (3517) INT/EXT WIRING DIAGRAM
21946-100	....	BUS 17, UNIT 26C - MOTOR CONROL CENTER 1G2
21946-103	....	BUS 18, UNIT 31C EG1A2 EMERGENCY GEN BREAKER 1A2 CONTROL SCHEMATIC
21946-104	....	BUS 17, UNIT 25C EG1B2 EMERGENCY GEN BREAKER 1B2 CONTROL SCHEMATIC
21946-112	....	BUS 14, UNIT 21A ABEF1G AUX BUILDING EXHAUST FAN 1GNTR
21946-180	....	VAPOR CONTAINER SUMP PUMP 1A - 42/VSP1A CONTROL SCHEMATIC
21946-180A	....	VAPOR CONTAINER SUMP PUMP 1B - 42/VSP1B CONTROL SCHEMATIC
21946-226	....	42/RCF1A, MCC1C, UNIT 1M - REACTOR COMPARTMENT FAN 1A CONTROL SCHEMATIC
21946-226A	....	42/RCF1B, MCC1D, UNIT 1M - REACTOR COMPARTMENT FAN 1B CONTROL SCHEMATIC
21946-227	....	42/VCAF1A, MCC1C, UNIT 3D - VAPOR CONTAINER AUX FILTER FAN 1A CONT SCHEM
21946-227A	....	42/VCAF1B, MCC1D, UNIT 1F - VAPOR CONTAINER AUX FILTER FAN 1B CONT SCHEM
21946-240E	....	RHR SUCTION STOP FROM LOOP A - VALVE 700 CONTROL SCHEMATIC
21946-240F	....	RHR SUCTION STOP FROM LOOP A - VALVE 701 CONTROL SCHEMATIC
21946-240G	....	RHR DISCHARGE TO LOOP B - VALVE 720 CONTROL SCHEMATIC
21946-240H	....	RHR DISCHARGE TO LOOP B - VALVE 721 CONTROL SCHEMATIC
21946-244C	....	CSP TO CHARCOAL FILTER DELUGE - VALVE 875A CONTROL SCHEMATIC
21946-244D	....	CSP TO CHARCOAL FILTER DELUGE - VALVE 875B CONTROL SCHEMATIC
21946-244E	....	CSP TO CHARCOAL FILTER DELUGE - VALVE 876A CONTROL SCHEMATIC
21946-244F	....	CSP TO CHARCOAL FILTER DELUGE - VALVE 876B CONTROL SCHEMATIC
21946-245A	....	EQUALIZATION LINE SHUTOFF MOV 1908 FOR MOISTURE PRESEPARATOR
21946-245G	....	MOTOR DRIVEN AUX FEEDWATER PUMP 1A DISCHARGE VALVE (AFDV-1A) CONTROL SCH
21946-245H	....	MOTOR DRIVEN AUX FEEDWATER PUMP 1B DISCAHRGE VALVE (AFDV-1B) CONTROL SCH
21946-259A	....	SOLENOID OPERATED VALVE 897
21946-259B	....	SOLENOID OPERATIED VALVE 898
21946-265M	....	4TH PASS REHEATER 1A CONDENSATE DUMP VALVE V2404 CONTROL SCHEMATIC
21946-265N	....	4TH PASS REHEATER 1B CONDENSATE DUMP VALVE V2412 CONTROL SCHEMATIC
21946-265P	....	4TH PASS REHEATER 2A CONDENSATE DUMP VALVE V2420 CONTROL SCHEMATIC
21946-265Q	....	4TH PASS REHEATER 2B CONDENSATE DUMP VALVE V2428 CONTROL SCHEMATIC
21946-27	....	BUS 12A UNIT 14 STATION SERVICE XFMR #14 CONTROL SCHEMATIC
21946-279	....	BUS 14, UNIT 20 MOTOR OPERATED VALVE 871A CONTROL SCHEMATIC
21946-279A	....	BUS 16, UNIT 12 MOTOR OPERATED VALVE 871B CONROL SCHEMATIC

NUMBER	SHEET	TITLE
21946-27A	....	BUS 12B UNIT 17 STATION SERVICE XFMR #16 CONTROL SCHEMATIC
21946-29	....	BUS 12B UNIT 18 STATION SERVICE XFMR #17 CONTROL SCHEMATIC
21946-296I&J	....	SOLENOID VALVE 5502 & 5503 FOR EXTRACTION NON-RETURN VALVES 1900/1907
21946-29A	....	BUS 12A UNIT 14 STATION SERVICE XFMR #18 CONTROL SCHEMATIC
21946-39	....	AVP-9A, 4160V, BUS 12A, UNIT 16 CONDENSATE BOOSTER PUMP 1A CONTROL SHEM
21946-483	....	INTERMEDIATE BUILDING BASEMENT SUMP PUMP NO. 1 & 2 CONTROL SCHEMATIC
21946-504	....	MAIN STEAM ISOLATION VALVE 1B MSIV 1B (3516) CONTROL SCHEMATIC
21946-505	....	MAIN STEAM ISOLATION VALVE 1A MSIV 1A (3517) CONTROL SCHEMATIC
21946-506	....	ISOPHASE COOLING SYSTEM ALARM CONTROL SCHEMATIC
21946-54	....	BUS 14, UNIT 18A - P.T.'S AND U.V. RELAYS - CONTROL SHCEMATIC
21946-541	....	TURBINE CYLINDER HEAD STEAM ADMISSION VALVES 3601A & 3602A - CONTROL SCH
21946-55	....	BUS 16, UNIT 11A - P.T.'S AND U.V. RELAYS - CONTROL SCHEMATIC
21946-56	....	BUS 17, UNIT 25A - P.T.'S AND U.V. RELAYS - CONTROL SCHEMATIC
21946-57	....	BUS 18, UNIT 31A - P.T.'S AND U.V. RELAYS - CONTROL SCHEMATIC
21946-60	....	BUS 14, UNIT 19B - BT 14-13 480V BUS TIE - BUS 14-13
21946-61	....	BUS 16, UNIT 12B - BT 16-15 480V BUS TIE - BUS 16-15
21946-62	....	BUS 16 UNIT 12C BT 16-14 480V BUS TIE BUS 16-14 CONTROL SCHEMATIC
21946-63	....	BUS 17, UNIT 28B, BT 17-18 480V BUS TIE - BUS 17-18 - CONTROL SCHEMATIC
21946-65	....	BUS 14, UNIT 18B 52/14 BUS 14 480V SUPPLY BREAKER CONTROL SCHEMATIC
21946-66	....	BUS 16 - UNIT 11B - 52/16
21946-67	....	BUS 17 UNIT 25B 52/17 480V SUPPLY
21946-68	....	BUS 18 UNIT 31B 52/18 - BUS 18 - 480V SUPPLY
21946-71	....	BUS 14, UNIT 23B, 52/CHP1A - CHARGING PUMP 1A CONTROL SCHEMATIC
21946-71A	....	BUS 16, UNIT 15A, 52/CHP1B - CHARGING PUMP 1B CONTROL SCHEMATIC
21946-71B	....	BUS 16, UNIT 15C, 52/CHP1C - CHARGING PUMP 1C CONTROL SCHEMATIC
21946-72A	....	BUS 16 - UNIT 16B CC1B COMPONENT COOLING PUMP 1B
21946-73	....	BUS 16 - UNIT 12A SIP1B SAFETY INJECTION PUMP 1B CONTROL SCHEMATIC
21946-73A	....	BUS 16 - UNIT 12A SIP1B SAFETY INJECTION PUMP 1B CONTROL SCHEMATIC
21946-76	....	BUS 14, UNIT 21C, MAFP1A MOTOR DRIVEN AUX FEEDWATER PUMP 1A - CONT SHEM
21946-77	....	BUS 16, UNIT 14C MAFP1B MOTOR DRIVEN AUX FEEDWATER PUMP 1B CONTROL SCHEM
21946-78	....	BUS 14, UNIT 22A, RHRP1B - RESIDUAL HEAT REMOVAL PUMP 1A - CONTROL SCHEM
21946-78A	....	BUS 16, UNIT 15A, RHRP1B - RESIDUAL HEAT REMOVAL PUMP 1B - CONTROL SCHEM
21946-79	....	BUS 14, UNIT 20B, CSP1A - CONTAINMENT SPRAY PUMP 1A CONTROL SCHEMATIC
21946-79A	....	BUS 16, UNIT 13B, CCSP1B CONTAINMENT SPRAY PUMP 1B CONTROL SCHEMATIC
21946-80	....	BUS 17 UNIT 26D 52/FP FIRE PUMP
21946-81	....	BUS 18, UNIT 19C SWP1A SERVICE WATER PUMP 1A
21946-81A	....	BUS 18, UNIT 29D, SWP1C SERVICE WATER PUMP 1C

NUMBER	SHEET	TITLE
21946-82	....	BUS 17, UNIT 27C, SWP1B, SERVICE WTER PUMP 1B
21946-82A	....	BUS 17, UNIT 27D, SWP 1D SERVICE WATER PUMP 1D CONTROL SCHEMATIC
21946-89	....	BUS 14 UNIT 22B 52/PHCG PRESSURIZER HEATER CONTROL GROUP
21946-90	....	BUS 16, UNIT 16A PHBG PRESSURIZER HEATER BACKUP GROUP
21946-91	....	BUS 18, UNIT 29A-IH1A, INTAKE HEATER 1A
21946-91A	....	BUS 17, UIT 27B-IH1B, INTAKE HEATER 1B
21946-91B	....	BUS 17, UNIT 27-IH1C, INTAKE HEATER 1C
21946-91C	....	BUS 17, UNIT 27B-IH1D, INTAKE HEATER 1D
21946-94	....	BUS 14, UNIT 23C-CF1A, CONTAINMENT FAN 1A
21946-94A	....	BUS 16, UNIT 16-CF1C, CONTAINMENT FAN 1C
21946-95	....	BUS 16, UNIT 13C CF1B CONTAINMENT FAN 1B
21946-95A	....	BUS 14, UNIT 20C CF1D CONTAINMNENT FAN 1D
21946-96	....	CONTROL ROD SHROUD COOLING FAN 1A CONTROL SCHEMATIC
21946-96A	....	480V BUS 15, UNIT 5C, 52/CRSF1B CONTROL ROD SHROUD COOLING FAN 1B CONT
21946-98	....	BUS 14, UNIT 22C, MCC1C, MOTOR CONTROL CENTER 1C
21946-98A	....	BUS 16, UNIT 16C, MCC1D, MOTOR CONTROL CENTER 1D
21946-99	....	BUS 18, UNIT 30C - MOTOR CONTROL CENTER 1G1
228MG-182 (191)	....	INTERMEDIATE BUILDING SUMP PUMP CURVE
228MG-182-084	....	CONDENSER PIT SUMP PUMP CURVE
228MG-VS (095)	....	INTERMEDIATE BUILDING SUMP PUMP SER #177261
236MG-182 (094)	....	AUX BUILDING SUMP PUMP CURVE
236MG-182 (188)	....	CONTAINMENT VESSEL SUMP PUMP SERIAL #176026-1 & 2
236MG-VS	....	AUXILIARY BUILDING SUMP PUMP SERIAL #176025
236MG-VS (197)	....	CONTAINMENT VESSEL SUMP PUMP SER #176026
237710341034	....	ACCUMLATOR TANK PLAN & ELEVATION
237710341034	....	ACCUMULATOR OUTLINE DIMENSIONS
23771452553	....	GENERAL ARRANGEMENT CHARGING PUMPS - AJAX IRON WORKS
23771907DATA	127	REFUEL WATER PURIFICATION PUMP DATA SHEET 127
23771907DATA	77	REACTOR MAKEUP WATER DATA SHEET SHEET 77
2377250270615	....	HUT RECIRC. PUMP MOTOR
2377250270623-1	....	CONTAINMENT SPRAY PUMP MOTOR
237725027641-B	....	COMPONENT COOLING PUMP MOTOR
23913114662097A	....	TIME VERSUS CURRENT 0156
23913114662098A	....	TIME VERSUS CURRENT 0157
23913114662099-	....	TIME VERSUS CURRENT 0158
23913114662100-	....	TIME VERSUS CURRENT 0159
23913114662101-	....	TIME VERSUS CURRENT 0160

NUMBER	SHEET	TITLE
23913114662102A	....	TIME VERSUS CURRENT 0161
23913114662103A	....	TIME VERSUS CURRENT 0162
2392131922400	1	IN-CORE TRANSFER DEVICE
2392131922400	2	IN-CORE TRANSFER DEVICE
2842140	....	PEERLESS PUMP - BLOWDOWN TRANSFER PUMP ENGINEERING DATA
2846802	....	PEERLESS PUMP - BLOWDOWN TRANSFER PUMP - PUMP CURVE
288MG-182 (088)	....	CONDENSATE PIT SUMP PUMP CURVE
2B-12354	....	HEATER DRAIN PUMPS
327-006	....	FLOOR & EQ DRAINS AUX BUILDING 325' 8"
327-007	....	FLOOR & EQ SECTION & DETAILS AUXILIARY BUILDING
327-008	....	FLOOR & EQPT DRAINS CONTAINMENT VESSEL 325' 3" BASEMENT
327-009	....	FLOOR & EQ DRNS INT FLOOR & OP FLOOR CONT VESSEL PLANS & SECTION
327-010	....	FLOOR & EQ DRAINS INTERMEDIATE BUILDING
327-011	....	FLOOR & EQ DRAINS INTERMEDIATE BUILDING
327-012	....	DRAINS FROM VENT STACKS - INTERMEDIATE BUILDING
33012-187	....	LOOP PT-2030
33013--37900	1	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
33013-1	....	SUBSTATION 13A - OPERATING DIAGRAM
33013-1130	....	125 VDC AUTOMATIC AND MANUAL THROWOVER DIAGRAM
33013-1141	....	P.A.S.S. P & ID LIQUID AND AIR SAMPLING SYSTEM
33013-1142	....	P.A.S.S. P & ID INSTRUMENT AIR
33013-1171	....	POST ACCIDENT SAMPLING SYSTEM WIRING DIAGRAM ELECTICAL CONTROL PANEL
33013-1231	....	MAIN STEAM
33013-1232	....	MAIN ELEMENT STEAM
33013-1233	....	CONDENSATE CONDENSER AND CONDENSATE PUMP
33013-1234	....	CONDENSATE STORAGE
33013-1235	....	CONDENSATE
33013-1236		FEEDWATER
33013-1236	1	FEEDWATER
33013-1236	2	FEEDWATER
33013-1237	....	AUXILIARY FEEDWATER
33013-1238	....	STANDBY AUXILIARY FEEDWATER
33013-1239	1	DIESEL GENERATOR "A"
33013-1239	2	DIESEL GENERATOR "B"
33013-1240	....	FIRE PROTECTION TB, DG, SVC BLDG, & SCREEN HOUSE
33013-1241	....	FIRE PROTECTION AB, IB, & RB
33013-1242	....	FIRE PROTECTION RELAY & COMPUTER ROOMS

NUMBER	SHEET	TITLE
33013-1245	.....	AUXILIARY COOLANT COMPONENT COOLING
33013-1246	1	AUXILIARY COOLING COMPONENT COOLING
33013-1246	2	AUXILIARY COOLANT COMPONENT COOLING WATER (AC)
33013-1246	3	.....
33013-1247	.....	AUXILIARY COOLANT--RESIDUAL HEAT REMOVAL
33013-1248	.....	AUXILIARY COOLANT
33013-1250	1	STATION SERVICE WATER SAFETY RELATED (SW)
33013-1250	2	STATION SERVICE COOLING WATER (SAFETY)
33013-1250	2	.....
33013-1250	3	STATION SERVICE COOLING WATER SAFETY RELATED (SW)
33013-1251	.....	STATION SERVICE COOLING WATER (NON-SAFETY)
33013-1251	1	STATION SERVICE COOLING WATER NON-SAFETY RELATED (SW)
33013-1251	2	STATION SERVICE COOLING
33013-1252	.....	CONDENSATE SYSTEM
33013-1253	.....	REACTOR BUILDING HVAC
33013-1254	.....	AUX BUILDING & INTERMEDIATE BLDG HVAC
33013-1255	.....	HVAC
33013-1256	.....	TECHNICAL SUPPORT CENTER HVAC
33013-1258	.....	REACTOR COOLANT PRESSURIZER P&ID
33013-1259	.....	MISCELLANEOUS LIQUID WASTE DISPOSAL LIQUID (WD) P&ID
33013-1260	.....	REACTOR COOLANT P&ID
33013-1261	.....	CONTAINMENT SPRAY P&ID
33013-1262	1	SAFETY INJECTION AND ACCUMULATORS
33013-1262	2	SAFETY INJECTION AND ACCUMULATORS (SI) P&ID
33013-1263	.....	RCS OVERPRESSURE PROTECTION NITROGEN ACCUMULATOR SYSTEM P&ID
33013-1264	.....	CHEMICAL AND VOLUME CONTROL
33013-1265	1	CHEMICAL AND VOLUME CONTROL, CHARGING
33013-1265	2	AUX BLDG CHEM AND VOL CNTRL CHARGING (CVCS) P&ID
33013-1266	.....	CVCS-BORIC ACID
33013-1267	.....	CHEMICAL AND VOLUME CONTROL
33013-1268	.....	CHEMICAL AND VOLUME CONTROL - BORIC ACID EVAPORATOR
33013-1269	.....	REACTOR MAKE-UP WATER
33013-1270	.....	WASTE DISPOSAL LIQUID
33013-1270	1	WASTE DISPOSAL-LIQUID WASTE DRAINS, HOLDUP TANK, SPENT RESIN TANKS (WD)
33013-1270	2	WASTE DISPOSAL-LIQUID WASRE DRAINS, HOLDUP TANK, SPENT RESIN TANKS (WD)
33013-1271		WASTE DISPOSAL LIQUID
33013-1272	.....	WASTE DISPOSAL LIQUID

NUMBER	SHEET	TITLE
33013-1272	1	WASTE DISPOSAL - LIQUID RC DRAIN TANK (WD)
33013-1272	2	WASTE DISPOSAL - LIQUID RC DRAIN TANK (WD)
33013-1273	....	WASTE DISPOSAL GAS
33013-1273	1	WASTE DISPOSAL - GAS (WD) P&ID
33013-1273	2	WASTE DISPOSAL-GAS
33013-1274	....	WASTE DISPOSAL GAS
33013-1275	....	WASTE DISPOSAL GAS
33013-1275	1	WASTE DISPOSAL - GAS HYDROGEN RECOMBINER (WD)
33013-1275	2	WASTE DISPOSAL-GAS HYDROGEN RECOMBINER (WD) P&ID
33013-1276	....	WASTE DISPOSAL REVERSE OSMOSIS UNIT
33013-1277	1	STEAM GENERATOR BLOWDOWN
33013-1277	2	S/G BLOWDOWN P&ID
33013-1278	1	NUCLEAR SAMPLING (SS)
33013-1278	2	NUCLEAR SAMPLING
33013-1278	2	.....
33013-1279	....	POST ACCIDENT SAMPLING
33013-1280	....	SUMP B LEVEL INDICATION SYSTEM WIRING DIAGRAM
33013-1353	1	LOGIC DIAGRAMS - INDEX & SYMBOLS
33013-1353	10	LOGIC DIAGRAMS - NUCLEAR INSTRUMENT TRIP SIGNALS
33013-1353	11	LOGIC DIAGRAMS - NUCLEAR INSTRUMENT PERMISSIVES & BLOCKS
33013-1353	12	LOGIC DIAGRAMS - PRESSURIZER TRIP SIGNALS
33013-1353	13	LOGIC DIAGRAMS - STEAM GENERATOR TRIP SIGNALS
33013-1353	14	LOGIC DIAGRAMS - REACTOR COOLANT SYSTEM TRIP SIGNALS
33013-1353	15	LOGIC DIAGRAMS - ROD TRIPS AND TURBINE RUNBACKS
33013-1353	2	LOGIC DIAGRAMS - INDEX & SYMBOLS
3013-1353	3	LOGIC DIAGRAMS - TURBINE TRIP SIGNALS
33013-1353	4	LOGIC DIAGRAMS - ELECTRICAL PROTECTION LOGIC
33013-1353	5	LOGIC DIAGRAMS - EMERGENCY GENERATOR STARTING
33013-1353	6	LOGIC DIAGRAMS - SAFEGUARDS ACTUATION SIGNALS
33013-1353	7	LOGIC DIAGRAMS - SAFEGUARDS SEQUENCE
33013-1353	8	LOGIC DIAGRAM - FW ISOLATION & AUXILIARY FW PUMPS
33013-1356	....	MOISTURE PRESEPARATOR FLOW DIAGRAMS
33013-1373	....	PRESEPARATOR TANK A & B EXTRACTION STEAM TO 4A & 4B LP HTRS PLAN & ELEV
33013-138	....	SCREENHOUSE - MECHANICAL EQUIPMENT SECTION L-L
33013-1495	....	ENGINEERING FLOW DIAGRAM FOR MSR SYSTEM
33013-1496	....	MSR MODIFICATION P&ID
33013-1513	....	FOURTH PASS DRAIN TANKS

NUMBER	SHEET	TITLE
33013-155	....	CONTROL SCHEMATIC 75112
33013-156	....	CONTROL SCHEMATIC 76702
33013-157	....	DISCHARGE TUNNEL TRANSITION
33013-1607	....	FIRE PROTECTION SYSTEM YARD LOOP P&ID
33013-178	....	DISCHARGE CANAL - STRUCTURAL - RECIRCULATING WIRE PLAN & SECTIONS
33013-1806	....	CONTAINMENT HVAC SYSTEM, PURGE EXHAUST, PENETRATION COOLING
33013-1863	....	HVAC - CONTAINMENT RECIRCULATING & COOLING SYSTEM POST ACCIDENT
33013-1864	....	HVAC - CONTAINMENT AUX. CHARCOAL FILTERS
33013-1865	....	HVAC - CONTAINMENT PURGE SUPPLY
33013-1866	....	HVAC - CONTAINMENT PURGE EXHAUST PENETRATION COOLING
33013-1867	....	HVAC - CONTROL BLDG. CONTROL RM HVAC
33013-1868	....	HVAC - CONTROL BLDG. RELAY RM COOLING
33013-1869	....	HVAC - AUX/INT BLDG. COOLING FOR CHARGING
33013-1870	....	AUX/IND. BLDG.HVAC
33013-1871	....	AUX/INT BLDG HVAC SYSTEMS
33013-1872	....	AUXILIARY AND INTERMEDIATE BLDG. AIR SYSTEMS
33013-1873	....	.....
33013-1874	....	TURBINE/MISC. BLDG. HVAC SYS. CONDENSATE DEMINERALIZER BLDG. VENTILATION
33013-1875	....	SERVICE BLDG HVAC SYS CNTRL'D ACCESS EXHAUST SYS & AIR HANDLING UNIT IC
33013-1876	....	SERVICE BLDG HVAC SYSTEMS AIR HANDLING UNITS 1B AND1D
33013-1877	....	SERVICE BLDG HVAC SYSTEMS AIR HANDLING UNIT A & RETURN AIR FAN A
33013-1878	....	SERVICE BLDG HVAC SYSTEMS MISC SERVICE BLDG HVAC SYSTEMS P&ID
33013-1879	....	SERVICE BUILDING HVAC SYSTEMS AIR HANDLING UNIT 1E P&ID
33013-1880	....	SERVICE BLDG HVAC SYSTEMS PERIMETER HOT WATER HEATING SYSTEM P&ID
33013-1881	....	SERVICE BLDG HVAC SYSTEMS SERVICE BLDG NORTH END HVAC SYS. 1990 ADDITION
33013-1882	....	CONTAINMENT VESSEL AIR & PROOF TEST
33013-1883	....	ELECTRICAL PENETRATION PRESSURIZATION SYSTEM
33013-1884	1	PENETRATION PRESSURIZATION SYSTEM
33013-1884	2	.....
33013-1885	....	CIRCULATING WATER
33013-1885	1	CIRCULATING WATER P&ID
33013-1885	2	CIRCULATING WATER
33013-1886	....	SERVICE AIR
33013-1886	1	SERVICE AIR
33013-1886	2	SERVICE AIR
33013-1887	....	IA - CONTAINMENT BLDG
33013-1888	....	IA - CONTAINMENT BLDG

NUMBER	SHEET	TITLE
33013-1889	....	IA - AUXILIARY BLDG
33013-1890	....	IA - AUXILIARY BLDG
33013-1891	....	IA - AUXILIARY BLDG
33013-1892	....	IA - AUXILIARY BLDG
33013-1893	....	IA - INTERMEDIATE BLDG
33013-1894	....	IA - TURBINE BLDG
33013-1894	1	INSTRUMENT AIR TURBINE BUILDING
33013-1894	2	INSTRUMENT AIR TURBINE BUILDING
33013-1895	....	IA - TURBINE BLDG
33013-1896	....	IA - TURBINE BLDG AND SCREEN HOUSE
33013-1897	....	IA - AVT BLDG
33013-1897	1	INSTRUMENT AIR AVT. BUILDING
33013-1897	2	INSTRUMENT AIR AVT6. BUILDING P7ID
33013-1898	....	IA - SERVICE BLDG
33013-1899	....	IA - SERVICE BLDG
33013-1899	1	INSTRUMENT AIR SERVICE BUILDING P&ID
33013-1899	2	INSTRUMENT AIR SERVICE BUILDING
33013-1900	1	IA - COMPRESSOR, RECEIVERS, FILTERS & DRYERS
33013-1900	2	IA - COMPRESSORS, RECEIVERS, FILTERS AND DRYERS P&ID
33013-1901	....	TURBINE LUBE OIL
33013-1902	....	FEEDWATER PUMPS A&B LUBE OIL P&ID
33013-1903	....	EXTRACTION STEAM
33013-1904	....	TURBINE GLAND STEAM AND DRAINS
33013-1904	....	TURBINE GLAND SYSTEM AND DRAINS
33013-1905	....	GLAND SEALING WATER P&ID
33013-1907	....	PRIMARY WATER TREATMENT CHEMICAL SUPPLY TANKS
33013-1908	1	PRIMARY WATER TREATMENT P&ID
33013-1908	2	PRIMARY WATER TREATMENT P&ID
33013-1908	3	PRIMARY WATER TREATMENT
33013-1909	....	AMMONIA ADDITION AND SECONDARY PLANT WATER TREATMENT.
33013-1910	1	CONDENSATE DEMINERALIZATION REGENERATION SYSTEM P&ID
33013-1910	2	CONDENSATE DEMINERALIZER REGENERATION SYSTEM P&ID
33013-1911	1	CONDENSATE DEMINERALIZER SERVICE VESSELS P&ID
33013-1911	2	CONDENSATE DEMINERALIZER SERVICE VESSEL P&ID
33013-1912	....	CONDENSATE DEMINERALIZER REGENERATION WASTE HANDLING.
33013-1913	....	SERVICE BUILDING HEATING STEAM AND COMDENSATE P&ID
33013-1914	....	TURBINE BUILDING HEAT AND CONDENSATE P&ID

NUMBER	SHEET	TITLE
33013-1915	....	HEATING STEAM & CONDENSATE - INT. BLDG. & CONTAINMENT
33013-1916	1	AUXILIARY BUILDIN\\G AND GAS BOTTLE STORAGE ROOM HEATING STEAM AND **
33013-1916	2	AUX BLDG. & BOTTLE GAS STORAGE ROOM HEATING STEAM AND CONDENSATE P&ID
33013-1917	....	SCREENHOUSE HEATING STEAM AND CONDENSATE P&ID
33013-1918	....	MSR SYSTEM, STEAM
33013-1918	1	MOISTURE SEPERATOR REHEATER 1A&1B & CONDENSER A STEAM DUMP (MS) P&ID
33013-1918	2	MOISTURE SEPERATOR REHEATER 2A&2B (MS) P&ID
33013-1919	1	MOISTURE SEPERATOR REHEATER 1A&1B DRAINS (MS) P&ID
33013-1919	2	MOISTURE SEPERATOR REHEATER 2A & 2B DRAINS (MS) P&ID
33013-1920	....	CHILLED WATER SYSTEM P&ID
33013-1921	....	CONDENSER AIR REMOVAL AND PRIMING P&ID
33013-1922	....	FEEDWATER HEATER VENTS RELIEF AND MISC. DRAINS P&ID
33013-1923	....	FEEDWATER HEATER DRAIN SYSTEM
33013-1924	....	EXTRACTION STEAM-1,2 & 3 HEATERS AND DRAINS
33013-1925	....	SERVICE WATER FOR INST AIR & SERVICE AIR COMPRESSORS & AFTERCOOLERS P&ID
33013-1949	....	ELECTRICAL THREE LINE DIAGRAM GENERATION - METERING AND RELAYING
33013-1950	....	ELECTRICAL THREE LINE DIAGRAM SYNCHRONIZING AND PHASING
33013-1951	....	ELECTRICAL THREE LINE DIAGRAM 4160V SWGR - METERING AND RELAYING
33013-1956	....	GINNA STATION SYSTEM P&ID REVISION STATUS SUMMARY
33013-1973	....	MCB TRIP, PERMISSIVE AND BYPASS STATUS LIGHTS
33013-1988	....	FIRE PROTECTION SYSTEMS FIRE SERVICE WATER
33013-1989	....	FIRE PROTECTION
33013-1990	....	FIRE PROTECTION FIRE SERVICE WATER AUXILIARY BLDG. INTERMEDIATE BLDG.
33013-1990	1	FIRE PROTECTION SYSTEMS FIRE SERVICE WATER TURBINE BLDG AND TSC
33013-1990	2	FIRE PROTECTION SYSTEMS
33013-1991	....	FIRE PROTECTION FIRE SERVICE WATER AUX., INTERMED., CONTAINMENT BLDGS.
33013-1992	....	FIRE PROTECTION SYSTEMS
33013-1993	1	FIRE PROTECTION SYSTEMS FIRE SERVICE WATER HEADER "B"
33013-1993	2	FIRE PROTECTION SYSTEMS
33013-2240	....	GINNA STATION SYSTEM P&ID REVISION & STATUS SUMMARY
33013-2241	....	GENERAL NOTES P&ID
33013-2242	1	SYMBOL LEHEND SHEET 1 P&ID
33013-2242	2	SYMBOL LEGEND SHEET 2 P&ID
33013-2242	3	SYMBOL LEGEND SHEET 3 P&ID
33013-2242	4	SYMBOL LEGEND SHEET 4 P&ID
33013-2248	....	RCP OIL SPILLAGE COLLECTION SYSTEM P&ID
33013-2249	1	ELECTRO-HYDRAULIC SYSTEM (EH) P&ID

NUMBER	SHEET	TITLE
33013-2249	2	ELECTRO-HYDRAULIC SYSTEM (EH) P&ID
33013-2250	....	CITY WATER SUPPLY DW DOMESTIC WATER
33013-2251	4	SECONDARY SAMPLING SYSTEM P&ID (SS)
33013-2252	....	SERVICE BLDG HOT WTR HEATER, TANK AND LAUNDRY, HOT SHOWER SCHEMATIC P&ID
33013-2274	....	AUX BLDG BORIC ACID EVAPORATOR SKID P&ID
33013-2275	1	GAS STRIPPER PANEL SKID P&ID
33013-2275	2	GAS STRIPPER SKID P&ID
33013-232	....	SUBSTATION - #1 TRANSFORMER - ELEMENTARY DIAGRAM
33013-233	....	SUBSTATION 13A - PILOT WIRE CABINET WIRING DIAGRAM
33013-235	....	SUBSTATION 13A - TELEPHONE DEMARCATION CABINET
33013-236	....	SUBSTATION 13A - TONE AUX. CAB. WIRING DIAGRAM
33013-237	....	115 KV CONTROL BOARD - SYNC. - SCHEMATIC
33013-241	....	115 KV CONTROL BOARD PANEL #1 - SCHEMATIC OCB 90812 CIR 908
33013-242	....	115 KV CONTROL BOARD PANEL #2 - SCHEMATIC - OCB 7X1372
33013-243	....	115 KV CONTROL BOARD PANEL #3 - SCHEMATIC - OCB 91302 CIR 913
33013-244	....	115 KV CONTROL BOARD PANEL #4 - SCHEMATIC - OCB ITI372
33013-245	....	115 KV CONTROL BOARD PANEL #5 - SCHEMATIC - OCB 8X1372
33013-246	....	115 KV CONTROL BOARD PANEL #6 - SCHEMATIC - OCB 91202 CIR 912
33013-247	....	115 KV CONTROL BOARD PANEL #7 - SCHEMATIC - OCB 91102 CIR 911
33013-248	....	115 KV CONTROL BOARD PANEL #8 - SCHEMATIC
33013-249	....	115 KV CONTROL BOARD PANEL #9 - SCHEMATIC
33013-3	1	CONTROL ELEMENTARY (SUBSTATION 13A)
33013-3	2	CONTROL ELEMENTARY (SUBSTATION 13A)
33013-3	3	CONTROL ELEMENTARY (SUBSTATION 13A)
33013-3	4	CONTROL ELEMENTARY (SUBSTATION 13A)
33013-350	....	PRIMARY PLANT SYSTEMS DIAGRAM
33013-394	....	SECOND PASS DRAIN TANKS
33013-4	....	STATION 13 - 13A SINGLE LINE
33013-420	....	WASTE DISPOSAL SYSTEM BACKLIFT POLISHING DEMINERALIZER ARRANGEMENT
33013-422	....	SAMPLING SYSTEM - PRIMARY
33013-423	....	WASTE DISPOSAL SYSTEM
33013-424	....	REACTOR COOLANT SYSTEM
33013-425	....	SAFETY INJECTION
33013-426	....	CHEMICAL AND VOLUME CONTROL SHT 1
33013-427	....	CVCS - CHARGING PUMP AND SEAL LEAK
33013-429	....	WASTE DISPOSAL SYSTEM WASTE GAS SYSTEM
33013-430	....	WASTE DISPOSAL SYSTEM

NUMBER	SHEET	TITLE
33013-431	....	WASTE DISPOSAL SYSTEM
33013-432	....	SAFETY INJECTION
33013-433	....	CHEMICAL AND VOLUME CONTROL
33013-434	....	CHEMICAL AND VOLUME CONTROL
33013-437	....	WASTE DISPOSAL SYSTEM SHT 3
33013-44	....	DISCHARGE CANAL DETAIL
33013-45	....	SINGLE LINE 312 AUX. TRANSFER
33013-480	....	SEAL WATER & CHARGING LINES - PLANS & SECTIONS - AUX BUILDING
33013-481	....	AUX BUILDING - RESIDUAL HEAT REMOVAL & REACTOR COOLANT
33013-494	....	AUX BUILDING - CHRGNG LINE, LTDN LINE, SEAL WTR LINES & ALT CHG LINE ISO
33013-495	....	AUX BLDG - RHR, SIS, & CONTAINMENT SPRAY SYSTEMS ISOMETRICS
33013-520	....	CIRCULATING WATER
33013-521	....	STATION SERVICE AND INSTRUMENT AIR
33013-522	....	STEAM GENERATOR BLOWDOWN
33013-523	....	TURBINE LUBE OIL
33013-524	....	PENETRATION PRESSURIZATION
33013-525	....	TURBINE GLAND STEAM AND DRAINS
33013-527	....	EXTRACTION STEAM
33013-528	....	CONDENSER AIR REMOVAL & PRIMING
33013-529	....	STATION SERVICE COOLING WATER
33013-530	....	PRIMARY WATER TREATMENT
33013-531	....	GLAND SEALING WATER
33013-533	....	HVAC
33013-534	....	MAIN AND REHEAT STEAM SYSTEM
33013-535	....	FEEDWATER HEATER VENTS, RELIEF AND MISC DRAINS
33013-536	....	HEATING STEAM & CONDENSATE - INT. BLDG.
33013-537	....	HEATING STEAM & CONDENSATE - TURBINE BLDG. & CONTROL ROOM
33013-538	....	SECONDARY WATER TREATMENT
33013-539	....	TURBINE PLANT PIPING DIESEL GENERATORS
33013-540	....	CONTAINMENT VESSEL AIR & PROOF TEST
33013-541	....	FLOOR & EQPT DRNS WATER DISPOSAL SYSTEM - AUX. BLDG. & CONTAINMENT VSL.
33013-542	....	SAMPLING SYSTEM - TURBINE PLANT
33013-544	....	MAIN FEEDWATER
33013-545	....	AUXILIARY FEEDWATER AND STANDBY FEEDWATER
33013-546	....	HEATING STEAM & CONDENSATE SERVICE BUILDING
33013-58	....	CONROL ROOM 115 KV CONTROL PANEL
33013-59	....	115 KV CONTROL PANEL - CONTROL ROOM

NUMBER	SHEET	TITLE
33013-593	....	FIRE PANEL BENCH SECTION
33013-594	....	FIRE PANEL VERTICAL SECTION - WITH DIMENSIONS
33013-623	1	MAIN ONE LINE OPERATING DIAGRAM
33013-623	2	MAIN ONE LINE OPERATING DIAGRAM
33013-626	....	BORIC ACID TRANSFER PIPING - ISOMETRIC
33013-627	....	BORIC ACID PIPING MOD. - PLAN & ELEVATION
33013-63	....	SCREENHOUSE MECHANICAL EQUIPMENT PLAN AT ELEVATION 253' 8"
33013-64	....	SCREENHOUSE MECHANICAL EQUIPMENT PLAN AT ELEVATION 237-0,239-6,234-6
33013-65	....	STA. 13A HOUSE SERVICE SCHEMATIC
33013-65	....	SCREENHOUSE - MECHANICAL EQUIPMENT PLANT ELEV. 216-6
33013-652	....	480V ONE LINE WIRING DIAGRAM
33013-653	....	4160V ONE LINE WIRING DIAGRAM
33013-656	....	AUXILIARY F.W. PUMP FLOW CONTROL P&ID
33013-66	....	SCREENHOUSE - MECHANICAL EQUIPMENT SECTION A-A
33013-660	....	SAFEGUARD SYSTEM
33013-661	....	SAFEGUARD SYSTEM
33013-662	....	SAFEGUARD SYSTEM
33013-663	....	SAFEGUARD SYSTEM
33013-664	....	SAFEGUARD SYSTEM
33013-665	....	SAFEGUARD SYSTEM
33013-666	....	SAFEGUARD SYSTEM
33013-67	....	SCREENHOUSE - MECHANICAL EQUIPMENT - SECTION B-B
33013-673	1	REACTOR TRIP BREAKER
33013-673	2	REACTOR TRIP BREAKER
33013-69	....	BROOKWOOD SITE DISCHARGE CANAL LAYOUT
33013-697	....	AUXILIARY FEED PUMP INSTRUMENTATION UPGRADE (EWR-1869)
33013-70	....	INSTALLATION OF 90" CIRCULATING WATER PIPE
33013-710	1	DIESEL GENERATOR CONTROL SCHEMATIC
33013-710	2	DIESEL GENERATOR CONTROL SCHEMATIC
33013-710	3	DIESEL GENERATOR CONTROL SCHEMATIC
33013-720	....	CONTROL BUILDING VENTILATION P&ID
33013-73	....	SCREENHOUSE PIPING DETAILS
33013-748	....	SPENT FUEL POOL COOLING SYSTEM SFP WATER P&ID
33013-757	1	ELECTRICAL ARRANGEMENTS A.C. DISTRIBUTION PANELS
33013-757	2	ELECTRICAL ARRANGEMENTS A.C. DISTRIBUTION PANELS
33013-757	3	ELECTRICAL ARRANGEMENTS A.C. DISTRIBUTION PANELS
33013-759	....	MAIN CONTROL BOARD CENTER FRONT SECTION

NUMBER	SHEET	TITLE
33013-760	.....	MAIN CONTROL BOARD RIGHT FRONT SECTION FRONT VIEW
33013-761	.....	MAIN CONTROL BOARD LEFT FRONT SECTION FRONT VIEW
33013-762	.....	MAIN CONTROL BOARD CENTER REAR SECTION
33013-763	.....	MAIN CONTROL BOARD RIGHT REAR FRONT VIEW
33013-764	.....	MAIN CONTROL BOARD LEFT REAR SECTION FRONT VIEW
33013-819	.....	SCHEMATIC CONTROL DIAGRAM FOR HYDROGEN COMBUSTION SYSTEM
33013-819	.....	SCHEMATIC CONTROL DIAGRAM FOR HYDROGEN COMBUSTION SYSTEM
33013-832	.....	FIRE SIGNALING SYSTEM - GENERAL ARRANGEMENT & GATE VALVE TABLE
33013-833	.....	FIRE CONTROL PANEL (FCP 1 TOP) GRAPHIC DISPLAY PANEL FIRE SIGNALING SYS
33013-834	.....	FIRE CONTROL PANEL (FCP 1 BOTTOM) FIRE SIGNALING SYSTEM
33013-835	.....	FIRE CONTROL PANEL (FCP 2 TOP) FIRE SIGNALING SYSTEM
33013-836	.....	FIRE CONTROL PANEL (FCP 2 BOTTOM) FIRE SIGNALING SYSTEM
33013-837	.....	FIRE SIGNALING SYSTEM LEGEND 1
33013-838	.....	CIRCUIT CONFIGURATION I - IV FIRE SIGNALING SYSTEM
33013-839	.....	CIRCUIT CONFIGURATION VI - VIII FIRE SIGNALING SYSTEM
33013-840	.....	CIRCUIT CONFIGURATION IX - XIII FIRE SIGNALING SYSTEM
33013-841	.....	CKT CONFIG XIV - XX MAN ACTIV SWITCHES & AUTO DEFEAT SWITCHES
33013-842	.....	CONTAINMENT ISOLATION RESET MODIFICATION
33013-85	.....	NO. 1 GENERATOR METERING - GROSS & NET
33013-88	.....	CONN. DIAGRAM - 767 CURRENT & POT
33013-89	.....	CONN. DIAGRAM - 751 CURRENT & POT TRANS'S
33013-91	1	ELEMENTARY DIAGRAM STATION 13A
33013-91	2	ELEMENTARY DIAGRAM - STATION 13A
33013-91	3	ELEMENTARY DIAGRAM - STATION 13A
33013-956	.....	DIVERSE CONTAINMENT ISOLATION WIRING DIAGRAM TRAIN A
33013-957	.....	DIVERSE CONTAINMENT ISOLATION WIRING DIAGRAM TRAIN B
33013.1992	1	FIRE PROTECTION SYSTEMS
33309-1	1	SUBSTATION 13A - OPERATING DIAGRAM
33309-1	2	SUBSTATION 13A - OPERATING DIAGRAM
33309-2	1	RELAY & METERING ELEMENTARY (SUBSTATION 13A)
33309-2	2	RELAY & METERING ELEMENTARY (SUBSTATION 13A)
33309-2	3	RELAY & METERING ELEMENTARY (SUBSTATION 13A)
33309-2	4	RELAY & METERING ELEMENTARY (SUBSTATION 13A)
33309-2	5	RELAY & METERING ELEMENTARY (SUBSTATION 13A)
33309-3	1	CKT 911 CONTROL ELEMENTARY
33309-3	2	CKT 912 CONTROL ELEMENTARY
33309-3	3	CKT 908 & 913 CONTROL ELEMENTARY

NUMBER	SHEET	TITLE
33309-3	4	CKT 909 CONTROL ELEMENTARY
4417D10	....	PRESSURIZER CONSTRUCTION (800 FT3)
461B820	6	WIRING SCHEMATIC AUTOSTOP TRIP AND TURBINE ALARM
461B820	9	WIRING SCHEMATIC DRAIN VALVE
4696-07-092-0	....	CONDENSATE BOOSTER PUMP 1A PUMP CURVE
4696-07-094-0	....	CONDENSATE BOOSTER PUMP 1B PUMP CURVE
4696-07-096-0	....	CONDENSATE BOOSTER PUMP 1C PUMP CURVE
49A73334	....	EMERGENCY D.G. CONTROL SCHEMATIC
52444E	1	FIRE PROTECTION SYSTEM SCHEMATIC & INTERCONNECTION DIAGRAM A888-M196
52444E	2	FIRE PROTECTION SYSTEM SCHEMATIC & INTERCONNECTION DIAGRAM A888-M196
52444M	1	FIRE PROTECTION SYSTEM CONTROL UNIT A888-M196
647-J-071	2	VOLUME CONTROL TANK CONSTRUCTION (1500 GAL, 200 FT3)
6720-37900	....	CONTAINMENT ISOLATION AUX RELAY CABINET SYSTEM CABINET ASSEMBLY - 4 SHTS
6720-37913	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37915	1	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37915	2	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37915	3	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37916	1	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37916	2	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37917	1	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37917	2	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37917	3	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37918	1	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37918	2	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37925	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37934	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37935	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37945	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37946	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
6720-37947	....	CONTAINMENT ISOLATION AUXILIARY RELAY CABINET
584-J-694	1	PRESSURIZER RELIEF TANK CONSTRUCTION (5984 GAL, 800 FT3)
584-J-694	2	PRESSURIZER RELIEF TANK CONSTRUCTION
584-J-694	3	PRESSURIZER RELIEF TANK CONSTRUCTION
584-J-694	4	PRESSURIZER RELIEF TANK CONSTRUCTION
584-J-700	1	COMPONENT COOLING SURGE TANK CONSTRUCTION (2000 GAL, 268 FT3)
584-J-700	2	COMPONENT COOLING SURGE TANK CONSTRUCTION (2000 GAL, 268 FT3)
584-J-787	1	REACTOR COOLANT DRAIN TANK CONSTRUCTION (350 GAL, 46.8 FT3)

NUMBER	SHEET	TITLE
684-J-787	2	REACTOR COOLANT DRAIN TANK CONSTRUCTION
684-J-809	1	BORIC ACID STORAGE TANKS CONSTRUCTION (3600 GAL)
684-J-809	2	BORIC ACID STORAGE TANKS CONSTRUCTION (3600 GAL)
6G-181	....	CONDENSER PIT AUX SUMP PUMP CURVE
7-11518-BD-1	1	INSTRUMENTATION BLOCK DIAGRAM REACTOR PROTECTION SYSTEM
7-11518-BD-1	2	INSTRUMENTATION BLOCK DIAGRAM REACTOR PROTECTION SYSTEM
7-11518-BD-10	....	REACTOR PROTECTION SYSTEM PRESSURIZER PRESSURE CONTROL
7-11518-BD-11	....	REACTOR PROTECTION SYSTEM PRESSURIZER LEVEL CONTROL
7-11518-BD-12	....	REACTOR PROTECTION SYSTEM REACTOR COOLANT FLOW
7-11518-BD-13	....	REACTOR CONTROL SYSTEM PRESSURIZER PRESSURE CONTROL
7-11518-BD-14	....	REACTOR COOLANT SYSTEM PRESSURIZER LEVEL CONTROL
7-11518-BD-15	....	REACTOR COOLANT SYSTEM ROD CONTROL
7-11518-BD-16	....	REACTOR COOLANT SYSTEM ROD LIMIT DELTA T
7-11518-BD-17	....	REACTOR CONTROL SYSTEM ROD SPEED & STEAM DUMP
7-11518-BD-18	....	REACTOR CONTROL SYSTEM S/G LEVEL LOOP A
7-11518-BD-19	....	REACTOR CONTROL SYSTEM S/G LEVEL LOOP B
7-11518-BD-2	....	REACTOR PROTECTION SYSTEM LOOP A1
7-11518-BD-3	....	REACTOR PROTECTION SYSTEM LOOP A2
7-11518-BD-4	....	REACTOR PROTECTION SYSTEM LOOP B1
7-11518-BD-5	....	REACTOR PROTECTION SYSTEM LOOP B2
7-11518-BD-6	....	COMP. STEAM FLOW & FEEDWATER FLOW LOOP A
7-11518-BD-7	....	COMP. STEAM & FEEDWATER FLOW LOOP B
7-11518-BD-8	....	STEAM GENERATOR LEVEL LOOP A
7-11518-BD-9	....	STEAM GENERATOR LEVEL LOOP B
7-11518-FA-1	1	REACTOR PROTECTION & CONTROL SYSTEM GENERAL RACK LAYOUT & CONSTRUCTION
7-11518-FA-1	2	RTD SIGNAL INJECTION TEST PANEL ASSEMBLY
7-11518-FA-1	3	RTD SIGNAL INJECTION TEST PANEL ASSEMBLY
7-11518-FA-10	1	REACTOR PROTECTION SYSTEM RACK NO. RIL LAYOUT
7-11518-FA-10	2	SWITCH & TEST RIL
7-11518-FA-11	1	REACTOR CONTROL SYSTEM RACK SD
7-11518-FA-11	2	SWITCH & TEST PANEL RACK SD
7-11518-FA-12	1	ROD CONTROL RACK RSC
7-11518-FA-12	2	SWITCH & TEST PANEL RACK RSC
7-11518-FA-13	1	PRESSURIZER PRESSURE & LEVEL CONTROL RACK PLP
7-11518-FA-13	2	SWITCH & TEST PANEL RACK PLP
7-11518-FA-14	1	FEEDWATER CONTROL SYSTEM RACK FW LAYOUT
7-11518-FA-14	2	RELAY & TEST PANEL RACK FW

NUMBER	SHEET	TITLE
7-11518-FA-15	1	AUXILIARY COOLANT & SAFETY INJECTION
7-11518-FA-15	2	TEST PANEL RACK SA
7-11518-FA-16	1	REACTOR COOLANT SYSTEM RACK RCS-2
7-11518-FA-16	2	TEST PANEL RACK RCS-2
7-11518-FA-17	1	REACTOR CONTROL SYSTEM RACK RCS-1
7-11518-FA-17	2	TEST PANEL RACK RCS-1
7-11518-FA-18	1	CVCS SYSTEM RACK CVCS-1
7-11518-FA-18	2	TEST PANEL CVCS-1
7-11518-FA-19	1	CVCS SYSTEM RACK CVCS-2
7-11518-FA-19	2	TEST PANEL RACK CVCS-2
7-11518-FA-2	1	REACTOR PROTECTION SYSTEM RACK R-1 LAYOUT
7-11518-FA-2	2	RTD SIGNAL INJECTION TEST PANEL RACK R-1
7-11518-FA-3	1	REACTOR PROTECTION SYSTEM RACK R-2 LAYOUT
7-11518-FA-3	2	TRANSMITTER SIGNAL INJECTION TEST PANEL RACK R-2
7-11518-FA-4	1	REACTOR PROTECTION SYSTEM RACK W-1 LAYOUT
7-11518-FA-4	2	RTD SIGNAL INJECTION TEST PANEL W-1
7-11518-FA-5	1	REACTOR PROTECTION SYSTEM RACK W-2 LAYOUT
7-11518-FA-5	2	TRANSMITTER SIGNAL INJECTION TEST PANEL RACK W-2
7-11518-FA-6	1	REACTOR PROTECTION SYSTEM RACK B-1 LAYOUT
7-11518-FA-6	2	RTD SIGNAL INJECTION TEST PANEL RACK B-1
7-11518-FA-7	1	REACTOR PROTECTION SYSTEM RACK B-2
7-11518-FA-7	2	SIGNAL INJECTION TEST PANEL RACK B-2
7-11518-FA-8	1	REACTOR PROTECTION SYSTEM RACK Y-1 LAYOUT
7-11518-FA-8	2	SIGNAL INJECTION TEST PANEL RACK Y-1
7-11518-FA-9	1	REACTOR PROTECTION SYSTEM RACK Y-2 LAYOUT
7-11518-FA-9	2	TRANSMITTER SIGNAL INJECTION PANEL RACK Y-2
7-11518-SP-10A	1	LOOP B-2 OVERTEMPERATURE DELTA T TRIP SETPOINT CALIBRATION
7-11518-SP-10A	2	LOOP B-2 OVERTEMPERATURE DELTA T TRIP CALIBRATION
7-11518-SP-10B	1	LOOP A-1 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	2	LOOP A-1 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	3	LOOP A-2 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	4	LOOP A-2 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	5	LOOP B-1 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	6	LOOP B-1 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	7	LOOP B-2 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-10B	8	LOOP B-2 OVERPOWER DELTA T TRIP CALIBRATION
7-11518-SP-11	....	OVERTEMPERATURE AND OVERPOWER DELTA T TRIP STEP RESPONSE

NUMBER	SHEET	TITLE
7-11518-SP-12	....	OVERTEMPERATURE AND OVERPOWER DELTA T TRIP RAMP RESPONSE
7-11518-SP-14	1	LOOP A-1 STEAM FLOW CALIBRATION
7-11518-SP-14	2	LOOP A-2 STEAM FLOW CALIBRATION
7-11518-SP-14	3	LOOP B-1 STEAM FLOW CALIBRATION
7-11518-SP-14	4	LOOP B-2 STEAM FLOW CALIBRATION
7-11518-SP-15A	1	LOOP A-1 FEEDWATER FLOW CALIBRATION
7-11518-SP-15A	2	LOOP A-2 FEEDWATER FLOW CALIBRATION
7-11518-SP-15A	3	LOOP B-1 FEEDWATER FLOW CALIBRATION
7-11518-SP-15A	4	LOOP B-2 FEEDWATER FLOW CALIBRATION
7-11518-SP-15B	1	LOOP A-1 STEAM PRESSURE CALIBRATION
7-11518-SP-15B	2	LOOP A-2 STEAM PRESSURE CALIBRATION
7-11518-SP-15B	3	LOOP A-3 STEAM PRESSURE CALIBRATION
7-11518-SP-15B	4	LOOP B-1 STEAM PRESSURE CALIBRATION
7-11518-SP-15B	5	LOOP B-2 STEAM PRESSURE CALIBRATION
7-11518-SP-15B	6	LOOP B-3 STEAM PRESSURE CALIBRATION
7-11518-SP-16	....	STEAM GENERATOR LEVEL CALIBRATION - ALL LOOPS
7-11518-SP-17	1	PRESSURIZER PRESURE CALIBRATION - LOOP I
7-11518-SP-17	2	PRESURIZER PRESSURE CALIBRATION - LOOP II
7-11518-SP-17	3	PRESSURIZER PRESSURE CALIBRATION - LOOP III
7-11518-SP-17	4	PRESSURIZER PRESSURE CALIBRATION - LOOP IV
7-11518-SP-18	....	PRESSURIZER LEVEL CALIBRATION, ALL CHANNELS
7-11518-SP-19A	1	REACTOR COOLANT FLOW CALIBRATION LOOP A (LOOP B)
7-11518-SP-19B	2	CONTAINMENT PRESSURE CALIBRATION LOOP A (LOOP B)
7-11518-SP-2	....	LOOP A-1 RACK R-1 TAVG/DELTA T CALIBRATION
7-11518-SP-3	....	LOOP A-2 RACK W-1 TAVG/DELTA T CALIBRATION
7-11518-SP-4	....	LOOP B-1 RACK B-1 TAVG/DELTA T CALIBRATION
7-11518-SP-5	....	LOOP B-2 RACK Y-1 TAVG/DELTA T CALIBRATION
7-11518-SP-6	1	LOOP A-1 FLUX TILT CALIBRATION
7-11518-SP-6	2	LOOP A-2 FLUX TILT CALIBRATION
7-11518-SP-6	3	LOOP B-1 FLUX TILT CALIBRATION
7-11518-SP-6	4	LOOP B-2 FLUX TILT CALIBRATION
7-11518-SP-7	1	LOOP A-1 OVERTEMPERATURE DELTA TRIP SETPOINT CALIBRATION
7-11518-SP-7	2	LOOP A-1 OVERTEMPERATURE DELTA T TRIP CALIBRATION
7-11518-SP-8	1	LOOP A-2 OVERTEMPERATURE DELTA T TRIP SETPOINT CALIBRATION
7-11518-SP-8	2	LOOP A-2 OVERTEMPERATURE DELTA T TRIP SETPOINT CALIBRATION
7-11518-SP-9	1	LOOP B-1 OVERTEMPERATURE DELTA T TRIP SETPOINT CALIBRATION
7-11518-SP-9	2	LOOP B-1 OVERTEMPERATURE DELTA T TRIP CAL.

NUMBER	SHEET	TITLE
7-16759-SP-1	....	RESISTANCE BULB ASSEMBLY AND WELL
7-16759-SP-2	....	RESISTANCE BULB ASSEMBLY AND WELL
7-16759-SP-3	....	RESISTANCE BULB ASSEMBLY AND WELL
7-16759-SP-4	....	FLANGED THERMOWELL
7-16759-SP-5	....	DYNATHERM RESISTANCE BULB
769A512	....	REFUEL WATER PURIFICATION PUMP DATA SHEET
769A515-1-2	....	REACTOR MAKEUP WATER DATA SHEET
383D762	2	MISCELLANEOUS RACKS RELAY IDENTITIY LIST
3886-M-20001	....	CONTROL ROOM HABITABILITY MODIFICATION VENTILATION P&ID
997249	....	RACK INSTALLATION - RAD MONITOR
997395/396	....	RM-40 MAIN ASSEMBLY
997402/403	....	MAIN ASSEMBLY AREA MONITOR
997448	....	RM CHASSIS NAMEPLATES
997498	....	RM SYSTEM WIRING DIAGRAM
997588	....	CABLE WIRING RGE DIAGRAM CONSOLE #3 CHANNELS R15-R20
997723	....	RECORDER, PLATE SILK SCREEN
A-202	....	RCS OVERPRESSURE PROTECTION NITROGEN ACCUMULATOR
A-202	....	RCS OVERPRESSURE PROTECTION NITROGEN ACCUMULATOR
A00-001-0427-0P	1	PARTS LIST - ROCH G & E SAS/PPCS
A00-001-0427-0P	2	PARTS LIST - ROCH G & E SAS/PPCS
A00-001-0427-0P	3	PARTS LIST - ROCH G & E SAS/PPCS
A00-001-0427-0P	4	PARTS LIST - ROCH G & E SAS/PPCS
A00-001-0427-0P	5	PARTS LIST - ROCH G & E SAS/PPCS
A00-001-0427-0P	6	PARTS LIST - ROCH G & E SAS/PPCS
A00-003-0153-0P	1	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	1	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	2	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	2	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	3	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	3	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	4	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	4	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	5	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	5	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	6	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	6	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0153-0P	7	PARTS LIST - CONSOLE, OPERATOR'S (SAS)

NUMBER	SHEET	TITLE
A00-003-0153-0P	7	PARTS LIST - CONSOLE, OPERATOR'S (SAS)
A00-003-0154-0P	1	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	1	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	2	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	2	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	3	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	3	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	4	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	4	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	5	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	5	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	6	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	6	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	7	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0154-0P	7	PARTS LIST - CONSOLE, OPERATOR'S (PPCS)
A00-003-0156-0P	1	PARTS LIST - WORK STATION, DUAL
A00-003-0156-0P	2	PARTS LIST - WORK STATION, DUAL
A00-003-0156-0P	3	PARTS LIST - WORK STATION, DUAL
A00-003-0156-0P	4	PARTS LIST - WORK STATION, DUAL
A00-004-0432-0P	1	PARTS LIST, CABINET, PERIPHERAL SWITCH
A00-004-0432-0P	2	PARTS LIST, CABINET, PERIPHERAL SWITCH
A00-004-0442-0	....	COMPUTER SEL 32/77 W/MOD 3421-2 CPU (RG&E)
A00-004-0443-0	....	COMPUTER SEL 32/77 W/MOD 2027 CPU (RG&E)
A00-034-0111-0P	1	PARTS LIST - TERMINAL, SAS BACKUP
A00-034-0111-0P	2	PARTS LIST - TERMINAL, SAS BACKUP
A00-034-0111-0P	3	PARTS LIST - TERMINAL, SAS BACKUP
A00-034-0112-0	....	TERMINAL CRT: CHROMATICS MOD #7900-03 (RG&E)
A00-034-0114-0	....	TERMINAL CRT: CHROMATICS MOD #3999
A00-034-0116-0	....	TERMINAL CRT: CHROMATICS MOD #7900-02 W/JOYSTICK
A00-034-0117-0	....	TERMINAL CRT: CHROMATICS MOD #7900-02
A00-093-0100-0P	1	PARTS LIST - CABINET, WIRED PERIPHERAL
A00-093-0100-0P	2	PARTS LIST - CABINET, WIRED PERIPHERAL
A00-093-0100-0P	3	PARTS LIST - CABINET, WIRED PERIPHERAL
A138D168	....	VOLTAGE REGULATOR BREAKER CONTROL DRAWING
B-281-041	....	LOCATION SCHEDULE, PULL, TERM AND JUNCT BOXES
B-281-071	....	EWD INDEX
B-281-073	....	EWD SWITCH DEVELOPMENT

NUMBER	SHEET	TITLE
B-281-206	....	4160V, 480V ONE LINE, 480V POWER DISTRIBUTIN PANEL AVC-10
B-281-218	....	EWD - CONDENSATE BOOSTER PUMP AVP-9A
B-281-219	....	EWD - CONDENSATE BOOSTER PUMP AVP-9B
B-281-220	....	EWD - CONDENSATE BOOSTER PUMP AVP-9C
B-281-224	....	EWD - CONDENSATE STORAGE TANK HEAT CIRCULATION PUMP AVP-11 AND HTR AVH-3
B-281-234	....	CONDENSATE DEMINERALIZER CONT. PNL. MCC AVC-2
B-281-235	....	480V POWER DISTRIBUTION PANEL AVC-10
B-281-236	....	EWD - VENT HEATER AVF 2 AND STOP VALVE 9515E
B-281-304	....	TRANSFER SWITCH SEP-2
B-281-305	....	480V POWER DISTRIBUTION PANEL SEP-4G
B-29-HMTA86X8A	....	GENERAL ARRANGEMENT MOTOR DRIVEN AFW PUMP C & D
B-308-001	....	HEATER 5B LEVEL CONTROL SYSTEM - RN36
B-308-002	....	HEATER 5B LEVEL CONTROL SYSTEM - RN36
B-308-003	....	HEATERS 4A AND 4B HIGH LEVEL ALARM
B-308-004	....	HEATER 3A LEVEL CONTROL SYSTEM - RN38
B-308-005	....	HEATER 3B LEVEL CONTROL SYSTEM - RN 38
B-308-006	....	HEATER 2A LEVEL CONTROL SYSTEM - RN 39
B-308-007	....	HEATER 2B LEVEL CONTROL SYSTEM - RN 39
B-308-008	....	HEATER 1A LEVEL CONTROL SYSTEM - RN-40
B-308-009	....	HEATER 1B LEVEL CONROL SYSTEM - RN 40
B-308-010	....	MOISTURE SEPARATOR 1A DRAIN CONTROL SYSTEM
B-308-011	....	MOISTURE SEPARATOR 1B CONTROL SYSTEM
B-308-012	....	MOISTURE SEPARATOR 2A DRAIN CONTROL SYSTEM
B-308-013	....	MOISTURE SEPARATOR 2B DRAIN CONTROL SYSTEM
B-308-014	....	REHEATERS 1A & 1B DRAIN CONROL SYSTEM RN 35
B-308-015	....	REHEATERS 2A & 2B DRAIN CONTROL SYSTEM
B-308-016	....	CONDENSER HOTWELL SPILL & FILL CONTR
B-308-017	....	CONDENSER HOTWELL LEVEL TRANSMITTER RN 46
B-308-018	....	HEATER DRAIN TANK
B-308-019	....	CONTR. 8 METER RN-22 & RN-23 (FIREWATER TANK)
B-308-020	....	HEATER DRAIN TANK PRESS XMTR. RK-11
B-308-021	....	SERVICE AIR HEADER PRESS XMTR. RK-11
B-308-022	....	AUX STEAM HEATING SYSTEM PRESS. CONTROL
B-308-023	....	INSTRUMENT AIR BACK-UP PRESS CONTROL
B-308-024	....	FP 1A & 1B SEAL WATER TEMP CONTROL
B-308-025	....	HYDROGEN TEMP CONROL RK-19C
B-308-026	....	HEATER DRAIN TANK COOLING WATER CONTROL

NUMBER	SHEET	TITLE
B-308-027	....	FEEDWATER 1A & 1B SUCTION DIFF PRESSURE XMTR.
B-308-028	....	FEEDWATER PUMPS 1A & 1B SUCTION PRESS. XMTR.
B-308-029	....	FEEDWTER PUMPS 1A & 1B DISCHARGE PRESSURE
B-308-030	....	EXTRACTION STEAM REV. CURRENT TEST VALVE
B-308-031	....	GLAND SEAL WATER DIFF. PRESSURIZER SYSTEM
B-308-032	....	FIRE WATER TANK DIFF. PRESSURIZER SYSTEM
B-308-033	....	AUXILIARY FEED PUMP DISCHARGE PRESSURE TRANSMITTER
B-308-034	....	CONDENSATE STORAGE TANK LEVEL CONTROL SYSTEM
B-308-035	....	HEATER DRAIN PUMP DIFF. PRESSURE XMTR
B-308-036	....	GLAND SEAL WATER PRESSURIZER CONTROL
B-308-037	....	LEVEL INDICATOR PIPING
B-308-038	....	AUXILIARY FEED PUMP DIFF. PRESSURIZER XMTR.
B-308-039	....	AUXILIARY FEEDWATER PUMP 1A & 1B RCIRC
B-308-040	....	AUXILIARY FEEDWATER PUMP DISCHARGE FLOW SWITCH
B-308-041	....	CONDENSER 1A WATER LEVEL ALARM
B-308-042	....	CONDENSER 1B WATER LEVEL ALARM
B-308-043	....	FIRE SERVICE HYDROPNEUMATIC TANK PRESSURE
B-308-045	....	CONDENSATE MAKE-UP CONTROL RN-30 & RN-44
B-308-047	....	UNLOADING SYSTEM & CONTROL (INSTRUMENT & CONROL AIR)
B-308-048	....	TURBINE GAUGE PANEL INDICATOR PIPING
B-308-049	....	TURBINE GLAND SEAL STEAM PRESSURE TRANSMITTER
B-308-051	....	AUXILIARY FEEDWATER PUMP DISCHARGE FLOW TRANSMITTER
B-308-052	....	MAIN STEAM DUMP VALVES CONTROL
B-308-053	....	MAIN STEAM DUMP VALVES CONTROL
B-308-054	....	TURBINE - DEMIN. CONTROL PANEL TUBING ISOMETRIC
B-308-601	....	AUX BLDG - CVCS INSTR DIAG BA TANK LEVEL XMTR LT-102, 106, 171, 172
B-308-602	....	CONTMNT VESSEL - INSTR. DIAG. LTDN HX OUTLET PRESS XMTR PT-121
B-308-603	....	AUX BLDG. - CVCS INSTR DIAG VCT XMTR LT-112, VCT PRESS XMTR PT-139
B-308-604	....	AUX BLDG - CVCS INSTR DIAG CHARGING LINE FLOW XMTR FT-128 & DP PIC-183
B-308-605	....	AUX BLDG. - CVCS INST DIAG MONITOR TANKS LEVEL XMTR LT-166 & LT-167
B-308-606	....	AUX BLDG - CVCS INSTR DIAG LTDN LINE PRESS XMTR PT-135, FLOW XMTR FI-134
B-308-607	....	CVCS INSTR DIAG CONCEN H/U TNK LEVEL & TEMP XMTR LT-151 & TT-150, FI-159
B-308-608	....	AUX BLDG - CVCS INSTR DIAG H/U TNKS LEVEL XMTRS LT-153,-154,-156 PT-155
B-308-609	....	AUX BLDG - CVCS INSTR DIAG RCP SEAL WTR FLOW LP A FI-115 & LP B FI-116
B-308-610	....	B.A. TNK TEMP CNTRLR TC-103 & TC-107: BATCH TNK TC-100: B.A. TNK LT-101
B-308-611	....	CVCS INSTR DIAG RMW TANK LEVEL TRANSMITTER LT-157
B-308-612	....	CNTRL FOR CAUSTIC PUMP DEBORATING DEMIN & CONDENSATE DEMINS

NUMBER	SHEET	TITLE
B-308-618	....	AC SYSTEM INSTR DIAG RHR PUMPS DISCH PRESS PIC-629
B-308-619	....	AC SYSTEM INSTR DIAG NRHX COOLING WATER FLOW FT-601 & RHR RETURN FT-626
B-308-620	....	AUX BLDG - INSTR DIAG CCW PUMPS DISCH PT-617 & CCW SRG TNK LT-618
B-308-621	....	AUX BLDG - AC - INSTR DIAG CCW LOOP FLOW FT-619
B-308-622	....	AUX BLDG - INSTR DIAG SFP LEVEL LT-634 & SFP TEMPERATURE
B-308-623	....	AC - INSTR DIAG RX SUPPORT CLNG WTR FT-640 & BORIC ACID EVAP CLNG FT-642
B-308-627	....	AUX BLDG - AC - RHR PUMPS COOLING WTR RETURN FLOW FIC-651
B-308-630	....	SI - INSTR DIAG REFUELING TNK LT-920,-921 & SI PMP DISCH PT-922 & PT-923
B-308-631	....	CONT VSL INST DIAG SI LOOP A FT-925 & LOOP B FT-924
B-308-632	....	SI - THIOSULFATE TNK INLET FT-930 & THIOSULFATE TNK LEVEL LT-931, -932
B-308-633	....	SI #1 ACCUMULATOR LEVEL LT-938, -939, PRESSURE PT-940, -941
B-308-634	....	SI #2 ACCUMULATOR LEVEL LT-935, PRESSURE PT-936, -937
B-308-635	....	RHR RETURN TO RWST FLOW FT-931A AND FT-931B
B-308-637	....	INSTR DIAG CONT VESSEL PRESSURE PT-945, -946, -948, -949, -950
B-308-638	....	SUMP B LEVEL TRANSMITTER LT-942 AND LT-943
B-308-651	....	INSTR DIAG - RC PRESS XMTR PT-420, PZR PRESS XMTR PT-429 & LVL LT-426
B-308-652	....	INSTR DIAG - PZR PRESS XMTR PT-431 & LVL XMTRS LT-428 & LT-433
B-308-653	....	INSTR DIAG - PZR PRESS XMTRS PT-430 & LT-427 & DEAD WT TSTR DPT-432,-449
B-308-654	....	INSTR DIAG - PRT LVL XMTR LT-442 & PRESS XMTR PT-440
B-308-655	....	INSTR DIAG - RCS LOOP A FLOW XMTRS FT-411, FT-412, FT-413
B-308-656	....	INSTR DIAG - RCS LOOP B FLOW XMTRS FT-414, FT-415, FT-416
B-308-657	....	INSTR DIAG - TUBING FROM PZR TO PT & LT CABINETS
B-308-658	....	PLANT VENT & PURGE DUCT MONITORS R11, R12, R13, R14
B-308-661	....	VENT HDR PRESS XMTR PT-1025 & G AS STOR TNK PT-1036, -1037, -1038, -1039
B-308-662	....	INSTR DIAG - AUX BLDG H2 SPPLY HDR PT-1065 & N2 SPPLY HDR PT-1066
B-308-663	....	INSTR DIAG - AUX BLDG SPENT RESIN TANKS PRESS XMTRS PT-1006 & PT-1008
B-308-664	....	INSTR DIAG - AUX BLDG WST CONDNSATE TANKS LVL XMTRS LT-1012 & LT-1013
B-308-665	....	INSTR DIAG - AUX BLDG SPNT RESIN TNKS LEVEL XMTRS LT-1005 & LT-1009
B-308-680	....	INSTR DIAG - INT BLDG MS & FW LOOP A FT-466 & 467, MS PT-468, 469 & 482
B-308-681	....	INSTR DIAG - TURB BLDG MAIN STEAM PRESSURE XMTR PT-484
B-308-682	....	INSTR DIAG - INT BLDG LOOP B FW FLOW FT-476, FT-477 MS PT-479, PT-483
B-308-683	....	INSTR DIAG - S/G LVL LT-460, LT-461, LT-462 MS FLOW FT-464, LT-465
B-308-684	....	INSTR DIAG - S/G LVL LT-470, LT-472, LT-473 MS FLOW FT-474, FT-475
B-308-685	....	INSTR DIAG - FW FLOW CNTRLR FMV-466 & FMW-476
B-308-687	....	INSTR DIAG - MS & FW PIPE SUPPORT AT NOZZLES
B-312-001	....	COND. STORAGE TANK
B-312-002	....	TURBINE OIL STORAGE TANK

NUMBER	SHEET	TITLE
B-312-004	....	FIRE SERVICE WATER TANKS
B-312-005	....	BLOWDOWN TANK
B-312-006	....	HEATER DRAIN TANK CONSTRUCTION
B-312-081	....	COND. SUPPLY TANK FOR STANDBY AFW PUMPS
B-326-003	....	REACTOR MAKEUP TANK
B-326-004	....	REACTOR DRAIN PUMP SUCTION
B-326-005	....	REFUELING WATER STORAGE TANK
B-326-006	....	HOLD UP TANK
B-326-009	....	THIOSULPHATE TANK CONSTRUCTION (5100 GAL, 681 FT3)
B-326-010	....	ACCUMULATOR TANKS
B-326-012	....	REACTOR FLANGE LEAK DETECTION
B-381-045	....	EXISTING AUXILIARY FEEDWATER SYSTEM VALVE ADDITIONS INTERMEDIATE BLDG
B00-034-0106-0	....	TERMINAL, CRT WITH FLOPPY DISKS DISASSEMBLY (WEPCO)
B00-034-0107-0	....	TERMINAL, CRT WITHOUT FLOPPY DISKS DISASSEMBLY (WEPCO)
B00-034-0108-0	....	TERMINAL, COLOR CRT WITH DUAL FLOPPY DISKS (WEPCO)
B00-034-0109-0	....	TERMINAL, COLOR CRT WITHOUT DUAL FLOPPY DISKS (WEPCO)
C-11058	....	ISOLATION VALVE DIAGRAM HYDROGEN FIRING COMBUSTOR
C-281-033	....	ARRANGEMENT & INTERNAL WIRING CONST STA SAFWP
C-281-034	....	ARRANGEMENT & INTERNAL WIRING CONST STA UNITS REACTOR PLANT
C-281-203	....	MAIN CONTROL BOARD MOD, RIGHT REAR SECTION
C-302-543	....	SEISMIC DIAGRAM MAIN STEAM FROM STEAM GENERATOR 1A TO HEADER
C-302-544	....	SEISMIC DIAGRAM MAIN STEAM FROM STEAM GENERATOR 1B TO HEADER
C-308-872	1	STUDY OF CLASS I PIPE SUPPORT CHARACTERISTICS
C-308-872	2	STUDY OF CLASS I PIPE SUPPORT CHARACTERISTICS
C-381-350	1	MAIN STEAM INSIDE CONTAINMENT (ISOMETRIC)
C-381-350	2	30" MAIN STEAM HEADER FROM STEAM GENERATOR SG-1A (ISOMETRIC)
C-381-350	3	MAIN STEAM FROM PEN. #402 TO VALVE 3518 (ISOMETRIC)
C-381-353	1	PRESSURIZER SPRAY FROM COOLANT LOOPS TO PRESSURIZER (ISOMETRIC)
C-381-353	10	REACTOR COOLANT PRIMARY LOOP 1B (ISOMETRIC)
C-381-353	2	PRESSURIZER SPRAY FROM COOLANT LOOPS TO PRESSURIZER (ISOMETRIC)
C-381-353	3	PRESSURIZER SURGE LINE FROM COOLANT LOOP "B" (ISOMETRIC)
C-381-353	9	REACTOR COOLANT PRIMARY LOOP 1A (ISOMETRIC)
C00-001-0427-0H	1	CPU I/O PORT LOCATIONS (FRONT VIEW)
C00-001-0427-0H	2	CPU I/O PORT LOCATIONS (REAR VIEW)
C1-1660-03	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
C1-1660-04	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
C1-1660-05	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM

NUMBER	SHEET	TITLE
C1-1660-06	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
C1-1660-07	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
C1-1660-08	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
C1-1660-09	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
C1-1660-10	....	RCS OVERPRESS PROTECTION NITROGEN ACCUMULATOR SYSTEM
D-118-025	....	RX CONT. VESSEL - ELEVATION SECTION & DETAIL
D-181-004	....	CONDENSATE DEMINERALIZER BLDG. PLAN & ELEVATIONS
D-207-011	....	ELECTRICAL 3 LINE - GENERATION - METERING & RELAYS
D-207-012	....	ELECTRICAL 3 LINE - 4160V SWGR - METERING & RELAYS
D-207-013	....	ELECTRICAL 3 LINE - 480V SWGR - METERING & RELAYS
D-207-014	....	ELECTRICAL 3 LINE - 480V SWGR - METERING & RELAYS
D-207-031	....	ELECTRICAL 3 LINE SYNCHRONIZING & PHASING DIAGRAM
D-2098	....	RESIDUAL HEAT REMOVAL PUMP ASSEMBLY DRAWING
D-220-131	....	EELECTRICAL LIGHTING LAYOUT - CONTROL ROOM
D-220-201	....	ELECTRICAL LIGHTING LAYOUT - DETAILS & LIGHT FIXTURE LEGEND
D-220-222	....	ELECTRICAL LIGHTING LAYOUT - WIRING DIAGRAM
D-281-036	....	ELECTRICAL ARRANGEMENT MAIN CONTROL BOARD MODIFICATION
D-281-037	....	ELECTRICAL INTERNAL WIRING MAIN CONTROL BOARD MODIFICATION
D-281-212	....	CONDUIT LAYOUT
D-300-001	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATE DUMP
D-300-002	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-005	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-008	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-009	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-010	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-011	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-012	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-013	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-014	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP
D-300-015	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-016	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-017	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-018	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-019	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-020	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-021	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-022	....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.

NUMBER	SHEET	TITLE
D-300-023	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-024	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-080	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-081	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-082	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-083	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-300-084	.....	MAINSTEAM, MAINSTEAM DUMP AND FEEDWATER DUMP DISC.
D-304-271	.....	INSTRUMENT AIR ISOMETRIC
D-311-003	.....	FLOOR & EQPT DRAINS - TURB BLDG BASEMENT
D-311-004	.....	FLOOR & EQPT DRAINS - TURBINE BUILDING MEZZANINE
D-311-011	.....	CONTROL ROOM HVAC
D-326-001	.....	LOCATION OF PENETRATIONS ABOVE ELEVATIONS 228' 2"
D-381-095	.....	SERVICE WATER TO STANDBY AUXILIARY F.W. PUMP ROOM COOLING SYSTEM
D-381-106	.....	TEMPORARY BLOWDOWN HEAT RECOVERY
D-381-301	.....	FIRE SERVICE WATER - TURBINE DIESEL GEN., SERVICE & SCREEEN HOUSE
D-381-302	.....	FIRE SERVICE WATER - AUXILIARY BLDG., INTERMEDIATE & CONTAINMENT BLDGS.
D00-001-0427-0A	.....	ASSEMBLY SAS/PPCS ROCH. G & E
D00-001-0427-0H	3	RG&E CPU "A" & "B" SAS 32/77
D00-001-0427-0H	4	RG&E CPU "C" & "D" PPCS 32/77
D00-001-0427-0H	5	RG&E I/O PORT ASSIGNMENTS
D00-001-0427-0H	6	INFORMATION SAS/PPCS (WEPCO) DOOR LOCK LOCATIONS
D00-003-0153-0A	1	OPERATOR'S CONSOLE ASSEMBLY (SAS)
D00-003-0153-0A	2	OPERATOR'S CONSOLE ASSEMBLY (SAS)
D00-003-0153-0A	3	OPERATOR'S CONSOLE ASSEMBLY (SAS)
D00-003-0153-0A	4	OPERATOR'S CONSOLE ASSEMBLY (SAS)
D00-003-0153-0A	5	OPERATOR'S CONSOLE ASSEMBLY (SAS)
D00-003-0154-0A	1	OPERATOR'S CONSOLE ASSEMBLY (PPCS)
D00-003-0154-0A	2	OPERATOR'S CONSOLE ASSEMBLY (PPCS)
D00-003-0154-0A	3	OPERATOR'S CONSOLE ASSEMBLY (PPCS)
D00-003-0154-0A	4	OPERATOR'S CONSOLE ASSEMBLY (PPCS)
D00-003-0154-0A	5	OPERATOR'S CONSOLE ASSEMBLY (PPCS)
D00-004-0432-0A	.....	ASSEMBLY PERIPHERAL SWITCH CABINET
D00-004-0432-0H	1	INFORMATION CABINET, PERIPHERAL SWITCH
D00-004-0432-0H	2	INFORMATION CABINET, PERIPHERAL SWITCH
D00-004-0432-0H	3	INFORMATION CABINET, PERIPHERAL SWITCH
D00-004-0432-0H	4	INFORMATION CABINET, PERIPHERAL SWITCH
D00-004-0432-0H	5	INFORMATION CABINET, PERIPHERAL SWITCH

NUMBER	SHEET	TITLE
)00-093-0100-0A	....	ASSEMBLY PERIPHERAL SWITCH CABINET
E-1026	....	MAIN CONTROL BOARD LEFT FRONT SECTION FRONT VIEW
E-1027	....	MAIN CONTROL BOARD CENTER REAR SECTION
E-1030	....	MAIN CONTROL BOARD PLAN SECTION A-A
E-1031	....	MAIN CONTROL BOARD PLAN SECTION B-B
E-1032	....	MAIN CONTROL BOARD PLAN SECTION C-C
E-1033	....	MAIN CONTROL BOARD SIDE VIEW AND SECTION D-D
E-1034	....	MAIN CONROL BOARD ROOF COVERS AND VENT OPENINGS
E-205176	....	CENTRIFUGAL PUMP CURVES (FEEDWATER)
E-207134	....	FEEDWATER PUMP 1B PERFORMANCE CURVE
E-207135	....	FEEDWATER PUMP 1A PERFORMANCE CURVE
FA-1	2	RTD SIGNAL INJECTION TEST PANEL ASSEMBLY REACTOR PROTECTION
FA-1	3	TRANSMITTER SIGNAL INJECTIN TEST PANEL ASSEMBLY REACTOR PROTECTION
FA-10	1	RACK NO. RIL LAYOUT SHEET 1 OF 2
FA-10	2	SWITCH & TEST PANEL LAYOUT RACK NO. RIL REACTOR CONTROL
FA-11	1	RACK NO. SD LAYOUT SHEET 1 OF 2
FA-11	2	SWITCH & TEST LAYOUT RACK NO. SD REACTOR CONTROL SYSTEM
FA-12	1	RACK NO. RSC LAYOUT SHEET 1 OF 2
FA-12	2	SWITCH & TEST PANEL LAYOUT RACK NO. RSC REACTOR CONTROL
FA-13	1	PRESSURIZER PRESS. & LEVEL CONTROL RACK NO. PLP LAYOUT
FA-13	2	SWITCH & TEST PANEL LAYOUT RACK NO. PLP REACTOR CONTROL
FA-14	1	FEEDWATER CONTROL SYSTEM RACK NO. FW LAYOUT SHEET 1 OF 2
FA-14	2	RELAY & TEST PANEL LAYOUT RACK NO. FW REACTOR CONTROL
FA-15	1	AUXILIARY COOLANT & SAFETY INJECTION RACK NO. SA LAYOUT
FA-15	2	TEST PANEL LAYOUT RACK NO. SA REACTOR CONTROL SYSTEM
FA-16	1	REACTOR COOLANT SYSTEM RACK NO. RCS 2 LAYOUT SHEET 1 OF 2
FA-16	2	REST PANEL LAYOUT RACK NO. RCS-2 REACTOR CONTROL SYSTEM
FA-17	1	REACTOR COOLANT SYSTEM RACK NO. RCS1 LAYOUT SHEET 1 OF 2
FA-17	2	TEST PANEL LAYOUT RACK NO. RCS-1 REACTOR CONTROL SYSTEM
FA-18	1	CHEMICAL & VOLUME CONTROL SYSTEM RACK NO. CVCS1 LAYOUT SHEET 1 OF 2
FA-18	2	TEST PANEL LAYOUT RACK NO. CVCS-1 REACTOR CONTROL SYTEM
FA-19	1	CHEMICAL & VOLUME CONTROL SYSREM RACK NO. CVCS-2 LAYOUT SHEET 1 OF 2
FA-19	2	RELAY & TEST PANEL LAYOUT RACK NO. CVCS-2 REACTOR CONTROL
FA-2	1	RACK NO. RI LAYOUT
FA-2	2	RTD SIGNAL INJECTION TEST PANEL RACK NO. R-1 REACTOR PROTECTION
FA-3	1	RACK NO. R-2 LYOUT SHEET 1 OF 2
FA-3	2	TRANS. SIGNAL INJECTION TEST PANEL RACK NO. R-2 REACTOR PROTECTION

NUMBER	SHEET	TITLE
EA-4	1	RACK NO. W1 LAYOUT SHEET 1 OF 2
EA-4	2	RTD SIGNAL INJECTION TEST PANEL RACK NO. W-1 REACTOR PROTECTION
EA-5	1	RACK NO. W-2 LAYOUT SHEET 1 OF 2
EA-5	2	TRANS. SIGNAL INJECTION TEST PANEL RACK NO W-2 REACTOR PROTECTION
EA-6	1	RACK NO. B1 LAYOUT SHEET 1 OF 2
EA-6	2	RTD SIGNAL INJECION TEST PANEL RACK NO. B-1 REACTOR PROTECTION
EA-7	1	RACK NO. B-2 LAYOUT SHEET 1 OF 2
EA-7	2	TRANS. SIGNAL INJECTIN TEST PANEL RACK NO. B-2 REACTOR PROTECTION
EA-8	1	RACK NO. Y-1 LAYOUT SHEET 1 OF 2
EA-8	2	RTD SIGNAL INJECTION TEST PANEL RACK NO. Y-1 REACTOR PROTECTION
EA-9	1	RACK NO. Y-2 LAYOUT SHEET 1 OF 2W
EA-9	2	TRANS. SIGNAL INJECTION TEST PANEL RACK NO. Y-2 REACTOR PROTECTION
ED-1522241/3	.....	COND. BOOSTER PUMPS DESIGN DATA
L313A3XRZ	.....	DIESEL FUEL OIL PUMP
03021-62	.....	D.I. WATER CONTAINMENT ISOLATION VALVES P&ID
RX-147780	.....	3W + 811 DIFFUSION PUMP (SI PUMP) ELEVATION
S-1436-41	.....	INSTALLATION FOR WG9H0L-9" STROKE COMPR. L. H.
S-1439-40	.....	INSTALLATION FOR WG9H-0" STROKE COMPR. L. H.
S-205-101	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER BTA-A
S-205-102	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER BTA-B
S-205-103	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER 11A
S-205-104	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER 12A
S-205-105	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER 14SS
S-205-106	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER 13SS
S-205-107	.....	ELECTRICAL FUNCTIONAL DIAGRAM 4.16KV BREAKER 52/1755
S-205-108	.....	ELECTRICAL FUNCTIONAL DIAGRAM SGFWP 1A
S-205-110	.....	ELECTRICAL FUNCTIONAL DIAGRAM COND PP 1A
S-205-111	.....	ELECTRICAL FUNCTIONAL DIAGRAM - HEATER DRAIN PUMP 1A
S-205-112	.....	ELECTRICAL FUNCTIONAL DIAGRAM RX AUX BLDG. MAIN EXHAUST FAN 1A
S-205-113	.....	ELECTRICAL FUNCTIONAL DIAGRAM 34.5KV BREAKER A-52/75112
S-205-114	.....	34.5KV BREAKER 53/76702
S-205-651	.....	EMERGENCY OIL PUMP (TURBINE)
S-205-652	.....	AIR SIDE DC SEAL OIL BACKUP PUMP
S-205-653	.....	SG FW PUMP DC AUXILIARY OIL PUMP 1A (1B)
S-205-654	.....	TRUBINE DRIVEN AFW PMP DC TAOP
S-205-660	.....	TURBINE DRIVEN AFW PUMP STEAM ADMISSION VALVE 1A (1B SIMILAR)
S-205-661	.....	TURBINE DRIVEN FW PUMP DC MOTOR OPERATED DISCHARGE VALVE

NUMBER	SHEET	TITLE
S-205-662	....	FWP RECIRC. VALVE 1A (1B)
S-205-663	....	ATMOSPHERIC RELIEF VALVE 1A (1B)
S-205-664	....	REHEATER DRAIN VALVE CV-22, 23, 24, & 25
S-205-665	....	CONTAINMENT VENTED TEMP CONTROL VALVE
S-205-668	....	TURBINE ROOM FIRE SERVICE 1 SOL VALVE (DC MOTOR OP)
S-205-669	....	125 VDC CONTROL CIRC WATER PUMP DISCHARGE VALVE 1A (1B)
S-205-671	....	CONTAINMENT PURGE SUPPLY VALVE INSIDE (OUTSIDE) VAPOR CONTAINER
S-205-672	....	TURBINE RELAY DUMP VALVE
S-205-673	....	CONDENSATE MAKE-UP FEED MODULATING VALVE
S-205-674	....	LP HTR 4A EXTRACTION NON-RETURN VALVES RN-2A & RN-2B
S-205-675	....	CONDENSATE BYPASS VALVE
S-205-676	....	FW HTR DUMP VAVE 1A, 2A (1B, 2B)
S-205-677	....	BLOWDOWN RANK ISOLATION VALVES
S-205-678	....	FW HTR PUMP VALVE 3A-CV-36 (37) - RN 38 B
S-205-679	....	HP HEATER 5A, 5B EXTRACTION NON-RETURN VALVES RN-1C, 1B (1A-1B)
S-205-680	....	TURBINE DRIVEN FW PUMP RECIRC VALVE
S-881-332	1	STANDBY AUXILIARY FEEDWATER HVAC SYSTEM
S-881-332	2	STANDBY AUXILIARY FEEDWATER HVAC SYSTEM
S-881-332	3	STANDBY AUXILIARY FEEDWATER HVAC SYSTEM
S-881-332	4	STANDBY AUXILIARY FEEDWATER HVAC SYSTEM
S-881-332	5	STANDBY AUXILIARY FEEDWATER HVAC SYSTEM
S-881-341	1	AUXILIARY FEEDWATER SYSTEM
S-881-341	2	AUXILIARY FEEDWATER SYSTEM
S197440	....	EMERGENCY D.G. STARTING AIR PIPING SCHEMATIC
S197470	....	EMERGENCY D.G. FUEL OIL PIPING SCHEMATIC
S308950	....	EMERGENCY D.G. AUXILIARY CONTROL SCHEMATIC
S309790	....	EMERGENCY D.G. SCHEMATIC FOR SERIES BOOSTER EXCITER & VOLTAGE REGULATOR
S310120	....	EMERGENCY D.G. A.C. SCHEMATIC DIAGRAM
S310540	1	CONTROL EQUIPMENT CONNECTION DIAGRAM
S310540	2	CONTROL EQUIPMENT CONNECTION DIAGRAM
S310600	....	ALCO WIRING DIAGRAM
S310630	....	CONTROLS - EQUIPMENT
SK-7	....	FIRE PANEL BENCH SECTION
SK-8	....	TEMPERATURE MONITORING INSTRUMENT MOUNTING CONFIGURATION
SK-9	....	TERMINAL CONNECTIONS FOR TEMPRATURE MONITOR
SS-201-041	....	480 V MCC 1C RX AUXILIARY BUILDING
SS-201-042	....	480 V MCC 1C RX AUXILIARY BUILDING

NUMBER	SHEET	TITLE
SS-201-043	....	480 V MCC 1D RX AUXILIARY BUILDING
SS-201-044	....	480 V MCC 1D RX AUXILIARY BUILDING
SS-201-045	....	480 V MCC 1E RX AUXILIARY BUILDING
SS-201-046	....	480 V MCC 1E RX AUXILIARY BUILDING
SS-201-051	....	480 V MCC 1A TURBINE AREA
SS-201-052	....	480 V MCC 1A TURBINE AREA
SS-201-053	....	480 V MCC 1B TURBINE AREA
SS-201-054	....	480 V MCC 1B TURBINE AREA
SS-201-055	....	480 V MCC 1F SERVICE BUILDING & WATER TREATMENT
SS-201-056	....	480 V MCC 1F SERVICE BUILDING & WATER TREATMENT
SS-201-057	....	480 V MCC 1G SCREEN HOUSE
SS-201-058	....	480 V MCC 1H, 1J, & 1K
SS-201-059	....	ELECTRICAL ADDITIONS TO 480V MC 1C & 1D
SS-224-126	....	480V SWGR - SWGR - SAFEGUARDS CKT - ELECTRICAL SCHEDULE
SS-224-127	....	480V SWGR - SAFEGUARDS CKT - ELECTRICAL SCHEDULE
SS-224-128	....	480V SWGR - SAFEGUARDS CKT - ELECTRICAL SCHEDULE
SS-224-129	....	ELECTRICAL SCHEDULE 480V SWGR SAFEGUARD CKT
SS-224-130	....	ELECTRICAL SHCEDULE 480V SWGR SAFEGUZRD CKT
SS-224-131	....	ELECTRICAL SHCEDULE 4160V SWGR SAFEGUARD CKT
SS-224-132	....	ELECTRICAL SCHEDULE MCC C & D SAFEGUARD CKT
SS-224-133	....	ELECTRICAL SCHEDULE SCHEDULE MCC C, D, & J SAFEGUARD CKT
SS-224-134	....	ELECTRICAL SCHEDULE MCC D & H SAFEGUARD CKT
SS-224-135	....	ELECTRICAL SCHEDULE MISC MOV SAFEGUARD CKT
SS-224-136	....	ELECTRICAL SCHEDULE SOLENOID VALVES SAFEGUARD CKT
SS-224-137	....	ELECTRICAL SCHEDULE SOLENOID VALVES SAFEGUARD CKT
SS-224-138	....	ELECTRICAL SHCEDULE SOLENOID VALVES SAFEGUARD CKT
SS-224-139	....	ELECTRICAL SCHEDULE SOLENOID VALVES SAFEGUARD CKT
SS-224-140	....	ELECTRICAL SCHEDULE VALVES, SAFEGUARD CKT
SS-224-141	....	ELECTRICAL SHCEDULE VALVES, SAFEGUARD CKT
SS-224-142	....	ELECTRICAL SCHEDULE VALVES, SAFEGUARD CKT
SS-224-143	....	ELECTRICAL SCHEDULE VALVES & FANS SAFEGUARD CKT
SS-224-144	....	ELECTRICAL SCHEDULE SENSORS & TRANSMITTERS SAFEGUARD CKT
SS-224-145	....	ELECTRICAL SCHEDULE SENSORS & TRANSMITTERS SAFEGUARD CKT
SS-224-146	....	ELECTRICAL SCHEDULE SENSORS & TRANSMITTERS SAFEGUARD CKT
SS-224-276	....	ELECTRICAL SHCEDULE 4160V SWGR
SS-224-277	....	ELECTRICAL SHCEDULE 480V SWGR
SS-224-278	....	ELECTRICAL SCHEDULE 480V SWGR

NUMBER	SHEET	TITLE
SS-224-279	....	ELECTRICAL SCHEDULE 480V SWGR
SS-224-280	....	ELECTRICAL SCHEDULE 480V MCC TURBINE PLANT
SS-224-281	....	ELECTRICAL SCHEDULE 480V MCC TURBINE PLANT
SS-224-282	....	ELECTRICAL SCHEDULE 480V MCC TURBINE PLANT
SS-224-283	....	ELECTRICAL SCHEDULE 480V MCC TURBINE PLANT
SS-224-284	....	ELECTRICAL SCHEDULE 480V MCC TURBINE PLANT
SS-224-285	....	ELECTRICAL SCHEDULE 480V MCC - TURBINE PLANT VALVES
SS-224-286	....	ELECTRICAL SCHEDULE 480V MCC - TURBINE PLANT VALVES
SS-224-287	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT
SS-224-288	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT
SS-224-289	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT
SS-224-290	....	ELECRRICAL SCHEDULE 480V MCC - REACTOR PLANT
SS-224-291	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT
SS-224-292	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT
SS-224-293	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT VALVES
SS-224-294	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT VALVES
SS-224-295	....	ELECTRICAL SCHEDULE 480V MCC - REACTOR PLANT VAALVES
SS-224-296	....	ELECTRICAL SCHEDULE 125V DC MOTOR & CONTROLLER
SS-224-301	....	ELECTRICAL SCHEDULE LOCAL CONTROL STATION
SS-224-302	....	ELECTRICAL SCHEDULE LOCAL CONTROL STATION
SS-281-031	....	ELECTRICAL SCHEDULE AUX BUILDING ADDITION 480V MCC 1L
SS-281-032	....	ELECTRICAL SCHEDULE AUX BUILDING ADDITION 480V MCC 1M
SS-281-047	0	BLOCK DIAGRAM INDEX
SS-281-047	1	ISOLATION VALVE 9643A
SS-281-047	2	ISOLATION VALVE 9643B
SS-281-050	....	STANDBY & A FEEDWATER MODIFICATION
SS-281-061	0	BLOCK DIAGRAM INDEX
SS-281-061	1	AUXILIARY ADDITIONAL CLG WATER V9632A
SS-281-061	2	AUXILIARY ADDITIONAL COOLING WATER V9632A
SS-281-061	3	AUXILIARY ADDITIONAL COOLING WATER V9632A
SS-281-061	4	AUXILIARY ADDITIONAL COOLING WATER V9632A
SS-281-061	5	AUXILIARY ADDITIONAL COOLING WATER V9632A
SS-281-061	6	AUXILAIRY ADDITIONAL COOLING WATER V9632A
SS-281-063	0	BLOCK DIAGRAM INDEX
SS-281-063	1	CROSSOVER VALVE 4000A
SS-281-063	2	CROSSOVER VALVE 4000B
SS-281-065	1	STANDBY AFW DISCHARGE VALVE 9701A

NUMBER	SHEET	TITLE
SS-281-065	10	STANDBY AFW RECIRC VALVE 9629B
SS-281-065	11	STANDBY AFW MOTOR DRIVEN SAFWP - C
SS-281-065	12	STANDBY AFW MOTOR DRIVEN SAFWP - D
SS-281-065	13	STANDBY AFW POWER SUPPLY MCC 1L & 1M
SS-281-065	14	POWER SUPPLY - INSTRUMENT PANEL SAFWP C & D
SS-281-065	16	STANDBY AFW MISC INSTRUMENTATION
SS-281-065	17	STANDBY AFW MISC ALARM & INDICATION
SS-281-065	2	SATANDBY AFW ISOLATION VALVE 9704A
SS-281-065	3	CROSSOVER VALVE 9703A
SS-281-065	4	STANDBY AFW SUCT VALVE 9629A
SS-281-065	5	STANDBY AFW DISCHARGE VALVE 9710B
SS-281-065	6	STANDBY AFW ISOLATION VALVE 9704B
SS-281-065	7	CROSSOVER VALVE 9703B
SS-281-065	8	STANDBY AFW SUCT VALVE 9629B
SS-281-065	9	STANDBY AFW RECIRC VALVE 9629B
SS-281-069	1	CONTAINMENT TV
SS-281-079	....	CONDENSATE SUPPLY TANK LEVEL INSTRUMENT TAPS
SS-281-080	....	CONDENSATE SUPPLY TANK LEVEL INSTRUMENT TAPS
SS-281-081	....	CONDENSATE SUPPLY TANK LEVEL INSTRUMENT TAPS
SS-281-141	....	EWD BATTERY ROOM GROUPED CONTROL ROOM ALARMS
SS-281-142	....	EWD AUXILIARY BUILDING ADD A-H DAMPERS AD-004 & 005
SS-281-143	....	EWD AUXILIARY BUILDING ADD A-H DAMPERS AD-001, 002 & 003
SS-281-144	....	EWD AUXILIARY GUILDING ADD GROUPED CONTROL ROOM ALARMS
SS-281-145	....	EWD SAFWP ROOM GROUPED CONTROL ROOM ALARMS
SS-281-146	....	EWD NOTES
SS-281-212	....	STANDBY AFW INSTRUMENT LIST
SS-281-213	0	BLOCK DIAGRAM INDEX
SS-281-213	1	CONDENSATE BOOSTER PUMP - RELAY & CONST. VALVE 9508D
SS-281-213	10	CONDENSATE DEMIN SYSTEM 480V MOTOR POWER FEEDS
SS-281-213	11	POWER SUPPLY CONTROL PANEL AVC-1
SS-281-213	12	CONDENSATE STORAGE TANK HEATER & CIRCULATION PUMP
SS-281-213	2	CONDENSATE BOOSTER PUMP 9A
SS-281-213	3	CONDENSATE BOOSTER PUMP 9B
SS-281-213	35	MISC ALARMS
SS-281-213	37	CONDENSATE BOOSTER PUMP ALARMS
SS-281-213	38	CONDENSATE SYSTEM INSTRUMENTATION
SS-281-213	39	CONTROL & ALARMS - MCC VC - 2 POWER PANEL 10

NUMBER	SHEET	TITLE
SS-281-213	4	CONDENSATE BOOSTER PUMP 9C
SS-281-213	40	CONDENSER AIR INLEAK STOP VALVE 9515E
SS-281-213	5	BLOWDOWN FLOW CONROL VALVE 951F & 9517F
SS-281-213	6	BLOWDOWN DISCHARGE VALVE 9518D
SS-281-213	7	BLOWDOWN DISCHARGE VALVE 9518F
SS-281-213	8	REGEN WATER PUMPS AVP 1A & 1B
SS-281-213	9	CONENSATE DEMIN SYSTEM 480V MOTOR POWER REEDS
SS-308-500	....	INSTRUMENT LIST - PIPING - FLOW TRANSMITTERS FT-2001 - FT-32032
SS-308-505	....	INSTRUMENT LIST - PIPING - FLOW INDICATORS FT-2001 - FT-2020
SS-308-506	....	INSTRUMENT LIST - PIPING - FLOW INDICATORS FT-2021. - FT-2032
SS-308-510	....	INSTRUMENT LIST - PIPING - LEVEL TRANSMITTERS LT-2001 - LT-2021
SS-308-511	....	INSTRUMENT LIST - PIPING - LEVEL TRANSMITTERS LT-2022 - LT-2027
SS-308-520	....	INSTRUMENT LIST - PIPING - LEVEL INDICATORS LI-2001 - LT-2021
SS-308-521	....	INSTRUMENT LIST - PIPING - LEVEL INDICATORS LI-2022 - LI-2042
SS-308-522	....	INSTRUMENT LIST - PIPING - LEVEL INDICATORS LI-2043 - LI-2047
SS-308-530	....	INSTRUMENT LIST - PIPING - PRESSURE TRANSMITTERS PT-2001 - PT-2021
SS-308-531	....	INSTRUMENT LIST - PIPING - PRESSURE TRANSMITTERS PT-2022 - PT-2042
SS-308-540	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2001 - PI-2021
SS-308-541	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2022 - PI-2042
SS-308-542	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2043 - PI-2063
SS-308-543	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2064 - PI-2084
SS-308-544	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2085 - PI-2105
SS-308-545	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2106 - PI-2126
SS-308-546	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2127 - PI-2147
SS-308-547	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2148 - PI-2168
SS-308-548	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2169 - PI-2189
SS-308-549	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2190 - PI-2210
SS-308-550	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2211 - PI-2231
SS-308-551	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2232 - PI-2250A
SS-308-552	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2276 - PI-2296
SS-308-553	....	INSTRUMENT LIST - PIPING - PRESSURE GAUGES PI-2293 - PI-2312
SS-308-570	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2001 - TT-2021
SS-308-571	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2022 - TT-2042
SS-308-572	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2043 - TT-2063
SS-308-573	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2064 - TT-2084
SS-308-574	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2085 - TT-2105
SS-308-575	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2001 - TT-2021

NUMBER	SHEET	TITLE
SS-308-576	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2148 - TT-2168
SS-308-577	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2148 - TT-2168
SS-308-578	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2169 - TT-2189
SS-308-579	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2190 - TT-2210
SS-308-580	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2211 - TT-2231
SS-308-581	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2232 - TT-2252
SS-308-582	....	INSTRUMENT LIST - PIPING - TEMPERATURE TRANSMITTERS TT-2253 - TT-2259
SS-308-612	....	INSTRUMENT LIST - PIPING - TEMPERATURE TEST WELLS TW-2043 - TW-2051
SS-308-630	....	INSTRUMENT LIST - PIPING - FSH-2001 - FS-2021
SS-308-631	....	INSTRUMENT LIST - PIPING - FA-2022 - FA-2040
SS-308-640	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LS-2001 THROUGH LAH-2021
SS-308-641	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LAH-2022 THROUGH LS-2042
SS-308-642	....	INSTRUMNET LIST - PIPING LEVEL SWITCHES LS-2043 THROUGH LS-2063
SS-308-643	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LS-2043 THROUGH LS-2063
SS-308-644	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LAH-2085 THROUGH LS-2094
SS-308-680	....	INSTRUMENT LIST - PIPING TAH-2001 THROUGH TS-2040
SS-308-760	....	INSTRUMENT LIST - PIPING PS-2001 THROUGH PS-2021
SS-308-761	....	INSTRUMENT LIST - PIPING PS-2022 THROUGH PS-2042
SS-308-762	....	INSTRUMENT LIST - PIPING PS-2043 THROUGH PS-2063
SS-308-763	....	INSTRUMENT LIST - PIPING PRESSURE SWITCHES PS-2063 THROUGH PS-2084
SS-308-764	....	INSTRUMENT LIST - PIPING PRESSURE SWITCHES PS-2085 THROUGH PS-2111
SS-308-764A	....	INSTRUMENT LIST - PIPING PRESSURE SWITCHES PS-2112 THROUGH PS-2114
SS-308-800	....	INSTRUMENT LIST - PIPING THERMOMETERS TI-2001 THROUGHT TI-2021
SS-308-801	....	INSTRUMENT LIST - PIPING THERMOMETERS TI-2023 THROUGH TI-2043
SS-308-802	....	INSTRUMENT LIST - PIPING THERMOCOUPLES TI-2044 THROUGH TI-2064
SS-308-830	....	INSTRUMENT LIST - PIPING FSH-2001 THROUGH FS-2021
SS-308-831	....	INSTRUMENT LIST - PIPING FLOW SWITCHES FS-2022 THROUGH FS-2042
SS-308-840	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LS-2001 THROUGH LAH-2021
SS-308-841	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LAH-2022 THROUGH LS-2042
SS-308-842	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LS-2043 THROUGH LS-2063
SS-308-843	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LS-2064 THROUGH LAH-2084
SS-308-844	....	INSTRUMENT LIST - PIPING LEVEL SWITCHES LAH-2085 THROUGH LS-2098
SS-308-880	....	INSTRUMENT LIST - PIPING TEMPERATURE SWITCHES TAH-2001 THROUGH TS-2040
SS-308-881	....	INSTRUMENT LIST - PIPING TEMPERATURE SWITCHES TAH-2022 THROUGH TS-2041
TP-3609-1	....	ELEVATION OF REACTOR VESSEL INSULATION
33013-2251	2	SECONDARY SAMPLING SYSTEM
33013-2276	....	CORS SKID, P&ID

NUMBER	SHEET	TITLE
33013-2277	....	GENERATOR HYDROGEN COOLING SKID, P&ID
33013-2278	....	INCORE DETECTORS DRIVE UNITS SKID, P&ID
33013-2279	1	WASTE EVAPORATOR SKID, P&ID
33013-2279	2	WASTE EVAPORATOR SKID, P&ID
33013-2280	....	GAS ANALYZER SKID, P&ID
33013-2281	1	PASS INSTRUMENT & PROCESS SUPPORT PANEL SKID, P&ID
33013-2281	2	PASS INSTRUMENT AND PROCESS SUPPORT PANEL SKID, P&ID
33013-2282	....	PROGRAMMED CHILLER CONTROL SKID, P&ID
33013-2283	....	TURBINE OIL RESERVOIR SKID, P&ID
33013-2284	....	GENERATOR SEAL OIL SYSTEM SKID, P&ID
33013-2285	....	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP LUBE OIL SKID, P&ID
33013-2286	....	AVT SAMPLE CHILLER SKID, P&ID
33013-2287	....	RETENTION TANK SKID, P&ID
33013-2288	....	TSC EMERGENCY DIESEL SKID, P&ID
33013-2289	....	PNEUNATIC TO CURRENT, CURRENT TO PNEUMATIC TRANSMITTER CABINET, P&ID
33013-2341	....	SPRINKLER SYSTEM AT DELUGE VALVE 8544F, P&ID
33013-2342		SPRINKLER SYSTEMS AT DELUGE VALVES 8540F AND 8546F, P&ID
33013-2343	....	SPRINKLER SYSTEM AT DELUGE VALVE 8542F, P&ID
33013-2344	....	SPRINNKLER SYSTEM AT DELUGE VALVE 8548U, P&ID
33013-2345	....	SPRINKLER SYSTEM AT DELUGE VALVE 5233F, P&ID
33013-2346	....	SPRINKLER SYSTEM AT DELUGE VALVE 5233F, P&ID
33013-2347	....	SPRINKLER SYSTEM AT DELUGE VALVE 5233F, P&ID
33013-2348	....	SPRINKLER SYSTEM AT DELUGE VALVE 5233F, P&ID
33013-2349	....	SPRINKLER SYSTEM AT DELUGE VALVES 9201F AND 9204F, P&ID
33013-2350	....	SPRINKLER SYSTEM AT DELUGE VALVES 9274F AND 9279F & VALVES 9275 &9282
33013-2351	....	SPRINKLER SYSTEM AT DELUGE VALVES 5234F AND 9219F, P&ID
33013-2352	....	SPRINKLER SYSTEM AT DELUGE VALVES 9189F AND 9247F, P&ID
33013-2353	....	SPRINKLER SYSTEM AT DELUGE VALVES 9240F AND 9244F, P&ID
33013-2354	....	SPRINKLER SYSTEM AT DELUGE VALVES 5231F AND 9242F, P&ID
33013-2355	....	SPRINKLER SYSTEM AT DELUGE VALVES 5228F, 5229F AND 5230F, P&ID
33013-2356	....	SPRINKLER SYSTEM AT DELUGE VALVES 5208F AND 5210F,P&ID
33013-2357	....	SPRINKLER SYSTEM AT DELUGE VALVES 5204F, 5206F AND 5207F, P&ID
33013-2358	....	SPRINKLER SYSTEM AT DELUGE VALVES 5209F, 5232F AND 9213F, P&ID
33013-2359	....	SPRINKLER SYSTEM AT DELUGE VALVES 9211F, 9215F AND 9217F, P&ID
10909-42	....	D.C. SYSTEM FUSE REFERENCE, MAIN DISTRIBUTION PANEL 1A
10909-74	....	D.C. SYSTEM FUSE REFERENCE, 4160V BREAKER TEST CABINETS
CD05	3	RACK NO. W2 (BOTTOM)

NUMBER	SHEET	TITLE
10905-592	....	MOV 759A CIRCULATING WATER FROM RCP
10905-593	....	MOV 759B CIRCULATING WATER FROM RCP
10905-594	....	MOV 813 REACTOR SUPPLY COOLANT LINE IN
10905-595	....	MOV 814 REACTOR SUPPLY COOLANT OUTLET
10905-596	....	MOV 817 CCW CONTAINMENT HEADER
10905-597	....	MOV 823 MU WATER TO CCW SURGE TANK
10905-710	....	AOV 745 EXCESS LETDOWN HEAT EXCHANGER CCW ISOL VLV
10905-711	....	AOV 754A RCP 1A THERMAL BARRIER CCW DISCH VLV
10905-712	....	AOV 754B RCP 1B THERMAL BARRIER CCW DISCH VLV
10905-741	....	AOV 3343, 4561 & 4562 SAFEGUARDS INDICATING LIGHTS
10905-81A	....	480V BUS 18 - UNIT 29C SERVICE WATER PUMP A
10905-81B	....	480B BUS 18 - UNIT 29D SERVICE WATER PUMP C
10905-82A	....	480V BUS 17 - UNIT 27C SERVICE WATER PUMP B
10905-82B	....	480V BUS 17, UNIT - 27D SERVICE WATER PUMP D
10905-72A	....	480V BUS 14 - UNIT 23A COMPONENT COOLING PUMP A
11302-0233	....	CCW LOOP TOTAL FLOW LOOP FT-619 INST. LOOP WIRING DIAGRAM
11302-0235	....	CCW CNMT SPRAY PUMPS COOLER FLOW LOOP FIC-649
11302-0236	....	SI PUMPS CCW OUTLET FLOW LOOP FIC-650
11302-0237	....	RHR PUMPS CCW OUTLET FLOW LOOP FIC-651
11302-0238	....	CCW SURGE TANK LEVEL LOOP LIT-618
11302-0239	....	CCW PUMPS DISCHARGE PRESSURE LOOP PIC-617
11302-0242	....	CCW FROM RCP 1A TEMP AND FLOW LOOP TIC-608, FIC-609
11302-0243	....	CCW FROM RCP 1B TEMP AND FLOW LOOP TIC-612, FIC-613
11302-0244	....	CCW PUMP INLET HEADER TEMPERATURE LOOP TIA-616
11302-0246	....	CCW HEAT EXCHNAGERS OUTLET TEMP. LOOP TIC-621
11302-0247	....	CCW TEMP FROM REACTOR SUPPORT LOOP TIC-639
11302-0248	....	COMPONENT COOLING PUMP SUCTION HEADER TEMP. LOOP TE-616
11302-0249	....	CCW HEAT EXCHANGER OUTLET TEMP. LOOP TE-621
10905-72B	....	480V BUS 16 - UNIT 16B COMPONENT COOLING PUMP B
10905-78A	....	480V BUS14 - UNIT 22A RESUAL HEAT REMOVAL PUMP A
10905-78B	....	480V BUS - UNIT 15 RESIDUAL HEAT REMOVAL PUMP B
10905-742	....	AOV 747A POST ACCIDENT SAMPLING SYSTEM
10905-743	....	AOV 747B POST ACCIDENT SAMPLING SYSTEM
10905-744	....	AOV 017 CCW SURGE TANK VENT
11302-0260	....	CONTAINMENT H2 MONITOR A LOOP H2 MONITOR
11302-0261	....	CONTAINMENT H2 MONITORE B LOOP H2 MONITOR
11302-0262	....	CONTAINMENT SUMP A LEVEL LOOP LT-2039

NUMBER	SHEET	TITLE
11302-0263	.....	COMTAINMENT SUMP A LEVEL LOOP LT-2044
11302-0264	.....	PRIMARY CONTAINMENT PRESSURE LOOP PT-944
11302-265	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-945
11302-0265	2	PRIMARY CONTAINMENT PRESSURE LOOP PT-945
11302-0266	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-946
11302-0266	2	PRIMARY CONTAINMENT PRESSURE LOOP PT-946
11302-0267	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-947
11301-0267	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-947
11302-0267	2	PRIMARY CONTAINMENT PRESSURE LOOP PT-947
11302-0268	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-948
11302-0268	2	PRIMARY CONTAINMENT PRESSURE LOOP PT-948
11302-0269	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-949
11302-0269	2	PRIMARY CONTAINMENT PRESSURE LOOP PT-949
11302-0270	1	PRIMARY CONTAINMENT PRESSURE LOOP PT-950
11302-0270	2	PRIMARY CONTAINMENT PRESSURE LOOP PT-950
11302-0271	.....	PERSONAL ACCESS HATCH PRESSURE LOOP PS-2103
11302-0272	.....	EQUIPMENT ACCESS HATCH PRESSURE LOOP PS-2104
33013-1353	9	LOGIC DIAGRAM FEEDWATER ISOLATION & AUXILIARY FEEDWATER PUMP

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

CONFIGURATION MANAGEMENT

SIMULATOR DESIGN DATA BASE LISTING:

TECHNICAL MANUALS AND TRAINING DOCUMENTS

NUMBER	TITLE
1250-C660 VOL I	496,322 KW STEAM TURBINE INSTRUCTION MANUAL
1250-C660 VOL II	496,322 KW STEAM TURBINE INSTRUCTION MANUAL
1250-C660 VOL III,1	496,322 KW STEAM TURBINE INSTRUCTION MANUAL
1250-C660 VOL III,2	496,322 KW STEAM TURBINE INSTRUCTION MANUAL
1310-C771	HEAT EXCHANGE EQUIPMENT
16597	MODEL AN-100 STATIC ANNUNCIATOR
177186	SPEEDOMAX G RECORDER MANUAL
177232	SPEEDOMAX W RECORDER MANUAL
54-A73150-B VOL II	INSTRUCTION BOOK FOR MAIN CONTROL BOARD (WOLFE & MANN)
DB 2480	RIS TEMPERATURE MONITORING PANEL DATA BULLETIN
EE-48	ACCEPT TST SPEC - ELEC. SYS. ON MSIV-1A AND MSIV-1B
I.L. 1310-1261	MAIN CONDENSER TECHNICAL MANUAL
IFRM	INSTRUMENT FAILURE REFERENCE MANUAL
K-8202	ROD POSITION INDICATION SYSTEM
N/A	SUMP B LEVEL INDICATION
N/A	ALCO DIESEL GENERATOR TECHNICAL MANUAL
N/A	WESTINGHOUSE ENGINEERING SPEC G675176, DRAWING LEGEND
N/A	RTD FAILURE TEST DATA
N/A	PRESSURIZER FOR R. E. GINNA NUCLEAR POWER PLANT
N/A	RELAY SETPOINTS
N/A	LP HTR 1 DATA SHEET
N/A	TECH MANUAL - PARTICULATE, IODINE, AND NOBLE GAS AIR MONITOR MODEL SPING
N/A	WESTINGHOUSE TRAINING MANUAL - ACCIDENT ANALYSIS
N/A	INSTRUCTION BOOK - HYDROGEN INNER-COOLED TURBINE GENERATOR
N/A	D.C. SYSTEM FUSE REEFERENCE
N/A	SETPOINT STUDY
N/A	MAIN CONTROL BOARD MANUAL
N/A	FIRST STAGE PRESSURE VS LOAD
N/A	TECHNICAL MANUAL FOR DATA ACQUISITION MODULE (MICROCOMPUTER CONTROLLED)
N/A	VALVE 20/TGO DATA
N/A	SCREENHOUSE ELEVATION CHART
N/A	R. E. GINNA PLANT ENGRAVING LIST
N/A	LP HTR 2 DATA SHEET
N/A	NET POSITIVE SUCTION HEAD COMPUTER
N/A	FECOR H2 RECOMBINER OPERATING INSTRUCTION
N/A	HEAT EXCHANGER EQUIPMENT FOR R. E. GINNA NUCLEAR POWER PLANT
N/A	GAITRONICS MODEL 370A INTERFACE

NUMBER	TITLE
N/A	BISTABLE MONITORING SYSTEM SPECIFICATION SHEET
N/A	LOAD FLOW ANALYSIS CORRESPONDENCE
N/A	RG&E MATERIAL REQUISITION FOR RIS TEMPERATURE MONITORING PANEL
N/A	RPI LAYOUT SKETCH
N/A	GOVERNOR VALVE LIFT CURVE
N/A	INSTRUCTION MANUAL FOR CONTAINMENT MONITOR 876-A
N/A	WESTINGHOUSE TRAINING MANUAL - PLANT LAYOUT AND FAMILIARIZATION
N/A	APPLICATION OF SYMBOLS FOR INSTRUMENT DIAGRAMS
N/A	CONDENSATE COOLER DATA SHEET
N/A	TURBINE DRIVEN AUXILIARY FEED PUMP TECHNICAL MANUAL
N/A	CONTROLLED LEAKAGE SEAL REACTOR COOLANT PUMP MODEL (V11 001-A1)
N/A	INSTRUCTION AND MAINTENANCE MANUAL - STRIP CHART RECORDER MODEL M11B
N/A	SAS/PPCS ENGINEERING DATABASE
N/A	KEY ASSIGNMENT LIST
N/A	RECORDER 17 INFORMATION
N/A	MODEL 355 MULTI-TONE GENERATOR
N/A	R. E. GINNA PLANT BILL OF MATERIALS
N/A	480V/4160V MOTOR INRUSH CURRENT
N/A	R. E. GINNA STATION TECHNICAL SPECIFICATIONS
N/A	CONTAINMENT SUMP ELEVATIONS
N/A	MCB SWITCHES
N/A	GINNA STATIN DISTRIBUTION SYSTEM LOAD FLOW ANALYSIS
N/A	FAST RESPONSE AC REGULATOR MODEL P3300
N/A	BORON CONCENTRATION TABLES
N/A	TRAVELLING SCREENS CONTROL DIAGRAM
N/A	INSTRUCTION MANUAL - REACTOR PRESSURE VESSEL
N/A	HP HTR 5 DATA SHEET
N/A	MISCELLANEOUS MCB HARDWARE INFORMATION - LETTER 3786-RW-56
N/A	LP HTR 4 DATA SHEET
N/A	TYPE WMA MAG-A-STAT VOLTAGE REGULATOR FOR THE BRUSHLESS EXCITATION SYS.
N/A	ELEMENTARY WIRING DIAGRAM INDEX
N/A	CRDM HEAT LOAD
N/A	R. E. GINNA VALVE INDEX
N/A	VERTICAL STEAM GENERATOR FOR R. E. GINNA NUCLEAR POWER PLANT
P-447952-4	WORTHINGTON FEEDWATER PUMPS
PG 1	VALVE STROKE TIMES
PG 2	VALVE STROKE TIMES

NUMBER	TITLE
PG 3	VALVE STROKE TIMES
PG 4	VALVE STROKE TIMES
PG 5	VALVE STROKE TIMES
PG 6	VALVE STROKE TIMES
PHOTO	PLANT PHOTOGRAPHS (STARTUP)
PHOTO	PLANT PHOTOGRAPHS (STARTUP)
PHOTO	PLANT PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS
PHOTO	FIRE PANEL PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS (STARTUP)
PHOTO	100% BOL PLANT DATA PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS (STARTUP)
PHOTO	PLANT PHOTOGRAPHS
PHOTO	PLANT PHOTOGRAPHS (SHUTDOWN)
PRESSURIZER HEATERS	PRESSURIZER HEATERS CONTROL GROUP PANEL 1A1
PRESSURIZER HEATERS	BACKUP HEATERS PRESSURIZER WATTAGE AND PRESSURIZER CONNECTIONS
PRESSURIZER HEATERS	PRESSURIZER HEATER CONNECTIONS
PRESSURIZER HEATERS	BACKUP HEATERS AND CONTROL GROUP AND PRESSURIZER HEATER CONNECTIONS
PRESSURIZER HEATERS	PRESSURIZER HEATERS CONTROL AND BACKUP GROUPS
PUMP CURVE	COMPONENT COOLING WATER PUMPS 1A & 1B
PUMP CURVE	DIESEL FIRE PUMP
PUMP CURVE	ELECTRIC FIRE PUMP
PUMP CURVE	CONTAINMENT SUMP A PUMPS A & B
PUMP CURVE	BORIC ACID TRANSFER PMPS 1A & 1B
PUMP CURVE	CIRCULATING WATER DISCHARGE FLOW - 2 PUMP OPERATION
PUMP CURVE	MONITOR TANK PUMP
PUMP CURVE	STEAM DRIVEN AUXULIARY FEEDWATER PUMP
PUMP CURVE	VACUUM PRIMING PUMPS
PUMP CURVE	RESIDUAL HEAT REMOVAL PUMP 1B
PUMP CURVE	HEATER DRAIN TANK PUMPS A & B
PUMP CURVE	RESIDUAL HEAT REMOVAL PUMP 1A
PUMP CURVE	REACTOR MAKE-UP WATER PUMPS A & B
PUMP CURVE	CONDENSATE PUMPS A, B, C
PUMP CURVE	SERVICE WATER PUMP 1A

NUMBER	TITLE
PUMP CURVE	CONTAINMENT SPRAY PUMPS 1A & 1B
PUMP CURVE	SAFETY INJECTION PUMPS
PUMP CURVE	RWST PURIFICATION PUMP
PUMP CURVE	CIRCULATING WATER PUMPS 1A & 1B
PUMP CURVE	REACTOR COOLANT DRAIN TANK PMP 1A
PUMP CURVE	SPENT FUEL PIT PUMP
PUMP CURVE	SAFETY INJECTION PUMP 1C
PUMP CURVE	STANDBY AUXILIARY FEEDWATER PUMPS A & B
PUMP CURVE	SAFETY INJECTION PUMP 1B
PUMP CURVE	MOTOR DRIVEN AUXILIARY FEEDWAER PUMP 1B
PUMP CURVE	SAFETY INJECTION PUMP 1A
PUMP CURVE	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP 1A
RG&E-1 67N-11518	FOXBORO DATA MANUAL
RGE-10	REACTOR COOLANT SYSTEM
RGE-11	REACTOR VESSEL AND INTERNALS
RGE-12	CORE COMPONENTS AND CONTROL ROD DRIVE MECHANICS
RGE-13	REACTOR COOLANT PUMP
RGE-14	PRESSURIZER AND PRESSURIZER RELIEF TANK
RGE-15	PRIMARY CHEMISTRY AND SAMPLING
RGE-16	CHEMICAL AND VOLUME CONTROL SYSTEM
RGE-17	BORON RECYCLE SYSTEM
RGE-18	REACTOR MAKEUP CONTROL SYSTEM
RGE-19	PRESSURIZER PRESSURE AND LEVEL CONTROL SYSTEM
RGE-20	REACTOR COOLANT TEMPERATURE INSTRUMENTATION SYSTEM
RGE-21	CONTAINMENT AND CONTAINMENT ISOLATION SYSTEM
RGE-22	CONTAINMENT AND AUXILIARY BUILDING VENTILATION
RGE-23	ENGINEERED SAFETY FEATURES
RGE-24	CONTAINMENT SPRAY SYSTEM
RGE-25	RESIDUAL HEAT REMOVAL SYSTEM
RGE-26	SAFETY INJECTION SYSTEM
RGE-27	EMERGENCY CORE COOLING SYSTEM
RGE-28	COMPONENET COOLING WATER SYSTEM
RGE-29	ROD INSERTION LIMIT CIRCUITS
RGE-30	ROD CONTROL SYSTEM
RGE-31	ROD POSITION INDICATION SYSTEM
RGE-32	INCORE INSTRUMENTATION SYSTEM
RGE-33	EXCORE INSTRUMENTATIN SYSTEM

NUMBER	TITLE
RGE-34	PLANT COMPUTER
RGE-35	REACTOR PROTECTION SYSTEM
RGE-36	SPENT FUEL PIT COOLING
RGE-37	FUEL HANDLING SYSTEM
RGE-38	WASTE DISPOSAL SYSTEM
RGE-39	RADIATION MONITORING SYSTEM
RGE-40	MAIN STEAM SYSTEM
RGE-41	MAIN TURBINE AND TURBINE AUXILIARIES
RGE-42	AUXILIARY FEED SYSTEM
RGE-43	CONDENSATE AND FEEDWATER SYSTEMS
RGE-44	STEAM GENERATOR LEVEL CONTROL SYSTEM
RGE-45	STEAM DUMP SYSTEM
RGE-46	SECONDARY CHEMISTRY CONTROL
RGE-47	INSTRUMENT AND SERVICE AIR SYSTEM
RGE-48	MAIN GENERATOR AUXILIARIES
RGE-49	MAIN TURBINE AND ELECTROHYDRAULIC CONTROL SYSTEM
RGE-5	MAIN GENERATOR
RGE-50	CIRCULATING WATER SYSTEM
RGE-51	SERVICE WATER SYSTEM
RGE-52	NUCLEAR POWER DISTRIBUTION
RGE-53	INTRODUCTIN TO ACCIDENT ANALYSIS
RGE-54	LOCAL OPERATING STATIONS
RGE-54-C-72693B I	RADIATION MONITORING SYSTEM OPERATING & MAINTENANCE MANUAL
RGE-54-C-72693B II	RADIATION MONITORING SYSTEM OPERATING & MAINTENANCE MANUAL
RGE-6	4160V ELECTRICAL DISTRIBUTION SYSTEM
RGE-7	480 VOLT ELECTRICAL DISTRIBUTION SYSTEM
RGE-8	STANDBY GENERATION DIESEL GENERATORS
RGE-9	AC INSTRUMENT AND DC CONTROL POWER
RGE-9 MOD	AC INSTRUMENT AND DC CONTROL POWER - MODIFIED
RH33007-AR6KN	NUCLEAR INSTRUMENTATION SYSTEM
RH33008-AR6KN I	FULL LENGTH ROD CONTROL
RH33008-AR6KN II	FULL LENGTH ROD CONTROL
RH33008-AR6KN III	FULL LENGTH ROD CONTROL
ROC-0111	THERMAL KIT
TANK CAP. SHT 1	TANK CAPACITY DATA SHEET
TANK CAP. SHT 2	TANK CAPACITY DATA SHEET
TANK CAP. SHT 3	TANK CAPACITY DATA SHEET

NUMBER	TITLE
TANK CAP. SHT 4	TANK CAPACITY DATA SHEET
TANK CAP. SHT 5	TANK CAPACITY DATA SHEET
TANK CAPACITY	APPROXIMATE VOLUME IN PRT AT VARIOUS LEVELS
TANK CAPACITY	NAOH TANK
W-1001	FEED/STEAM FLOW ELEMENTS 466, 476 CALIBRATION
W-1001	FEED FLOW ORIFICE CALIBRATION
W-1001-S	FEED/STEAM FLOW ELEMENTS 464, 474 CALIBRATION
WCAP-7303 VOL I	TECHNICAL MANUAL FOR MINIATURE DETECTOR FLUX MAPPING SYSTEM

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

PLANT PROCEDURES

NUMBER	TITLE
.....	.....
.....	ISOLTAION OF VALVE 348C
.....	.....
A-1.1	LOCKED RADIATION AREAS
PT-22.9	MECHANICAL MANIFOLD "B" LEAKRATE TEST
T-17M	TURBINE LUBE OIL COOLERS ALTERNATING
)-1.1	PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN
)-1.2.2	CRITICAL ROD POSITION CALCULATION
A-25	REPORTING OF UNUSUAL PLANT CONDITIONS
A-25.1	GINNA STATION EVENT REPORT
A-25.2	I&C/ELECTRICAL EQUIPMENT FAILURE (SAFETY RELATED) REPORT
A-3	CONTAINMENT VESSEL ACCESS REQUIREMENTS
A-5.1	PROTECTIVE CLOTHING LOCKER INVENTORY
A-52.1	SHIFT ORGANIZATION AND RESPONSIBILITIES
A-52.11	CONDUCT OF ACTIVITIES IN THE CONTROL ROOM
A-52.12	INOPERABILITY OF NON-SAFEGUARDS EQUIPMENT
A-52.2	CONTROL OF LOCKED VALVE AND BREAKER OPERATION
A-52.4	CONTROL OF LIMITING CONDITIONS FOR OPERATING EQUIPMENT
A-52.4.1	CONTROL OF LCO OF FIRE SUPPRESSION AND DETECTION EQUIPMENT
A-52.5	CONTROL OF LIMITING CONDITIONS FOR SYSTEM SPECIFICATIONS
A-54.4	DUTY ENGINEER RESPONSIBILITIES
A-54.4.1	COLD WEATHER WALKDOWN PROCEDURE
A-56.3	GINNA CONTROL ROOM CURVE BOOK
A-60	GINNA STATION D.C. FUSE PROGRAM
A-7	PROCEDURES FOR HANDLING ILLNESS OR INJURIES AT GINNA STATION
A-7.1	FIRST AID SUPPLY INVENTORY FOR PLANT STRETCHER BOXES; EMERGENCY **
AP-CCW.1	LEAKAGE INTO THE COMPONENT COOLING LOOP
AP-CCW.2	LOSS OF CCW DURING POWER OPERATION
AP-CCW.3	LOSS OF CCW - PLANT SHUTDOWN
AP-CR.1	CONTROL ROOM INACCESSIBILITY
AP-CVCS.1	CVCS LEAK
AP-CVCS.2	IMMEDIATE BORATION
AP-CW.1	LOSS OF A CIRC WATER PUMP
AP-ELEC.1	LOSS OF #12 SS TRANSFORMER
AP-ELEC.2	SAFEGUARD BUSSES LOW VOLTAGE OR SYSTEM LOW FREQUENCY
AP-FW.1	PARTIAL OR COMPLETE LOSS OF MAIN FEEDWATER
AP-IA.1	LOSS OF INSTRUMENT AIR

NUMBER	TITLE
AP-PRZR.1	ABNORMAL PRESSURIZER PRESSURE
AP-RCC.1	CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION
AP-RCC.2	RCC/RPI MALFUNCTION
AP-RCP.1	RCP SEAL MALFUNCTION
AP-RCS.1	REACTOR COOLANT LEAK
AP-RCS.2	LOSS OF REACTOR COOLANT FLOW
AP-RCS.3	HIGH REACTOR COOLANT ACTIVITY
AP-RHR.1	LOSS OF RHR
AP-RHR.2	LOSS OF RHR AT LOW LOOP LEVELS
AP-SW.1	LOSS OF SERVICE WATER
AP-TURB.1	TURBINE TRIP WITHOUT REACTOR TRIP
AP-TURB.2	AUTOMATIC TURBINE RUNBACK
AP-TURB.3	TURBINE VIBRATIONS
AP-TURB.4	LOSS OF CONDENSER VACUUM
AR-12A-1	86T/12A LOCKOUT
AR-12A-2	86B/12A LOCKOUT
AR-12A-3	86T BU/12A LOCKOUT
AR-12B-1B	86T/12B LOCKOUT
AR-12B-2B	86B/12B LOCKOUT
AR-12B-3	86T BU/12B LOCKOUT
AR-3-2	POWER RANGE HIGH RANGE REACTOR TRIP 2/4 108%
AR-A-01	R.H.R. PUMP HI PRESSURE 550 PSI
AR-A-02	VCT LEVEL 14 % 86
AR-A-03	LO PRESS LTDWN RELIEF VLV HI TEMP 130F
AR-A-04	REGEN HX LETDOWN OUT HI TEMP 395F
AR-A-05	CCW SURGE TANK HI LEVEL 58.8%
AR-A-06	CONT. SPRAY PUMP COOLING WATER OUT LOW FLOW 15 GPM
AR-A-07	RCP 1A CCW RETURN HI TEMP OR LOW FLOW, 165 GPM, 125 F
AR-A-08	R.C.P. LOOP A LAB. SEAL HIGH INLET TEMPERATURE
AR-A-09	RHR PUMP COOLING WATER OUTLET LOW FLOW, 15 GPM
AR-A-1	RHR PUMP HI PRESS 550 PSI
AR-A-10	VCT PRESSURE 15 PSI 65
AR-A-11	LETDOWN LINE HIGH PRESSURE
AR-A-12	NRHX LETDOWN OUTLET HIGH TEMPERATURE
AR-A-13	COMP. COOLING SURGE TANK LO LEVEL 41.2%
AR-A-14	SI PUMPS COOLING WATER OUTLET LOW FLOW 25 GPM
AR-A-15	RCP 1B CCW RETURN HIGH TEMP OR LOW FLOW, 165 GPM, 125 F

NUMBER	TITLE
AR-A-16	RCP 1B LABYRINTH SEAL INLET HI TEMP 150 F
AR-A-17	MOTOR OFF RCP CCP
AR-A-18	VCT HIGH TEMPERATURE 145 DEGREES F
AR-A-19	LETDOWN LINE HI FLOW 70 GPM
AR-A-2	VCT LEVEL 14% 86
AR-A-20	RESIDUAL HEAT REMOVAL LOOP LO FLOW 2900 GPM
AR-A-21	COMP. COOLING HX OUT HI TEMP 120 F
AR-A-22	CCW PUMP DISCHARGE LO PRESSURE, 60 PSI
AR-A-23	COMP. COOL. WATER FROM SUPPORT COOLER, HI TEMP.
AR-A-24	RCP 1A OIL LEVEL +- 1.25
AR-A-25	CONTAINMENT VENTILATION ISOLATION
AR-A-26	CONTAINMENT ISOLATION.....
AR-A-27	CONTAINMENT SPRAY 2/3 + 2/3 >28 PSI
AR-A-28	CONTAINMENT SPRAY CHANNEL ALERT
AR-A-29	COOLING FAN REACTOR CAVITY COOLER WATER OUTLET HI TEMP 150 DEGREES F
AR-A-3	LO PRESS LTDN RELIEF VLV HI TEMP 130 F
AR-A-30	COMPONENT COOLING PUMP INLET HEADER HI TEMPERATURE 150 DEGREES F
AR-A-31	COMPONENT COOLING LOOP LOW FLOW 1800 GPM
AR-A-32	RCP 1B OIL LEVEL +- 1.25
AR-A-4	REGEN HX LETDOWN OUT HI TEMP 395 F
AR-A-5	CCW SURGE TANK HI LEVEL 58.8%
AR-AA-01	SERVICE WATER REDUNDANT RETURN LINE LOW FLOW
AR-AA-02	AVT WATER TREATMENT PANEL TROUBLE
AR-AA-03	STANDBY AUXILIARY FEEDWATER CONDENSATE STORAGE TANK HI/LOW LEVEL
AR-AA-04	STANDBY AUXILIARY FEEDWATER HVAC TROUBLE
AR-AA-05	STDBY AUX FW PMP C OR D TRIP
AR-AA-06	RCS OVERPRESSURE ARM/INHIBIT LOOP A SELECT
AR-AA-07	RCS OVERPRESSURE ARM/INHIBIT LOOP B SELECT
AR-AA-08	RCS SUBCOOLING MARGIN MONITOR < 40 DEGREES F
AR-AA-09	COND BSTR PMP PRESS TRIP 100 PSI 425
AR-AA-10	COND BSTR PMP OVERCURRENT TRIP
AR-AA-11	STDBY AUX. FW C TRANSFER OR TEST SW OFF NORMAL
AR-AA-12	STDBY AUX. FW PUMP D TRANSFER OR TEST SW OFF NORMAL
AR-AA-13	PRESSURIZER SAFETY VALVE POSITION
AR-AA-14	N2 ACCUM V-801A LO PRESS 725 PSI
AR-AA-15	N2 ACCUM V-801B LO PRESSURE 725 PSI
AR-AA-16	EM GEN - SECURITY

NUMBER	TITLE
AR-AA-17	CNDST BSTR PMP DISCH HI PRESS 400 PSIG
AR-AA-18	REACTOR COOLANT PUMP VIBRATION ALERT
AR-AA-19	STDBY AUX. FW PUMP C DISCH HI FLOW
AR-AA-20	STDBY AUX. FW PUMP D DISCH HI FLOW 245 GPM
AR-AA-21	AUXILIARY FEEDWATER DEFEAT SWITCH
AR-AA-22	RCS OVERPRESS. PROTECTION TRAIN A HI PRESSURE
AR-AA-23	RCS OVERPRESS. PROTECTION TRAIN B HI PRESSURE
AR-AA-24	UPS-SECURITY
AR-AA-25	COND SYS LO PRESS 300 PSI
AR-AA-26	REACTOR COOLANT PUMP VIBRATION DANGER
AR-AA-27	STDBY AUX. FW PUMP C DISCH HI PRESS 1365 PSI
AR-AA-28	STDBY AUX. FW PUMP D DISCH HI PRESS 1365 PSI
AR-AA-29	CONDENSATE SYSTEM LO PRESSURE DROP
AR-AA-30	COND BSTR PMP LO SUCT PRESS 100 PSI
AR-AA-31	RCS OVERPRESSURE PROTECTION TRAIN C HI PRESSURE
AR-AA-32	HVAC SECURITY
AR-B-01	RCP 1A #1 SEAL OUT HI TEMP 190 F
AR-B-02	RCP 1B #1 SEAL OUT HI TEMP 190 F
AR-B-03	RCP 1A STAND PIPE HI LEVEL + 1 FT.
AR-B-04	RCP 1B STAND PIPE HI LEVEL + 1 FT
AR-B-05	REACTOR TRIP BY-PASS BRKR A OR B CLOSED
AR-B-06	PROTECTION CHANNEL NO. 1 TEST
AR-B-07	REACTOR MAKEUP WATER TANK LO LEVEL
AR-B-08	RWST HI-LO LEVEL 95 % 28
AR-B-09	RCP 1A LABYR SEAL LO DIFF PRESS 15" H20
AR-B-10	RCP 1B LABYR SEAL LO DIFF PRESS 15" H20
AR-B-11	RCP LOOP A STANDPIPE LEVEL LOW -4 FT
AR-B-12	RCP 1B STANDPIPE LO LEVEL -4 FT.
AR-B-13	SEAL INJECTION FILTER HI DIFF. PRESSURE 20 PSID
AR-B-14	PROTECTION CHANNEL #2 TEST
AR-B-15	BORIC ACID TANK HI-LO LEVEL 55 % 75
AR-B-16	REFUEL WATER STORAGE TANK LO LO LEVEL 15%
AR-B-17	RCP A NO. 1 SEAL HI-LO FLOW 5.5 GPM 0.25
AR-B-18	RCP B NO.1 SEAL HI-LO FLOW 5.5 GPM 0.25
AR-B-19	RCP LOOP A NO. 1 SEAL BYPASS LO FLOW 0.6 GPM
AR-B-20	RCP LOOP B NO. 1 SEAL BYPASS LO FLOW 0.6 GPM
AR-B-21	RCP TEMP RECORDER

NUMBER	TITLE
AR-B-22	PROTECTION CHANNEL #3 TEST
AR-B-23	BORIC ACID TANK LO LO LEVEL 10%
AR-B-24	SPRAY ADD TANK LO LEVEL 90%
AR-B-25	RCP A NO. 1 SEAL LO DIFF PRESS 220 PSID
AR-B-26	RCP B NO. 1 SEAL LO DIFF PRESS 220 PSID
AR-B-27	RCS LOOP A LO FLOW CHANNEL ALERT
AR-B-28	RCS LOOP B LO FLOW CHANNEL ALERT
AR-B-29	RCP BREAKER CHANNNEL ALERT
AR-B-30	PROTECTION CHANNEL #4 TEST
AR-B-31	BORIC ACID TANK TEMP. OR N2 PRESSURE 155 DEGREES F 175 DEGREES F
AR-B-32	CONTAINMENT RECIRC. FAN VIBRATION
AR-C-01	CONTAINMENT RECIRC. SYSTEM LO AIR FLOW
AR-C-02	CONTAINMENT RECIRC. COOLERS WATER OUTLET HI TEMPERATURE 217 DEGREES F
AR-C-03	ACCUMULATOR 1A LEVEL 57% 75%
AR-C-04	ACCUMULATOR 1B LEVEL 57% 75
AR-C-05	PPCS ROD SEQUENCE OR ROD DEVIATION
AR-C-06	ROD CONTROL NON-URGENT FAILURE
AR-C-07	INSERTION LIMIT BANK "A" LO
AR-C-08	INSERTION LIMIT BANK "A" LO-LO
AR-C-09	CONTAINMENT RECIRC SYSTEM DAMPER FAILURE
AR-C-10	CONTAINMENT RECIRC. COOLERS WATER OUTLET LO FLOW 920 GPM
AR-C-11	LOOP B ACCUMULATOR PRESSURE 720 PSI 760
AR-C-12	LOOP "A" ACCUMULATOR PRESSURE 720 PSI 760
AR-C-13	BATTERY ROOM LOSS OF VENTILATION
AR-C-14	ROD BOTTOM ROD STOP
AR-C-15	INSERTION LIMIT BANK "B" LO
AR-C-16	INSERTION LIMIT BANK "B" LO-LO
AR-C-17	CONTAINMENT VENT SYSTEM
AR-C-18	CONTAINMENT SUMP "A" PUMP AUTO START
AR-C-19	CONTAINMENT SUMP "A" HI LEVEL
AR-C-20	CONTAINMNET SUMP "B" HI LEVEL
AR-C-21	ROD CONTROL M-G SET TRIPPED
AR-C-22	ROD WITHDRAWAL BANK D HIGH 95%
AR-C-23	INSERTION LIMIT BANK C LO
AR-C-24	INSERTION LIMIT BANK C LO LO
AR-C-25	CONTAINMENT PRESSURE CHANNEL ALERT
AR-C-26	MANUAL TRIP CHANNEL ALERT

NUMBER	TITLE
AR-C-27	PRESSURIZER LO PRESSURE SI CHANNEL ALERT 1750 PSIG
AR-C-28	PRESSURIZER LO PRESSURE SI CHANNEL ALERT 1750 PSIG
AR-C-29	MRPI SYSTEM FAILURE
AR-C-30	ROD CONTROL URGENT FAILURE ROD STOP
AR-C-31	INSERTION LIMIT BANK D LO
AR-C-32	INSERTION LIMIT BANK D LO LO
AR-C-7	INSERTION LIMIT BANK A LO
AR-D-01	MANUAL TRIP
AR-D-02	NIS POWER RANGE 2.4 108%
AR-D-03	OTDT TRIP
AR-D-04	PRESSURIZER HIGH LEVEL 87%
AR-D-05	STEAM GENERATOR LO LO FEEDWATER LEVEL LOOP A 2/3 17%
AR-D-06	STEAM GENERATOR LO-LO FEEDWATER LEVEL LOOP B 2/3 17%
AR-D-07	REACTOR COOLANT LOW FLOW LOOP A & B
AR-D-08	4KV BUS UNDER VOLTAGE 70% OF NORM..
AR-D-1	MANUAL TRIP
AR-D-10	NIS POWER RANGE LO TANGE REACTOR TRIP 2/4 24%
AR-D-11	OVER POWER DIFF. TEMP (DELTA T)
AR-D-12	PRESSURIZER HI PRESSURE 2377 PSI
AR-D-13	STEAM GENERATOR FEED WATER LO FLOW AND LEVEL - LOOP A FF < SF 30%
AR-D-14	STEAM GENERATOR FEED WATER LOW FLOW AND LEVEL - LOOP B FF < SF 30%
AR-D-15	RCS LOOP A LOW FLOW 2/3 91%.....
AR-D-16	4KV BUS UNDER FREQUENCY 57.7 HZ
AR-D-17	REACTOR COOLANT PUMPS TRIPPED
AR-D-18	INTERMEDIATE RANGE REACTOR TRIP 1/2 25%
AR-D-19	PRESSURIZER LO PRESSURE SI 1750 PSIG
AR-D-20	PRESSURIZER LO PRESSURE TRIP 1873 PSI
AR-D-21	STEAM LINE LO LO PRESSURE - LOOP A 514 PSI
AR-D-22	STEAM LINE LO LO PRESSURE - LOOP B 514 PRESS
AR-D-23	RCS LOOP B LO FLOW 2/3 91%
AR-D-24	TURBINE AUTO STOP
AR-D-26	SOURCE RANGE HI FLUX LEVEL REACTOR TRIP
AR-D-28	CONTAINMENT PRESSURE 4 PSI
AR-D-3	OT/_\ T TRIP
AR-D-30	ZIRCONIUM GUIDE TUBE TRIP
AR-D-31	MANUAL SAFETY INJECTION
AR-D-32	TURBINE VALVES

NUMBER	TITLE
AR-D-4	PRESSURIZER HI LEVEL 87%
AR-D-5	STEAM GEN LO-LO LEVEL LOOP A 2/3 17%
AR-D-6	STEAM GEN LO-LO LEVEL LOOP B 2/3 17%
AR-D-7	REACTOR COOLANT LOOP A & B LO FLOW
AR-D-8	4KV BUS UNDER VOLTAGE 70% OF NORM
AR-D/G-A-2	DAY TANK LO-LO LEVEL
AR-D/G-A-23	LOSS OF NORMAL DC
AR-D/G-B-16	SHUTDOWN RESET
AR-D/G-B-17	LOSS OF NORMAL DC
AR-DGA-23	LOSS OF NORMAL DC
AR-E-01	NIS CHANNEL TEST
AR-E-04	POWER RANGE UPPER DETECT FLUX DEV. OR AUTO DEFEAT
AR-E-05	SOURCE RANGE HI SHUTDOWN FLOX ALARM BLOCKED
AR-E-06	LOSS A INSTR. BUS
AR-E-07	NIS TRIP BYPASS
AR-E-09	INTERMEDIATE RANGE 1 LOSS OF COMPENSATING VOLTAGE
AR-E-10	INTERMEDIATE RANGE LOSS OF DETECTOR VOLTAGE
AR-E-11	CONTROL ROOM HVAC ISOLATION
AR-E-12	NIS POWER RANGE LOWER DETECTOR HIGH FLUX DEV. OR AUTO DEFEAT
AR-E-13	INTERMEDIATE RANGE HI FLUX LEVEL ROD STOP 20%
AR-E-14	LOSS B INSTR. BUS
AR-E-15	CONTAINMENT PRESSURE DEVIATION
AR-E-16	RMS PROCESS MONITOR HIGH ACTIVITY
AR-E-17	INTEMEDIATE RANGE 2 LOSS OF COMPENSATING VOLTAGE
AR-E-18	NIS POWER RANGE LOSS OF DETECTOR VOLTAGE
AR-E-19	NIS POWER RANGE SINGLE CHANNEL HIGH RANGE ALERT 108%
AR-E-2	SOURCE RANGE LOSS OF DETECTOR VOLTAGE
AR-E-20	R-10A OR R-10B PUMP TRIP
AR-E-21	POWER RANGE OVERPOWER ROD STOP 103%
AR-E-22	LOSS C INSTR. BUS
AR-E-23	EYE WASH
AR-E-24	RMS AREA MONITOR HIGH ACTIVITY
AR-E-25	MCC 1C AND 1D AUXILIARY BREAKER CABINET ALARM
AR-E-26	NIS POWER RANGE CHANNEL DEVIATION
AR-E-27	NIS POWER RANGE SINGLE CHANNEL LO RANGE ALERT 24%
AR-E-28	NIS POWER RANGE ROD DROP - ROD STOP -5%/5 SEC
AR-E-29	SOURCE RANGE HI FLUX AT SHUTDOWN

NUMBER	TITLE
AR-E-30	LOSS D INSTR BUS
AR-E-31	CONTAINMENT RECIRC. FAN CONDENSATE HI-HI LEVEL
AR-E-32	ROD CONTROL SYSTEM GROUNDED
AR-E-8	RMS CHANNEL TEST
AR-F-01	PRESSURIZER RELIEF TANK LIQUID HI TEMP 220 DEGREES F
AR-F-02	PRESSURIZER HI PRESSURE 2310 PSI
AR-F-03	PRESSURIZER HI LEVEL 70%
AR-F-04	PRZR LEVEL DEVIATION -5 NORMAL +5
AR-F-05	PRZR HEATER BKR. TRIP
AR-F-05	PRZR VAPOR HI TEMP 665
AR-F-07	RCS LOOP A LO TAVG 545 F
AR-F-08	RCS LOOP B LO TAVG 545 F
AR-F-09	PRT HI PRESS 5 PSI.....
AR-F-10	PRZR LO PRESS 2185 PSI
AR-F-11	PRZR LO LEVEL 13%
AR-F-12	PRZR SURGE LINE LO TEMP 550 DEGREES F
AR-F-13	PRZR LIQUID HI TEMP 665 DEGREES F
AR-F-14	CHARGING PUMP SPEED
AR-F-15	RCS TAVG DEV 4 F
AR-F-16	AVG TAVG - TREF DEVIATION +-5 F
AR-F-17	PRZR RELIEF TANK LEVEL 60.8%, 84.5
AR-F-18	PZR SAFETY VLV OUTLET HI TEMP 145 F
AR-F-19	PRZR PORV OUTLET HI TEMP 145 F
AR-F-20	PRZR SPRAY LINE LO TEMP 475 DEGREES F
AR-F-21	HI COND. PRESS OR LOSS OF BOTH CIRC. WATER PUMPS
AR-F-22	REACTOR COOLANT LO PRESS 410 PSI
AR-F-23	REACTOR COOLANT OVERTEMP DELTA T SINGLE CHANNEL ALERT
AR-F-24	RCS AVG DT DEVIATION 3 F
AR-F-25	REACTOR VESSEL FLANGE LEAKOFF HI TEMP 20 ABV AMB
AR-F-26	PRZR HI PRESS. SINGLE CHANNEL ALERT 2377 PSI
AR-F-27	PRESSURIZER LO PRESS CHANNEL ALERT 1873 PSI
AR-F-28	PRESSURIZER HIGH LEVEL CHANNEL ALERT 87%
AR-F-29	PPCS AXIAL OR RADIAL TILT
AR-F-30	AUTO. TURBINE RUNBACK OVERPOWER DELTA T
AR-F-31	OTDT TURBINE RUNBACK
AR-F-32	REACTOR COOLANT OVERPOWER DELTA T SINGLE CHANNEL ALERT
AR-G-01	BORIC ACID FLOW DIVIATION

NUMBER	TITLE
AR-G-02	FF > SF LOOP A .8 X 10E6 LB/HR
AR-G-03	S/G A LEVEL DEVIATION +- 7%
AR-G-04	S/G A HI LEVEL CHANNEL ALERT 67%
AR-G-05	S/G B LEVEL DEVIATION +- 7%
AR-G-06	S/G B HIGH LEVEL CHANNEL ALERT 67%
AR-G-07	FF > SF LOOP B .8 X 10E6 LB/HR
AR-G-10	RCS LOOP B HIGH TAVG 578 F
AR-G-11	LOW STEAM PRESSURE LOOP "A" 600 PSI
AR-G-12	S/G A HI LEVEL LOOP 67%
AR-G-13	LOW STEAM PRESSURE LOOP "B" 600 PSI
AR-G-14	S/G B HI LEVEL 67%
AR-G-15	STEAM DUMP
AR-G-16	REHEATER DRAIN TANK HI LEVEL
AR-G-17	RMW FLOW DEVIATION
AR-G-18	STEAM GENERATOR LOOP "A" ISOLATION
AR-G-19	S/G A LO FW FLOW CHANNEL ALERT .8 X 10E6 LB/HR
AR-G-20	S/G A LO LEVEL CHANNEL ALERT 30%
AR-G-21	S/G B LO FW FLOW CHANNEL ALERT .8 X 10E6 LB/HR
AR-G-22	S/G B LO LEVEL CHANNEL ALERT 30%
AR-G-23	STEAM GENERATOR LOOP "B" ISOLATION
AR-G-24	PH RECORDER
AR-G-25	MOTOR OFF CTR SECT PUMPS EXCEPT MAIN & AUX FEED PUMPS
AR-G-26	STEAM GENERATOR LOOP "A" HI STEAM FLOW
AR-G-27	STEAM LINE LO LO PRESSURE LOOP "A" CHANNEL ALERT 514 PSI
AR-G-28	STEAM GENERATOR "A" LO LO LEVEL SINGLE CHANNEL ALERT.17%
AR-G-29	STEAM LINE LO LO PRESSURE LOOP "B" CHANNEL ALERT 514 PSI
AR-G-3	S/G A LEVEL DEVIATION +/- 7%
AR-G-30	STEAM GENERATOR "B" LO LO LEVEL SINGLE CHANNEL ALERT 17%
AR-G-31	STEAM GENERATOR LOOP "B" HI STEAM FLOW
AR-G-32	TURBINE DC OIL PUMP RUNNING 15 PSI
AR-G-5	S/G B LEVEL DEVIATION +/- 7%
AR-G-8	4 KV MOTOR OVERLOAD
AR-G-9	RCS LOOP A HIGH TAVG 578 F
AR-H-01	FEED WATER PUMP LO SUCT PRESS 185 PSI
AR-H-03	FEED PUMP SEAL WATER FILTER HI DELTA P 15 PSI
AR-H-04	MAIN FEED PUMP OIL SYSTEM
AR-H-05	SECONDARY CHEMICAL FEED TANK LOW LEVEL

NUMBER	TITLE
AR-H-06	CCW SERVICE WATER LO FLOW 1000 GPM
AR-H-07	HIGH CONDENSER PRESSURE 25.5 HG
AR-H-08	INSTRUMENT AIR LO PRESS 100 PSI
AR-H-09	AUX. FEED PUMP COOLING WATER FILTER HIGH DIFFERENTIAL PRESSURE
AR-H-10	AUX. FEED PUMP LIGHT LOAD
AR-H-11	FEED PUMP SEAL WATER LO DIFF PRESS 15 PSI
AR-H-12	FEED PUMP DC OIL PUMP AUTO START
AR-H-13	CONDENSATE STORAGE TANK LEVEL 18' 4" 22' 4"
AR-H-14	CONDENSATE HEADER LOW PRESS 265 PSI
AR-H-15	TURBINE AUX. FEED PUMP STEAM VALVES 1A OR 1B BLOCKED CLOSED
AR-H-16	INSTRUMENT AIR COMPRESSOR
AR-H-17	FEED PUMP NET POSITIVE SUCTION HEAD
AR-H-18	HEATER DRAIN PUMP RECIR. VALVE OPEN
AR-H-19	FEED PUMP SEAL DRAIN TANK HI LEVEL/FEED PUMP SEAL H2O
AR-H-2	FEED WATER PUMP LIGHT LOAD
AR-H-20	TURBINE DRIVEN FEED PUMP LOW OIL PRESSURE 4.8 PSI
AR-H-21	CONDENSER HOTWELL LEVEL 4" 40"
AR-H-22	H2 CLR TEMP HI/BYP VLV < 80% OPEN
AR-H-23	CONTAINMENT RECOMBINER URGENT FAILURE
AR-H-24	STATION SERVICE AIR LO PRESS.85 PSI
AR-H-25	ANNUNCIATOR NORMAL SUPPLY OFF
AR-H-26	INSTRUMENT AIR DRYER TRANSFER FAILURE
AR-H-27	TURBINE DRIVEN FEED PUMP D.C. OIL PUMP AUTO START
AR-H-28	MOTOR DRIVEN AUXILIARY FEED PUMP OIL PUMP OFF
AR-H-29	FDWTR HTR AND DRAIN TANK HI-LO LEVEL OR PRESEP TK HI LEVEL
AR-H-30	CONDENSATE BYPASS VALVE OPEN
AR-H-31	VACUUM PRIMING SYSTEM
AR-H-32	STATION SERVICE AIR COMPRESSOR
AR-H2 PANEL	HYDROGEN SIDE LEVEL LOW
AR-H2 PANEL-1	HYDROGEN PURITY HIGH OR LOW
AR-H2 PANEL-11	GENERATOR CORE CONDITION MONITOR
AR-H2 PANEL-12	GLAD STEAM EXHAUSTER FAILURE
AR-H2 PANEL-13	D.C. POWER FAILURE
AR-H2 PANEL-14	GENERATOR BRG DRAIN LOOP SEAL VAPOR EXTRACTOR FAILURE
AR-H2 PANEL-2	HYDROGEN PRESSURE HIGH OR LOW
AR-H2 PANEL-3	HYDRGEN SUPPLY PRESSURE - LOW ALARM SET AT 75 PSIG
AR-H2 PANEL-4	AIR SIDE SEAL OIL PUMP - OFF

NUMBER	TITLE
AR-H2 PANEL-5	HYDROGEN SIDE SEAL OIL PUMP - OFF
AR-H2 PANEL-6A	DEFOAMING TANK LEVEL HIGH
AR-H2 PANEL-7A	SEAL OIL PRESSURE LOW
AR-H2 PANEL-7B	AIR SIDE SEAL OIL BACKUP PUMP RUNNING
AR-H2 PANEL-8A	SEAL OIL TURB BACKUP PRESSURE - LOW
AR-H2 PANEL-9A	WATER DETECTOR HIGH
AR-H2 PANEL-9B	HYDROGEN TEMPERATURE HIGH
AR-I-1	SCREEN HOUSE LO LEVEL 17'
AR-I-10	CW PUMP SEAL WATER LO FLOW
AR-I-11	TEMPERATURE RECORDERS
AR-I-12	TURNING GEAR
AR-I-13	AUTO STOP TRIP LATCH ACTUATION
AR-I-14	TURBINE BEARING OIL LO PRESSURE
AR-I-15	TURBINE RUN BACK DEFEAT
AR-I-16	E.H. PUMP LOCKOUT LO LEVEL
AR-I-17	TRAVEL SCREEN HI DIFF. LEVEL 6"
AR-I-18	CONDENSER EXP. JOINT A LO LEVEL
AR-I-19	CONDENSER EXP. JOINT B LO LEVEL
AR-I-2	CIRC. WATER PUMP FILTER HI DIFF. PRESS. (SEAL H2O) 11 PSID
AR-I-20	ROTOR POSITION
AR-I-21	LOSS OF AIR TO EXTRACTION STEAM STOPS.....
AR-I-22	TURBINE EMERGENCY OIL PUMP AUTO START 6 PSI
AR-I-23	TURBINE EMERGENCY OIL PUMP OVERLOAD
AR-I-24	E.H. SYSTEM TEMPERATURE PRESSURE
AR-I-25	TRAVEL SCREEN EMERGENCY HI DIFF. LEVEL 10"
AR-I-26	SCREEN HOUSE HI SUMP LEVEL
AR-I-27	ROTOR ECCENTRICITY OR VIBRATION
AR-I-28	DIFFERENTIAL EXPANSION
AR-I-29	TURBINE AUTO STOP SINGLE CHANNEL ALERT
AR-I-3	TURBINE METAL TEMPERATURE RECORDER
AR-I-30	TURVINE VALVES SINGLE CHANNEL ALERT
AR-I-31	LUB. OIL RESERVOIR VAPOR EXTRACTOR FAILURE
AR-I-32	E-H SYSTEM CONTROL POWER FAILURE
AR-I-4	EXHAUST HOOD HI TEMP 175 DEGREES F
AR-I-5	VACUUM TRIP LATCH ACTUATION 23"
AR-I-6	TURBINE OIL RESORVOIR LEVEL
AR-I-7	TURBINE OIL PURIFIER LO LEVEL OR HI LEVEL

NUMBER	TITLE
AR-I-8	E.H. RESERVOIR LEVEL
AR-I-9	SCREEN HOUSE LO LO LEVEL 15'
AR-J-1	HYDROGEN PANEL
AR-J-10	#1 GEN. VOLTAGE REG. TRIP TO MANUAL
AR-J-11	GENERATOR REVERSE POWER
AR-J-12	GENERATOR MAIN TRANSFORMER ANNUNCIATOR
AR-J-13	NO. 11/12 TRANSFORMER LO-SIDE PARALLELED
AR-J-14	480V BUS 14/16 OR 17/18 TIE BREAKER CLOSED
AR-J-15	BATTERY CHARGER FAILURE OR PA INVERTER TROUBLE
AR-J-16	MOTOR OFF CW-EH EMERG OIL SEAL OIL BU
AR-J-17	NON-SAFEGUARD EQUIPMENT LOCKED OFF
AR-J-18	GEN. VOLTAGE REGULATOR FIELD FORCING
AR-J-19	GENERATOR FIELD FAILURE
AR-J-2	GENERATOR STATOR WINDING HI TEMP
AR-J-20	GEN TRANSFORMER OVEREXCITATION
AR-J-21	1A OR 1B BATTERY UNDERVOLTAGE
AR-J-22	GENERATOR PIPE CABLE PILOT WIRE MONITOR
AR-J-23	BATTERY BANK GROUND
AR-J-24	EMERGENCY DIESEL GEN 1A PANEL
AR-J-25	SAFEGUARDS EQUIPMENT LOCKED OFF
AR-J-26	GENERATOR EXCITER FIELD BREAKER TRIP
AR-J-27	GEN VOLTAGE REGULATOR POWER UNIT BIAS
AR-J-28	115 KV PANEL ALARM
AR-J-29	480V TRANSFORMER BREAKER TRIP
AR-J-3	19 KV POT TRANSFORMER VOLTAGE BALANCE
AR-J-30	GENERATOR FIELD GROUND
AR-J-31	VITAL BATTERY MONITORING SYSTEM
AR-J-32	EMERGENCY DIESEL GEN 1B PANEL
AR-J-4	GENERATOR ISO PHASE BUS COOLING SYS
AR-J-5	11/12 TRANSFORMER OUT OF SYNCH
AR-J-6	4 KV MAIN OR TIE BREAKER TRIP
AR-J-7	480V MAIN OR TIE BREAKER TRIP
AR-J-8	480V MCC SUPPLY BREAKER TRIP
AR-J-9	SAFEGUARD BREAKER TRIP
AR-K-1	THRUST BEARING FAILURE
AR-K-10	MANUAL TRIP (TURBINE)
AR-K-11	STEAM HEADER SUPPORT CONTACTS M-25

NUMBER	TITLE
AR-K-12	CONTAINMENT ACCESS
AR-K-13	S/G BLOWDOWN VALVES CV-70, CV-71 DEFEAT SWITCH
AR-K-14	EMERGENCY SHUTDOWN LOCAL CONTROL
AR-K-15	FIRE SYSTEM STORAGE TANK LOW PRESSURE 90 PSI
AR-K-16	HEATING BOILER PANEL
AR-K-17	TURBINE LOW VACUUM TRIP 20" HG
AR-K-18	FEEDWATER PUMP TRIP
AR-K-19	RETENTION TANK LEVEL 25 INCHES 68
AR-K-2	REACTOR TRIP BREAKERS OPEN
AR-K-20	AIR COOLED PENET/EQUIPMENT ACCESS HATCH TEMP 0 DEGREES F 140
AR-K-21	SPENT FUEL POOL LEVEL 20" 12" AND 1100 GPM LOW FLOW
AR-K-22	HEAT TRACING SYSTEM
AR-K-23	FIRE SYSTEM STORAGE TANK LOW LEVEL 5'
AR-K-24	WATER TREATMENT PANEL
AR-K-25	TURBINE OVER SPEED ALERT 1980 RPM
AR-K-26	GENERATOR LOCKOUT RELAY
AR-K-27	DRAINAGE SYSTEM PH PANEL
AR-K-28	WASTE DISPOSAL PANEL
AR-K-29	SPENT FUEL PIT HI TEMP 115 DEGREES F
AR-K-3	AMSAC ACTUATED
AR-K-30	TURBINE PLANT SAMPLING RACK TROUBLE
AR-K-31	FIRE SYSTEM ALARM PANEL
AR-K-32	C.V. AIR DRIER LOW PRESSURE S/G BLOWDOWN HEAT RECOVERY SYSTEM
AR-K-4	CONTAINMENT ACCESS PRESURE ALARM
AR-K-5	BATCH TANK LO LEVEL 20%
AR-K-6	THERMAL OVERLOAD BYPASS RELAYS
AR-K-7	FIRE PUMP BREAKER TRIP
AR-K-8	ELEVATOR
AR-K-9	TURBINE BEARING OIL LO PRESSURE TRIP
AR-L-1	AUX BLDG VENT SYSTEM CONTROL PANEL
AR-L-10	AUXILIARY BUILDING SUMP PUMP AUTO START
AR-L-11	TURBINE OIL RESERVOIR OUTLET HI TEMP 130 DEGREES F
AR-L-12	CONDENSER PIT OR SCREEN HOUSE HIGH LEVEL 6.5"
AR-L-13	SAFEGUARD BUS DIESEL GENERATOR GREAKER OVERCURRENT TRIP
AR-L-14	BUS 14 UNDERVOLTAGE SAFEGUARDS
AR-L-15	BUS 17 UNDERVOLTAGE - SAFEGUARDS
AR-L-16	HOLDUP TANK 1A HI LEVEL 90%

NUMBER	TITLE
AR-L-17	INTER BLDG SUMP HI LEVEL
AR-L-18	34 KV BUS DIFFERENTIAL LOCKOUT
AR-L-19	AUXILIARY TRANSFORMER #11 LOCKOUT
AR-L-2	11A OR 11B BUS UNDER FREQ
AR-L-20	AUXILIARY TRANKSFORMER #12 A & B
AR-L-21	A OR B MFW PUMP OIL SUMP LO-HI LEVEL
AR-L-22	BUS 15 UNDERVOLTAGE - NON-SAFEGUARDS
AR-L-23	BUS 18 UNDER VOLTAGE SAFEGUARDS
AR-L-24	HOLDUP TANK 1B HI LEVEL 90%
AR-L-25	34 KV BREAKER LOW AIR PRESSURE 110 PSI
AR-L-26	34 KV LINE 767 PILOT WIRE MONITOR
AR-L-27	34 KV BREAKER TRIP
AR-L-28	AUXILIARY TRANKSFORMER #12 LOCKOUT
AR-L-29	4 KV BUSS, DIFFERENTIAL LOCKOUT
AR-L-3	11A OR 11B BUS UNDER VOLTAGE
AR-L-30	SAFEGUARD TEST SW. ON TEST
AR-L-31	SAFEGUARD DC FAILURE
AR-L-32	HOLDUP TANK NO. 1C HIGH LEVEL 90%
AR-L-4	12A OR 12B BUS UNDERVOLTAGE
AR-L-5	SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP
AR-L-6	BUS 13 - UNDERVOLTAGE - NON-SAFEGUARDS
AR-L-7	BUS 16 UNDER VOLTAGE SAFEGUARDS
AR-L-8	480V GROUND
AR-L-9	AUXILIARY BUILDING SUMP HI LEVEL
AR-RMS-10A.3	CNMT IODINE "RANGE" ALARM
AR-RMS-10B.2	PLANT VENT IODINE "RANGE" ALARM
AR-RMS-20	.....
AR-RMS-20B	.....
AR-RMS.10B	R10B VENT IODINE
AR-RMS.10B.1	PLANT VENT IODINE "FAIL" ALARM
AR-RMS.11	CONTAINMENT PARTICULATE
AR-RMS.11.2	CNMT PARTICULATE "FAIL" ALARM
AR-RMS.11.3	CNMT PARTICULATE "RANGE" ALARM
AR-RMS.12	CONTAINMENT GAS
AR-RMS.12.2	CNMT GAS "FAIL" ALARM
AR-RMS.12.3	CNMT GAS "RANGE" ALARM
AR-RMS.13	PLANT VENT PARTICULATE

NUMBER	TITLE
AR-RMS.13.1	PLANT VENT PARTICULATE "FAIL" ALARM
AR-RMS.13.2	PLANT VENT PARTICULATE "RANGE" ALARM
AR-RMS.14	PLANT VENT GAS
AR-RMS.14.1	PLANT VENT GAS "FAIL" ALARM
AR-RMS.14.2	PLANT VENT GAS "RANGE" ALARM
AR-RMS.15	AIR EJECTOR GAS
AR-RMS.17	COMPONENT COOLING RADIATION
AR-RMS.18	LIQUID WASTE DISPOSAL RADIATION
AR-RMS.19	S/G BLOWDOWN RADIATION
AR-RMS.2	CONTAINMENT RADIATION
AR-RMS.20B	SPENT FUEL PIT HEAT EXCHANGER 1B SERVICE WATER
AR-RMS.4	CHARGING PUMP ROOM
AR-RMS.5	SPENT FUEL PIT
AR-RMS.7	INCORE INSTRUMENT AREA
AR-RMS.9	LETDOWN LINE MONITOR R-9
ATT-AUX.BLDG.SW	ATTACHMENT AUX BLDG SW
ATT-CI/CVI	ATTACHMENT CI/CVI
ATT-CNMT.RECIRC	ATTACHMENT CNMT RECIRC FANS
ATT-COND.TO.S/G	ATTACHMENT COND TO S/G
ATT-D/G.STOP	ATTACHMENT D/G STOP
ATT-DC.LOADS	ATTACHMENT RCS ISOLATION
ATT-FAULTED.S/G	ATTACHMENT FAULTED S/G
ATT-GEN.DEGAS	ATTACHMENT GEN DEGAS
ATT-LETDOWN	ATTACHMENT LETDOWN
ATT-N2.PORVS	ATTACHMENT N2 PORVS
ATT-NC	ATTACHMENT NC
ATT-NONVITAL	ATTACHMENT NONVITAL
ATT-RCP.START	ATTACHMENT RCP START
ATT-RCS.ISOLATION	ATTACHMENT RCS ISOLATION
ATT-RHR.COOL	ATTACHMENT RHR COOL
ATT-RHR.SYS	ATTACHMENT RHR SYSTEM
ATT-RUPTURED.S/G	ATTACHMENT RUPTURED S/G
ATT-RUPTURED.SG	ATTACHMENT RUPTURED S/G
ATT-SAFW	ATTACHMENT SAFW
ATT-SD-1	ATTACHMENT SD-1
ATT-SD-2	ATTACHMENT SD-2
ATT-SEAL.COOLING	ATTACHMENT SEAL COOLING

NUMBER	TITLE
ATT-SFP.RWST	ATTACHMENT SFP-RWST
ATT-SI.FLUSH	ATTACHMENT SI FLUSH
ATT-SI/UV	ATTACHMENT SI/UV
ATT-VENT.TIME	ATTACHMENT VENT TIME
CP-11	P.L.P. RACK MODULES
CP-12	ROD INSERTION LIMIT AND T REACTOR CONTROL RACK
CP-13	ROD CONTROL SYSTEM RACK CALIBRATION AND MAINTENANCE
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-4 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-8 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-5 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-23 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-6 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-9 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-7 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-26 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-24 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-2 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-25 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-27 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-1 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-28 (TA-62 DETECTORS)
CP-209	CALIBRATION OF AREA RADIATION MONITORS R-3 (TA-62 DETECTORS)
CP-210.2	CALIBRATION OF R-10A DETECTORS
CP-210.2	CALIBRATION OF R-10B DETECTORS
CP-211.2	CALIBRATION OF R-11 DETECTOR
CP-211.4	CHECK OF FLOW CONTROL SYSTEM FOR R-11 AND R-12
CP-212.2	CALIBRATION OF R-12 DETECTOR
CP-213.2	CALIBRATION OF R-13 DETECTOR
CP-213.4	CHECK OF R-13 AND R-14 FLOW CONTROL SYSTEM
CP-214.2	CALIBRATION OF R-14 DETECTOR
CP-215.2	CALIBRATION OF R-15 DETECTOR
CP-216.2	CALIBRATION OF R-16 DETECTOR
CP-217.2	CALIBRATION OF R-17 DETECTOR
CP-218.2	CALIBRAITION OF R-18 DETECTOR
CP-219.2	CALIBRATION OF R-19 DETECTOR
CP-220.2	CALIBRATION OF R-20 DETECTOR
CP-221.2	CALIBRATION OF R-21 DETECTOR

NUMBER	TITLE
CP-222.2	CALIBRATION OF R-22 DETECTOR
CP-400	CALIBRATION AND/OR MAINTENANCE OF THE STEAM DUMP SYSTEM
E-0	REACTOR TRIP OR SAFETY INJECTION
E-1	LOSS OF REACTOR OR SECONDARY COOLANT
E-2	FAULTED STEAM GENERATOR
E-3	STEAM GENERATOR TUBE RUPTURE
ECA-0.0	LOSS OF ALL AC POWER
ECA-0.1	LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED
ECA-0.2	LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED
ECA-1.1	LOSS OF EMERGENCY COOLANT RECIRCULATION
ECA-1.2	LOCA OUTSIDE CONTAINMENT
ECA-2.1	UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS
ECA-3.1	SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED
ECA-3.2	SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY DESIRED
ECA-3.3	SGTR WITHOUT PRESSURIZER PRESSURE CONTROL
ER-AFW.1	ALTERNATE WATER SUPPLY TO THE AFW PUMPS
ER-BA.1	BAST TEMPERATURE CONCERNS - LOSS OF ALL AC
ER-CVCS.1	REACTOR MAKEUP CONTROL MALFUNCTION
ER-D/G.1	RESTORING D/G'S
ER-D/G.2	ALTERNATE COOLING FOR EMERGENCY D/G'S
ER-ELEC.1	RESTORATION OF OFFSITE POWER
ER-ELEC.2	CROSSTIE TSC BATTERY TO A OR B DC BUS
ER-ELEC.3	EMERGENCY OFFSITE BACKFEED VIA UNIT AUX TRANSFORMER
ER-ELEC.4	TSC D/G FEED TO BUS 16 TO SUPPLY CHARGING PUMPS
ER-ELEC.5	SECURITY DIESEL FEED TO BUS 13
ER-INST.1	REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENT LOOP FAILURE .
ER-INST.2	LOSS OF ANNUNCIATOR
ER-NIS.1	SR MALFUNCTION
ER-NIS.2	IR MALFUNCTION
ER-NIS.3	PR MALFUNCTION
ER-PRZR.1	RESTORATION OF PRZR HEATERS DURING BLACKOUT
ER-RCC.1	RETRIEVAL OF A DROPPED RCC
ER-RCC.2	RESTORING A MISALIGNED RCC
ER-RHR.1	RCDT PUMP OPERATION FOR CORE COOLING
ER-RMS.1	LOCATING SOURCE OF HIGH ACTIVITY - PLANT VENT
ER-SFP.1	LOSS OF SPENT FUEL PIT COOLING
ER-SW.1	LOSS OF SW RETURN OUTSIDE AUX BLDG

NUMBER	TITLE
ES-0.0	REDIAGNOSIS
ES-0.1	REACTOR TRIP RESPONSE
ES-0.2	NATURAL CIRCULATION COOLDOWN
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS)
ES-1.1	SAFETY INJECTION TERMINATION
ES-1.2	POST LOCA COOLDOWN AND DEPRESSURIZATION
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL
ES-3.2	POST-SGTR COOLDOWN USING BLOWDOWN
ES-3.3	POST-SGTR COOLDOWN USING STEAM DUMP
F-0.3	HEAT SINK
F-0.5	CONTAINMENT
F-0.6	INVENTORY
FR-2.2	RESPONSE TO CONTAINMENT FLOODING
FR-C.1	RESPONSE TO INADEQUATE CORE COOLING
FR-C.2	RESPONSE TO DEGRADED CORE COOLING
FR-C.3	RESPONSE TO SATURATED CORE COOLING
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK
FR-H.2	RESPONSE TO STEAM GENERATOR OVERPRESSURE
FR-H.3	RESPONSE TO STEAM GENERATOR HIGH LEVEL
FR-H.4	RESPONSE TO LOS OF NORMAL STEAM RELEASE CAPABILITIES
FR-H.5	RESPONSE TO STEAM GENERATOR LOW LEVEL
FR-I.1	RESPONSE TO HIGH PRESSURIZER LEVEL
FR-I.2	RESPONSE TO LOW PRESSURIZER LEVEL
FR-I.3	RESPONSE TO VOIDS IN REACTOR VESSEL
FR-P.1	RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION
FR-P.2	RESPONSE TO ANTICIPATED PRESSURIZED THERMAL SHOCK CONDITION
FR-S.1	RESPONSE TO NUCLEAR POWER GENERATION/ATWS
FR-S.2	RESPONSE TO LOSS OF CORE SHUTDOWN
FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE
FR-Z.2	RESPONSE TO CONTAINMENT FLOODING
FR-Z.3	RESPONSE TO HIGH CONTAINMENT RADIATION LEVEL
FSSP-2.2	DIESEL GENERATOR LOAD AND SAFEGUARD SEQUENCE TEST
O-1	PLANT STARTUP
O-1.1	PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN
O-1.1B	ESTABLISHING CONTAINMENT INTEGRITY
O-1.1C	PRECRITICAL TECHNICAL SPECIFICATION CHECK SHEET

NUMBER	TITLE
0-1.1C	PRECRITICAL TECHNICAL SPECIFICATION CHECK SHEET
0-1.1D	PRE-HEATUP PLANT REQUIREMENT CHECK LIST
0-1.1E	TECHNICAL SPECIFICATION REQUIREMENTS FOR HEATING THE RCS ABOVE 350 F
0-1.2	PLANT FROM HOT SHUTDOWN TO FULL LOAD
0-1.2.1	1/M CURVES
0-1.2.2	CRITICAL ROD POSITION CALCULATION
0-1.3	REACTOR STARTUP FOR TRAINING
0-10	CREVICE CLEANING
0-102	BORATED WATER FOR STEAM GENERATOR CHANNEL HEAD DECONTAMINATION
0-11	CONTROL OF MINI-PURGE EXHAUST VALVES WHILE DEPRESSURIZING CONTAINMENT
0-11	CONTROL OF CONTAINMENT DEPRESSURIZATION VALVES WHILE REACTOR IS CRITICAL
0-14.1	MAJOR ZONE BOUNDARY HOLDS FOR SECONDARY PLANT
0-14.2	MAIN FEED AND CONDENSATE SYSTEM DEPRESSURIZATION
0-2	PLANT SHUTDOWN
0-2.1	NORMAL SHUTDOWN TO HOT SHUTDOWN
0-2.1	NORMAL SHUTDOWN TO HOT SHUTDOWN
0-2.2	PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITION
0-2.3	PLANT AT COLD OR REFUELING SHUTDOWN
0-2.3.1	DRAINING THE REACTOR COOLANT SYSTEM
0-2.3.1A	CONTAINMENT CLOSURE CAPABILITY IN TWO HOURS DURING RCS REDUCED **
0-2.3.1A	CNMT CLOSURE CAPABILITY IN TWO HOURS DURING RCS REDUCED INVENTORY OPS
0-2.3.2	FILLING AND VENTING THE REACTOR COOLANT SYSTEM
0-2.4	NATURAL CIRC. COOLDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN
0-3	HOT SHUTDOWN WITH XENON PRESENT
0-3.1	BORON CONC. FOR XE FREE ARI, MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN
0-3.2	SHUTDOWN MARGIN FOR AN OPERATING REACTOR
0-5.1	LOAD REDUCTIONS
0-5.2	LOAD INCREASES
0-6	OPERATIONS AND PROCESS MONITORING
0-6.10	PLANT OPERATION WITH STEAM GENERATOR TUBE LEAK INDICATION
0-6.11	ROUTINE OPERATIONS CHECK SHEET
0-6.12	PLANT OPERATION DURING COASTDOWN
0-6.12	PLANT OPERATION DURING COASTDOWN
0-6.13	DAILY SURVEILLANCE LOG
0-6.14	MONTHLY SURVEILLANCE SCHEDULE
0-6.3	MAXIMUM UNIT POWER
0-6.3.1	STEAM GENERATOR BLOWDOWN CORRECTION FACTOR

NUMBER	TITLE
)-6.3.2	MAX UNIT POWER CALCULATION USING LEFM FOR FLOW MEASUREMENT
)-6.4	CORE QUADRANT POWER TILT CALCULATION
)-6.4.1	REFERENCE EQUILIBRIUM INDICATED AXIAL FLUX DIFFERENCE DETERMINATION
)-6.4.2	COMPUTER UPDATE OF THE FLOW MIXING FACTORS
)-6.5	UNEXPLAINED REACTIVITY CHANGES
)-6.6	CORRECTING MEASURED BORON CONC. TO FULL POWER EXPECTED BORON CONC.
)-6.7	WEEKLY ALARM STATUS CHECK
)-6.7.1	PLANT ALARM PANELS TEST AND STATUS LIGHT CHECK
)-6.8	LOGGING MVAR AND ELECTRICAL READINGS
)-6.9	OPERATING LIMITS FOR GINNA STATION TRANSMISSION
)-6.9.1	REDUCTION OF HOUSE LOADS
)-6.9.2	ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A/BUS 12B
)-7	ALIGNMENT AND OPERATION OF THE RX VESSEL OVERPRESSURE PROTECTION SYSTEM
)-9	SHIFT RELIEF TURNOVER - CONTROL ROOM
)-9.1	SHIFT RELIEF TURNOVER - AUXILIARY OPERATOR
)-9.3	USNRC IMMEDIATE NOTIFICATION
P-1	REACTOR CONTROL AND PROTECTION SYSTEM
P-10	INSTRUMENT FAILURE REFERENCE MANUAL
P-2	REACTOR COOLANT SYSTEM PRECAUTIONS AND LIMITATIONS
P-3	CHEMICAL AND VOLUME CONTROL SYSTEM
P-4	PRECAUTIONS, LIMITATIONS, AND SETPOINTS, AUXILIARY COOLANT SYSTEM
P-6	PRECAUTIONS, LIMITATIONS, AND SETPOINTS, NUCLEAR INSTRUMENTATION SYSTEM
P-7	SAFETY INJECTION SYSTEM
P-8	WASTE DISPOSAL SYSTEM
P-9	RADIATION MONITORING SYSTEM
PC-25.4	PRIMARY COOLANT ACTIVITY
PR-13.12	PURGE FILTER SMOKE DETECTOR ZONE TESTING ZONES 723 AND 724
PT-1	ROD CONTROL SYSTEM
PT-10.2	STATION BATTERY 1B SERVICE TEST
PT-10.3	STATION BATTERY 1A SERVICE TEST
PT-10.4	1A STATION BATTERY PERFORMANCE TEST
PT-10.5	1B STATION BATTERY PERFORMANCE TEST
PT-10.6	TSC BATTERY DISCHARGE TEST
PT-10.7	SPARE STATION BATTERY CELLS PERFORMANCE TEST
PT-11	60 CELL BATTERY BANKS "A" & "B"
PT-11.1	HEAT TRACE CIRCUITRY FUNCTIONAL CHECK
PT-11.2	SECURITY 60 CELL BATTERY BANK

NUMBER	TITLE
PT-11.3	DC THROWOVER SWITCH VERIFICATION TEST
PT-11.4	TECHNICAL SUPPORT CENTER 60 CELL BATTERY BANK
PT-11.5	FIRE SYSTEM BATTERIES - SSA AND SSC
PT-12.1	EMERGENCY DIESEL GENERATOR 1A
PT-12.2	EMERGENCY DIESEL GENERATOR 1B
PT-12.3	SECURITY EMERGENCY DIESEL TEST
PT-12.4	EMERGENCY DIESEL START & BREAKER CLOSURE MONITOR TEST
PT-12.5	TECHNICAL SUPPORT CENTER EMERGENCY DIESEL TEST
PT-12.6	DIESEL GENERATOR FUEL OIL TRANSFER PUMP CHECK VALVE CLOSURE TEST
PT-13	FIRE PUMP OPERATION & SYSTEM ALIGNMENT
PT-13.1	ANNUAL FIRE PUMP INSURANCE SURVEILLANCE TEST
PT-13.1.13	DELUGE VALVE SYSTEM RESETTING ONLY SYSTEM NUMBER S-50 CONTAMINATED
PT-13.1.15.1	HALON SYSTEM (RESETTING ONLY) COMPUTER ROOM (S07) & RELAY ROOM (S08)
PT-13.1.15.2	HALON SYSTEM (RESETTING ONLY) TSC SAS/PPCS COMPUTER ROOM (S37)
PT-13.1.16	PYROTRONICS SMOKE DETECTOR SYSTEM (RESETTING ONLY)
PT-13.1.4	DELUGE VALVE SYSTEM RESETTING ONLY
PT-13.1.4.1	DELUGE VALVE SYSTEM (RESETTING ONLY) 1G FAN SYSTEM #14
PT-13.1.8.1	ALARM VLV SYS (RESET ONLY) SYS #'S 12, 13, 15 FAB SHOP, CONSTRUCTION ---
PT-13.10	FIRE SYSTEM SPRAY NOZZLE AIR FLOW TEST SYSTEM---
PT-13.11.1	GAMEWELL SMOKE DETECTOR TESTING ZONE Z19 (CONTROL ROOM)
PT-13.11.10	GAMEWELL SMOKE DETECTOR TESTING ZONE Z33
PT-13.11.11	GAMEWELL SMOKE DETECTOR TESTING ZONE Z34 TURBINE BUILDING MEZZANINE
PT-13.11.12	TESTING OF SMOKE DETECTION ZONE Z-27 TSC CABLE TUNNEL
PT-13.11.13	TESTING OF SMOKE DETECTION ZONE Z-28 TSC CENTRAL OFFICE AREA
PT-13.11.14	TESTING OF SMOKE DETECTION ZONE Z-29 TSC EQUIP. ROOMS-NORTH
PT-13.11.15	TESTING OF SMOKE DETECTION ZONE Z-30 TSC EQUIP. ROOMS - SOUTH
PT-13.11.16	TESTING OF SMOKE DETECTION ZONE Z-31 TSC SOUTH VESTIBULE
PT-13.11.17	GAMEWELL SMOKE DETECTOR TESTING S-50 (CONTAMINATED STORAGE BUILDING)
PT-13.11.2	GAMEWELL ZONE SMOKE DETECTOR TESTING ZONES Z20 ("A" D/G VAULT), Z21 ---
PT-13.11.3	GAMEWELL ZONE SMOKE DETECTOR TESTING ZONE Z22
PT-13.11.4	GAMEWELL SMOKE DETECTOR TESTING
PT-13.11.5	GAMEWELL ZONE SMOKE DETECTOR TESTING ZONE Z26 (SCREENHOUSE UPPER LEVEL)
PT-13.11.6	TESTING OF SMOKE DETECTION ZONE Z-38 INTERMEDIATE BUILDING - SOUTH
PT-13.11.7	TESTING OF SMOKE DETECTION ZONE Z-36 INTERMEDIATE BLDG - SUB-BASEMENT
PT-13.11.8	TESTING OF SMOKE DETECTION ZONE Z-37 INTERMEDIATE BUILDING - NORTH
PT-13.11.9	.....
PT-13.11.9	GAMEWELL SMOKE DETECTOR TESTING ZONE Z32

NUMBER	TITLE
PT-13.12	PURGE FILTER SMOKE DETECTOR ZONE TESTING ZONES Z23 AND Z24
PT-13.13	GAMEWELL R-902 SMOKE DETECTOR ZONE TESTING ZONE Z16 (CONTAINMENT)
PT-13.14	CONTAINMENT CHARCOAL FILTER HEAT DETECTOR ZONE TESTING ZONES Z06,**
PT-13.15	CONTAINMENT THERMISTOR HEAT DETECTOR ZONE TESTING
PT-13.16.0	STAR CORPORATION HEAT DETECTOR ZONE TESTING ZONES Z05, Z18, AND Z19DB
PT-13.17	VLVE TAMPER SWITCHES
PT-13.18.0	SATELLITE STATION "C" BATTERY BACKUP TEST
PT-13.19	SATELLITE STATION "A" SYSTEM TEST
PT-13.2	DIESEL FIRE PUMP STANDARD PROTECTION TEST
PT-13.20	SATELLITE STATION "B" SYSTEM TEST
PT-13.21	PYROTRONICS SMOKE DETECTOR SYSTEM TESTING
PT-13.22	FIRE SYSTEM 2 MONTH FLOW ALARM CHECK
PT-13.22.1	FIRE SYSTEM 2 MONTH FLOW ALARM CHECK (SEPARATE ALARM AND TEST VAVES.
PT-13.23	P2044 LOW HEADER PRESSURE SUPERVISORY TEST
PT-13.24.0	ALLISON PANEL OPERABILITY TEST
PT-13.25	SYSTEM #14 CIRCUIT OERABILITY TEST 1-G AUXILIARY CHARCOAL FILTER
PT-13.26	TESTING OF FIRE DAMPERS
PT-13.3	FIRE PUMP ELECTRICAL EQUIPMENT SURVEILLANCE
PT-13.4.1	MULTIMATIC VALVE TESTING-SUPPRESSION SYSTEM #S24 TURBINE CONDENSER PIT*
PT-13.4.10A	PROTOMATIC DELUGE VALVE SYSTEM TESTING SYSTEM #10A (#12-A TRANSFORMER)
PT-13.4.10B	PROTOMATIC DELUGE VALVE SYSTEM TESTING SYSTEM #10B (#12-B TRANSFORMER)
PT-13.4.11	MULTIMATIC VLV TESTING-SUPPRESSION SYS #S05 CABLE TUNNEL AUTO DELUGE
PT-13.4.13	ALARM VALVE SYSTEM TESTING - FIRE SYSTEM #13 SERVICE BLDG SPRINKLER
PT-13.4.15	ALARM VALVE TESTING - FIRE SYSTEM #15 (BUTLER BUILDING)
PT-13.4.16	FLOOD VLV TESTING-SUPPRESSION SYS #S01 AUX. BLDG BSMT PRE-ACTION SYSTEM
PT-13.4.17	MULTIMATIC VALVE TESTING-SUPPRESSION SYSTEM #S03 AUX BLDG MEZZ LEVEL ---
PT-13.4.18	FLOOD VALVE TESTING-SUPPRESSION SYSTEM #S04 AUX BLDG MESS PRE-ACTION SYS
PT-13.4.19	VALVE TESTING-SUPPRESSION SYSTEM #S06 AIR HANDLING ROOM AUTO DELUGE
PT-13.4.2	.....
PT-13.4.20	FLOOD VALVE TESTING-SUPPRESSION SYSTEM #S09 RELAY ROOM SE MANUAL DELUGE
PT-13.4.21	FLOOD VALVE TESTING-SUPPRESSION SYST. #S10 RELAY ROOM W MANUAL DELUGE
PT-13.4.21	FLOOD VALVE TESTING-SUPPRESSION SYSTEM #S10 RELAY ROOM W MANUAL DELUGE
PT-13.4.22	FLOOD VALVE TESTING-SUPPRESSION SYSTEM #S11 RELAY ROOM NE MANUAL DELUGE
PT-13.4.24	MULTIATIC VALVE TESTING-SUPPRESSION SYSTEM #S17 SCREENHOUSE BSMT AUTO*
PT-13.4.25	MULTIMATIC VALVE TESTING-SUPPRESSION SYS #S15 INTER. BLDG BSMT CABLE ---
PT-13.4.26	MULTIMATIC VALVE TESTING-SUPPRESSION SYSTEM #S29 CONTROL ROOM WALL **
PT-13.4.27	ALARM VALVE TESTING-SUPPRESSION SYSTEM #S18 SERVICE WATER PUMP*

NUMBER	TITLE
PT-13.4.28	HALON SYSTEM TESTING COMPUTER ROOM (S07)
PT-13.4.29	HALON SYSTEM TESTING RELAY ROOM (S08)
PT-13.4.3	.....
PT-13.4.31	ALARM VALVE TESTING-SUPPRESSION SYSTEM/ STEAM GENERATOR BUILDING
PT-13.4.32	ALARM VALVE TESTING - SUPPRESSION SYSTEM RAD-WASTE STORAGE BLDG
PT-13.4.33	STATION HALON SYSTEMS BOTTLE WEIGHING AND S07, S08 AIR FLOW TEST
PT-13.4.34	ALARM VALVE SYSTEM TESTING (FAB SHOP - CONSTRUCTION OFFICES)
PT-13.4.35	TESTING OF SMOKE DETECTION SONE Z-35 (SPENT FUEL PIT AREA)
PT-13.4.36	ALARM VALVE TESTING - SURPRESSION SYSTEM #S36 AUXILIARY BLDG. WEST
PT-13.4.37	.....
PT-13.4.39	TSC HVAC CHARCOAL FILTER DELUGE SYSTEM S31/TSC DIESEL GENERATOR FIRE**
PT-13.4.4	FLOOD VALE TESTING-SUPPRESSION SYSTEM #S12 1A DIESEL GENERATOR PRE-*
PT-13.4.41	TSC HVAC DUCT DETECTOR AND HOSE REEL WATER SUPPLY ZONE S33
PT-13.4.42	GAMEWELL ZONE SMOKE DETECTOR TESTING ZONE S34 TSC ADMIN COMPUTER FACIL.
PT-13.4.43	TSC COMPUTER ROOM DETECTION SYSTEM TESTING
PT-13.4.5	FLOOD VALVE TESTING-SUPPRESSION SYSTEM S13 1B DIESEL GENERATOR PRE-*
PT-13.4.6	FLOOD VLV TESTING-SUPPRESSION SYS #S14 TURBINE AUX. FEEDWATER PUMP AND--
PT-13.4.7	PROTOMATIC VALVE TESTING-SUPPRESSION SYSTEM #S16 OIL STORAGE ROOM*
PT-13.4.8	PROTOMATIC DELUGE VALVE SYSTEM TESTING SYSTEM #8 (MAIN TRANSFORMER)4
PT-13.4.9	PROTOMATIC DELUGE VALVE SYSTEM TESTING - SYSTEM #9 (#11 TRANSFORMER)
PT-13.5	FIRE SPRAY SYSTEM EXTERNAL SYSTEM EXTERNAL HEADER/NOZZLE INSPECTION
PT-13.6	VELOCITY FLUSH OF THE FIRE WATER SYSTEM
PT-13.7	FIRE HOSE REEL ASSEMBLY INSPECTION
PT-13.7.2	FIRE HOSE REEL ASSEMBLY ENSPECTION AND TEST - CONTAINMENT
PT-13.8	EXTERIOR HYDRANT FREEZE PROTECTION AND INSPECTION
PT-13.9	FIRE SYSTEM VALVE CYCLING
PT-13.L11	GAMEWEL ZONE SMOKE DETECTOR TESTING ZONES Z01 (AUX. BASE. EAST),**
PT-14	CIRCULATING WATER PUMPS-HIGH WATER TRIP LOGIC
PT-16	AUXILIARY FEEDWATER SYSTEM
PT-16.1	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP FLOW BALANCE
PT-16.2	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP FLOW BALANCE
PT-16M	AUXILIARY FEEDWATER SYSTEM - MONTHLY
PT-16Q	AUXILIARY FEEDWATER SYSTEM - QUARTERLY
PT-17.1	AREA RADIATION MONITORS R-1/R-9 HIGH RANGE MONITORS & AVT R23 TO R30--
PT-17.2	PROCESS, IODINE, & HIGH RANGE EFFLUENT MONITORS R-10A - R-32
PT-17.3	RMS CHANNEL RESP TO PORT RAD SOURCE, CHANNELS 9,10A,10B,11,22,31,32
PT-17.4	CONTROL RM RADIATION R-36, R-37, R-38 & TOXIC GAS MONITOR OPERABILITY**

NUMBER	TITLE
PT-17.5	HIGH RANGE EFFLUENT MONITORS R-12A, R-14A, R-15A, R31, R-32
PT-2.10	CHECK VALVE EXERCISING TEST REQUIREMENTS
PT-2.10.1	RCS AND SI HEADER CHECK VALVES LOOP A & B COLD LEG
PT-2.10.10	RHR SYSTEM CHECK VALVES FULL FLOW OPERABILITY VERIFICATION
PT-2.10.11	EXERCISING SERVICE WATER REDUNDANT DISCHARGE LINE ISOLATION VALVES
PT-2.10.13	HYDROGEN RECOMBINER CHECK VALVES EXERCISING TEST
PT-2.10.14	SI CHECK VALVE 1828 OPENING TEST
PT-2.10.2	RHR SYSTEM CORE DELUGE CHECK
PT-2.10.4	SI CHECK VALVE & MOV LEAKAGE TEST
PT-2.10.5	MSIV EXERCISING REQUIREMENTS REFUELING OUTAGE
PT-2.10.7	ACCUMULATOR DISCHARGE CHECK VALVES QUARTERLY EXERCISING
PT-2.10.9	MAIN FEEDWATER CHECK VALVE REVERSE FLOW CLOSURE VERIFICATION
PT-2.1M	SAFETY INJECTION SYSTEM MONTHLY TEST
PT-2.1Q	SAFETY INJECTION SYSTEM QUARTERLY TEST
PT-2.2A	RESIDUAL HEAT REMOVAL SYSTEM SHUTDOWN OPERABILITY TEST
PT-2.2M	RESIDUAL HEAT REMOVAL SYSTEM - MONTHLY
PT-2.2Q	RESIDUAL HEAT REMOVAL SYSTEM - QUARTERLY
PT-2.3	SAFEGUARD VALVE OPERATION
PT-2.3.1	POST ACCIDENT CHARCOAL FILTER DAMPERS
PT-2.4	COLD SHUTDOWN MOTOR OPERATED VALVE SURVEILLANCE
PT-2.4.1	COLD/REFUELING MOTOR OPERATED VALVE SURVEILLANCE (RHR SYSTEM-700 VALVES)
PT-2.5	AIR OPERATED VALVES, QUARTERLY SURVEILLANCE AUXILIARY BUILDING
PT-2.5.1	AIR OPERATED VALVES, QUARTERLY SURVEILLANCE (CONTAINMENT)
PT-2.5.2	AIR OPERATED VALVES, COLD SHUTDOWN SURVEILLANCE
PT-2.5.3	AIR OPERATED VALVES; QUARTERLY SURVEILLANCE (AOV)5735, 5736, 5737, 5738
PT-2.5.4	AIR OPERATED VLVES, QUARTERLY SURVEILLANCE CONTROLLED INTER. BLDG
PT-2.5.5	AIR/SOLENOID OPERATED VALVES, QRTLY SURV. CLEAN INTERMED. BLDG.
PT-2.6	COLD/REFUELING SHUTDOWN AIR OPERATED VALVE SURVEILLANCE
PT-2.6.1	MAIN STEAM PORV STROKING
PT-2.6.2	REACTOR HEAD VENT SOLENOID VALVES POSITION VERIFICATION
PT-2.6.4	CHARGING LINE CHECK VALVE AND AOV 392A OPERABILITY TEST
PT-2.6.5	RCS OVERPRESSURE PROTECTION SYSTEM PORV OPERABILITY VERIFICATION
PT-2.7	SERVICE WATER SYSTEM
PT-2.8M	COMPONENT COOLING WATER PUMP MONTHLY TEST
PT-2.8Q	COMPONENT COOLING WATER PUMP QUARTERLY TEST
PT-2.9	CHECK VALVE EXERCISING
PT-2.9.3	CHECK VALVE EXERCISING

NUMBER	TITLE
PT-21	CLEANING BORIC ACID TANK LEVEL SENSING LINES
PT-22	CONTAINMENT PENETRATION LEAKRATE TESTING
PT-22.1	EQUIPMENT HATCH DOOR SEAL LEAKRATE TEST
PT-22.10	MECHANICAL MANIFOLD "C" LEAKRATE TEST
PT-22.11	MECHANICAL MANIFOLD "E" LEAKRATE TEST
PT-22.12	MECHANICAL MANIFOLD "F" LEAKRATE TEST
PT-22.13	MECHANICAL MANIFOLD "G" LEAKRATE TEST
PT-22.14	MECHANICAL MANIFOLD "H" LEAKRATE TEST
PT-22.15	MECHANICAL MANIFOLD "I" LEAKRATE TEST--
PT-22.15.1	S/G COMMUNICATION FLANGE LEAKRATE TEST (INSIDE CONTAINMENT)
PT-22.15.2	S/G COMMUNICATION FLANGE LEAK RATE TEST (OUTSIDE CONTAINMENT)
PT-22.16	MECHANICAL MANIFOLD "J" LEAKRATE TEST
PT-22.17	MECHANICAL MANIFOLD "K" LEAKRATE TEST
PT-22.18	ELECTRICAL MANIFOLD #I LEAKRATE CLAN INTER. BLDG. BASEMENT
PT-22.19	ELECTRICAL MANIFOLD #II LEAKRATE TEST CONTROLLED INT. BLDG. BASEMENT
PT-22.2	PERSONNEL HATCH DOOR SEAL LEAKRATE TEST
PT-22.20	ELECTRICAL MANIFOLD #III LEAKRATE TEST AUX. BLDG. INT.FLOOR BY CRANE BAY
PT-22.21	MECHANICAL MANIFOLD "L" LEAKRATE TEST
PT-22.22	FUEL TRANSFER FLANGE LEAKRATE TEST
PT-22.3	PERSONNEL HATCH BETWEEN DOOR VOLUME LEAK RATE TEST
PT-22.4	EQUIPMENT HATCH BETWEEN DOOR VOLUME LEAK RATE TEST
PT-22.5	PERSONNEL HATCH CANOPY LEAKRATE TEST
PT-22.6	EQUIPMENT HATCH CANOPY LEAKRATE TEST
PT-22.7	EQUIPMENT HATCH O-RING LEAKRATE TEST
PT-22.8	MECHANICAL MANIFOLD "A" LEAKRATE TEST
PT-22.9	MECHANICAL MANIFOLD "B" LEAKRATE TEST
PT-23	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING
PT-23.1	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING PRESSURIZER RELIEF TANK**
PT-23.10	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING ALTERNATE CHARGING LINE
PT-23.11	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING RCP SEAL WATER **
PT-23.12A	CONTAINMENT ISOL. VLV LEAK RATE TESTING PRESSURIZER STEAM SPACE SAMPLE
PT-23.12B	CONTAINMENT ISOL. VALVE LEAK RATE TESTING PRESSURIZER LIQUID SPACE SAMPL
PT-23.12C	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING RCS SAMPLE LOOP "B"
PT-23.13A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "A" STEAM GENERATOR SAMPLE
PT-23.13B	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "B" STEAM GENERATOR SAMPLE
PT-23.14	CONTAINMENT ISLATION VLV. LEAK RATE TESTING CONTMENT AIR SAMPLE INLET
PT-23.15	CONTAINMENT ISOL. VLV LEAK RATE TESTING CONTAINMENT AIR SAMPLE OUT

NUMBER	TITLE
PT-23.16A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "A" STEAM GEN. BLOWDOWN
PT-23.17A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING CONTAIMENT PRESSURE **
PT-23.17B	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING CONTAINMENT PRESSURE **
PT-23.17C	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING CONTAINMENT PRESSURE **
PT-23.18A	CONTAINMENT ISOLATION VLV.LEAK RATE TESTING "A" CONTAINMENT SPRAY HEADER
PT-23.18B	CONTAINMENT ISOLAT.VALVE LEAK RATE TESTING "B" CONTAIMENT SPRAY HEADER
PT-23.19	CONTAINMENT ISOLTION VALVE LEAK RATE TESTING SAFETY INJECTION SYSTEM
PT-23.2	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING NITROGEN SUPPLY TO **
PT-23.20	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING RCDT GAS HEADER
PT-23.21	CONTAINMENT ISOL. VALVE LEAK RATE TESTING E.C.D.T. TO GAS ANALYZER
PT-23.22	CONTAINMENT ISOL. VALVE LEAK RATE TESTING R.C.D.T. DISCHARGE
PT-23.23	CONTAINMENT ISOL. VLV. LEAK RATE TESTING SUMP "A" DISCHARGE
PT-23.24	CONTAINMENT ISOL. VALVE LEKA RATE TESTING REACTOR SUPPORT COOLERS **
PT-23.26	CONTAIANMENT ISOLATION VALVE LEAK RATE TESTING AUX. COOLNAT SYSTEM **
PT-23.27	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING AUX. COOLANT SYS. TO **
PT-23.28	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING AUX. COOLANT SYS. FROM**
PT-23.3	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING MAKEUP WATER TO PRESSUR --
PT-23.30	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING AUXILIARY COOLANT SYS ---
PT-23.32	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING INSTRUMENT AIR
PT-23.32	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING-INSTRUMENT AIR
PT-23.33	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING SERVICE AIR
PT-23.34	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING CONTMT. MINI-PURGE EXHAUST
PT-23.35.1	CONTAINMENT ISOL.BOUNDARY LEAK RATE TESTING PURGE SUPPLY O-RING SEAL
PT-23.36.1	CONTAINMENT ISOL. BOUNDARY LEAK RATE TESTING PURGE EXHAUST O-RING SEAL
PT-23.39	CONTAINMENT ISOL. VALVE LEAK RATE TESTING & STROKING-DEMINERALIZED H2O
PT-23.40	CONTAINMENT ISOLATION VLV. LEAK RATE TESTING AUX. STEAM SUPPLY & **
PT-23.42	CONTAINMENT ISOL. VALVE LEAK RATE TESTING LEAKAGE TEST DEPRESSURIZATION
PT-23.42	CONTAINMENT ISOL. VALVE LEAK RATE TESTING LEAKAGE TEST SUPPLY HEADER
PT-23.43	CNMT ISOLATION VALVE LEAK RATE TESTING LEAKAGE TEST SUPPLY HEADER
PT-23.44	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING LEAKAGE TEST/CONTNMT.MINI-
PT-23.45	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING CONTAINMENT H2 MONITORS
PT-23.46	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING NITROGEN TO ACCUMULATORS
PT-23.49	CONTAINMENT ISOL. VLV. LEAK RATE TESTING CONSTR. FIRE SERVICE WATER
PT-23.50A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING // CONTAINMENT POST **
PT-23.50B	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING CONTAINMENT POST --
PT-23.50C	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING - CONTAINMENT POST **
PT-23.51A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "A" HYDROGEN RECOMBINER--

NUMBER	TITLE
PT-23.51B	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "B" HYDROGEN RECOMBINER--
PT-23.51C	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "A" AND "B" HYDROGEN**
PT-23.52	CONTAAINMENT ISOLATION VALVE LEAK RATE TESTING FIRE SERVICE WATER
PT-23.5A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING SUMP 'B' TO 'A' RCDT PUMP
PT-23.5B	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING SUMP'B' TO 'B' RCDT PUMP
PT-23.6	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING, LETDOWN LINE FROM RCS
PT-23.8	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING RCS CHARGING LINE
PT-23.9A	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "A" RCP SEAL WATER LINE
PT-23.9B	CONTAINMENT ISOLATION VALVE LEAK RATE TESTING "B" RCP SEAL WATER LINE
PT-23A	CONTAINMENT ISOLATION VALVE TEST CONNECTION BOUNDARY CONTROL
PT-27.2	TENDON SURVEILLANCE PROGRAM FOLLOWING RE-TENSIONING
PT-30	CONTAINMENT SPRAY NOZZLE CHECK OF A AND B RINGS
PT-31	CHARGING PUMP INSERVICE TEST
PT-32	REACTOR TRIP LOGIC TEST "A" OR "B" TRAIN
PT-32.1	PLANT SAFEGUARD LOGIC TEST
PT-32.2	RCS OVERPRESSURE PROTECTION SYSTEM COLD SHUTDOWN VALVE TIMING
PT-32.5	REACTOR TRIP BREAKERS 'A' AND 'B' TRAIN RESPONSE TIME TESTING
PT-32A	REACTOR TRIP BREAKER TESTING - "A" TRAIN
PT-32B	REACTOR TRIP BREAKER TESTING - "B" TRAIN
PT-33	SPENT FUEL PIT PUMPS
PT-34.0	STARTUP PHYSICS TEST PROGRAM
PT-34.1	INITIAL CRITICALITY, AND ARO BORON
PT-34.2	MODERATOR TEMP COEFF MEASUREMENT
PT-34.3	RCC BANK WORTH MEASUREMENT
PT-34.4	RCC BANC BORON END POINT CONCENTRATION
PT-34.5	MEASUREMENT OF SHUTDOWN BANK WORTH WITH MOST REACTIVE ROD WITHDRAWN
PT-34.6	AT POWER PHYSICS TESTING
PT-36	STANDBY AUX FW SYSTEM FLOW CHECK
PT-36.1	STANDBY AUXILIARY FEEDWATE PUMP FLOW BALANCE
PT-36M	STANDBY AUXILIARY FEEDWATER SYSTEM - MONTHLY
PT-36Q	STANDBY AUXILIARY FEEDWATER SYSTEM - QUARTERLY
PT-37.2	CONTAINMENT VENT MASS AIR FLOW CHECK
PT-37.3	CONTROL ROOM VENT MASS AIR FLOW CHECK
PT-37.4	AUXILIARY BUILDING CHARCOAL FILTER FANS A & B MASS AIR FLOW CHECK
PT-37.6	CONTROLLED ACCESS FANS MASS AIR FLOW CHECK
PT-37.7	1-G EXHAUST FAN MASS AIR FLOW CHECK
PT-37.9	TECHNICAL SUPPORT CENTER PRESSURIZATION & FILTER BANK MASS AIR FLOW

NUMBER	TITLE
PT-39	PRIMARY SYSTEMS LEAKAGE EVALUATION INSERVICE INSPECTION
PT-3M	CONTAINMENT SPRAY PUMP MONTHLY TEST
PT-3Q	CONTAINMENT SPRAY PUMP QUARTERLY TEST
PT-4	RESIDUAL HEAT REMOVAL LOOP, ANNUAL HYDRO TEST OF LOW PRESSURE PIPING
PT-4.1	RESIDUAL HEAT REMOVAL LOOP-HYDRO TEST OF HIGH PRESSURE PIPING
PT-42	TESTING OF VPI FOR MSIV'S, PORV'S, & TURBINE DRIVEN AFW PUMP MOV'S
PT-43	.....
PT-44	HOLDING CURRENT CHECK OF GOULD J13 SERIES RELAYS IN THE CONTAINMENT ---
PT-47.1	AUX. BLDG VENTILATION UNIT-MAIN HEPA FILTERATION SYS EFFICIENCY TEST
PT-47.10	SPENT FUEL PIT CHARCOAL FILTRATION SYSTEM EFFICIENCY TEST
PT-47.11	CONTAINMENT POST ACCIDENT CHARCOAL FILTER UNIT EFFICIENCY TEST
PT-47.2	PURGE EXHAUST A & B VENTILATION UNITS-HEPA AND CHARCOAL FILTERATION ---
PT-47.3	CONTROL ROOM AIR HANDLING UNIT - FILTRATION SYSTEM EFFICIENCY TEST
PT-47.4	AUX BLDG VENTILATION UNIT-CHARCOAL FILTERATION SYS EFFICIENCY TEST
PT-47.5	CONTAINMENT FAN RECIRCULATION UNIT-HEPA FILTERATION SYS EFFICIENCY TEST
PT-47.6	CONTROLLED ACCESS VENTILATION UNIT-HEPA & CHARCOAL FILTERATION SYS ----
PT-47.7	1-G EXHAUST FAN VENTILATION UNIT - HEPA AND CHARCOAL FILTRATION SYSTEM**
PT-47.8	1A &1B VC AUX VENTILATION UNITS-HEPA & CHARCOAL FILTERATION SYS EFF TEST
PT-47.9	TECH. SUPPORT CENTER AIR HANDLING UNIT EFF. TEST OF HEPA & CHARCOAL ----
PT-5.10	PROCESS INSTR RX PROTECTION CHANNEL TRIP TEST (CHANNEL 1)
PT-5.20	PROCESS INSTR RX PROTECTION CHANNEL TRIP TEST (CHANNEL 2)
PT-5.30	PROCESS INSTR RX PROTECTION CHANNEL TRIP TEST (CHANNEL 3)
PT-5.40	PROCESS INSTR RX PROTECTION CHANNEL TRIP TEST (CHANNEL 4)
PT-5.50	AUTO STOP OIL PRESSURE SWITCH AND RELAY TEST
PT-50.1	DIFFERENTIAL PRESSURE TESTING OF CCW VAVES MOV-749,B MOV-759A,B**
PT-50.2	DIFFERENTIAL PRESSURE TESTING OF CONTAINMENT SPRAY SYSTEM VALVES**
PT-50.3	DIFFERENTIAL PRESSURE TESTING OF CONTAINMENT SPRAY VALVES MOV-860C **
PT-6.1	SOURCE RANGE NUCLEAR INSTRUMENTATION SYSTEM
PT-6.2	N.I.S. INTERMEDIATE RANGE CHANNELS
PT-6.3.1	POWER RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL 41
PT-6.3.2	POWER RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL 42
PT-6.3.3	POWER RNAGE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL 43
PT-6.3.4	POWER RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL 44
PT-6.4	EXCORE/INCORE RECALIBRATION
PT-6.4.1	PRECISION FLOW CALORIMETRIC
PT-6.4A	SINGLE POINT INCORE/EXCORE CALIBRATION
PT-7	HYDRO TEST OF REACTOR COOLANT SYSTEM

NUMBER	TITLE
PT-8.0	RHR SYS VLVS-SEAT LEAKAGE TEST VLVS 852A/B, 853A/B, 700, 701, 720 & 721
PT-8.1	SEAT LEAKAGE TEST OF LETDOWN ORIFICES STOP VALVES
PT-8.2	OVERPRESSURE PROTECTION ACCUMULTOR NITROGEN FILL LINE CK VLV(S) LEAK TES
PT-8.5	SEAT LEAKAGE TEST OF HCV-123
PT-8.7	SEAT LEAKAGE TEST OF 383B
PT-8.8	SEAT LEAKAGE TEST OF ACCUMULATOR DISCHARGE CHECK VALVES 842A AND 842B
PT-9	UNDERVOLTAGE AND UNDERFREQUENCY PROTECTION 11A & 11B - 4160 VOLT BUSES
PT-9.1	UNDERVOLTAGE PROTECTION - 480 VOLT SAFEGUARD BUSSES
PTR-13.15	CONTAINMENT THERMISTOR HEAT DETECTOR ZONE TESTING ZONES Z08, Z13, **
R-PRI-DI-3	ACID FAILURE
RESSP-2.7	SAFETY INJECTION SEQUENCE TIMERS TRAIN A AND B
RF-2E	DRAINING OF REFUELING CANAL
RGE-SU-4.1.1	PRESSURIZER RELIEF TANK START-UP TEST PROCEDURE
RGE-SU-4.1.10	PRESSURIZER SPRAY FLOW VERIFICATION
RGE-SU-4.15.2	AUTOMATIC STEAM GENERATOR LEVEL CONTROL START-UP TEST PROCEDURE
RGE-SU-4.3.2	RESIDUAL HEAT REMOVAL START-UP TEST PROCEDURE
RGE-SU-4.9.2	STEAM DUMP SYSTEM START-UP TEST PROCEDURE
RSSP-12	TESTING OF PRIMARY AND SECONDARY RELIEF VALVES ON TEST STAND
RSSP-13.17	ISI HYDRO TEST OF CLASS 3 PIPING CHEMICAL VOLUME CONTROL SYSTEM **
RSSP-15.16	INSERVICE INSPECTIN STATIC HEAD HYDRO TEST OF ":B" BORIC ACID**
RSSP-19	"A" EMERGENCY DIESEL GENERATOR - AUTO-START UNDERVOLTAGE LOGIC TEST
RSSP-2.2	DIESEL GENERATOR LOAD AND SAFEGUARD SEQUENCE TEST
RSSP-2.3A	'A' EMERGENCY DIESEL GENERATOR TRIP TESTING
RSSP-2.3B	'B' EMERGENCY DIESEL GENERATOR TRIP TESTING
RSSP-2.4	CV RECIRCULATION FAN SERVICE WATER VALVES LEAK CHECK
RSSP-2.7	SAFETY INJECTION SEQUENCE TIMERS TRAIN A AND B
RSSP-20	"B" EMERGENCY DIESEL GENERATOR-AUTO-START UNDERVOLTAGE LOGIC TEST
RSSP-8.0	RTD CROSS CALIBRATION CHECK
S-10	FLUSH FCV-110A PIPING
S-11	BATCHING TANK
S-11.1	BORIC ACID STORAGE TANK TRANSFER TO BATCH TANK FOR BORON ENRICHMENT, AND
S-11.2	DRAINING THE BORIC ACID BATCH TANK TO CHT
S-11.3	TRANSFERRING CHT TO BA BATCH TANK
S-12.1	LEAKAGE DETECTION SYSTEMS PRE-STARTUP
S-12.2	OPERATOR ACT. IN THE EVENT OF INDICAT. OF SIGNIF. INCR. IN LEAKAGE
S-12.4	RCS LEAKAGE SURVEILLANCE RECORD INSTRUCTIONS
S-13A	RHR SYSTEM LINEUP

NUMBER	TITLE
S-13B	RHR PUMP ISOLATION
S-13C	1A RHR HEAT EXCHANGER ISOLATION AND RESTORATION
S-13D	RHR OPERATION WITH ALTERNATE DISCHARGE TO THE RCS LOOP
S-13E	1A OR 1B RCDT PUMP ISOLATION
S-13F	1B RHR HEAT EXCHANGER ISOLATION AND RESTORATION
S-13G	RHR SYSTEM 1989 OUTAGE SPECIAL OPERATIONS
S-13H	ISOLATING AND DRAINING OF THE RCS AND SI SYSTEM
S-13I	RHR SYSTEM OUTAGE RESTORATION
S-14	AREA AND PROCESS RADIATION MONITORING SYSTEM
S-14.1	RADIATION MONITORING AND RELATED SYSTEMS DAILY PLOT REQUIREMENTS
S-14.10	OPERATION OF PROCESS RADIATION MONITORS (R-15 THRU R-20B)
S-14.2	DETERMINATION OF THE PERCENT OF TECHNICAL SPECIFICATION LIMITS FOR **
S-14.3	OPERATION OF CONTAINMENT HIGH RANGE AREA MONITORS R-29
S-14.4	HIGH RANGE EFFLUENT MONITORS (SPING-4) R-12A, R-14A, R-
S-14.5	R-11 FILTER CHANGE
S-14.6	R-13 FILTER CHANGE
S-14.7	OPERATION OF AREA RADIATION MONITORS (R-1 THRU R-9)
S-14.8	OPERATION OF CONTAINMENT VENTILATION RADIATION MONITORS (R-10A,11,12)
S-14.9	OPERATION OF PLANT VENTILATION RADIATION MONITORS (R-10B,13,14)
S-15.1	FLUX MAPPING NORMAL PROCEDURE
S-15.2	FLUX MAPPING EMERGENCY AND CALIBRATION PROCEDURE
S-15.3	INCORE MOVABLE DETECTOR ALIGNMENT
S-15.4	INCORE FLUX MAP DATA REDUCTION AND REVIEW
S-15.5	MOVEABLE INCORE DETECTOR SYSTEM OPERATION TO DETECT CO
S-16.10	CHARGING THE "B" ACCUMULATOR WITH NITROGEN
S-16.11	MONITORING AND ENRICHMENT OF ACCUMULATOR BORON CONCENTRATION
S-16.13	RWST WATER MAKEUP ACCUMULATORS
S-16.14	ISOLATION AND RESTORATION OF SAFETY INJECTION PUMPS SUCTION
S-16.14.1	ISOL & DRAINING OF SAFETY INJECT PUMPS SUCTION LINE FROM BORIC ACID ----
S-16.14.2	ISOLATION & DRAINING OF SAFETY INJECTION PUMPS SUCTION LINE FROM*8
S-16.16A	1-A SAFETY INJECTION PUMP ISOLATION/RESTORATION
S-16.16B	1-B SAFETY INJECTION PUMP ISOLATION/RESTORATION
S-16.16C	1-C SAFETY INJECTIN PUMP ISOLATIN/RESTORATION
S-16.18	LOWERING SI ACCUMULATOR PRESSURE
S-16.2	NITROGEN MAKE-UP TO THE ACCUMULATORS
S-16.3	VENTING N2 FORM THE "A" ACCUMULATOR
S-16.4	VENTING N2 FROM THE "B" ACCUMULATOR

NUMBER	TITLE
S-16.4.1	VENTING N2 FROM THE "A" OVERPRESSURE PROTECTION ACCUMULATOR
S-16.4.2	VENTING N2 FROM THE "B" OVERPRESSURE PROTECTION ACCUMULATOR
S-16.5	DRAINING THE "A" ACCUMULATOR
S-16.6	DRAINING THE "B" ACCUMULATOR
S-16.7	FILLING THE "A" ACCUMULATOR WITH WATER
S-16.8	FILLING THE "B" ACCUMULATOR WITH WATER
S-16.9	CHARGING THE "A" ACCUMULATOR WITH NITROGEN
S-16A	SAFETY INJECTION SYSTEM ALIGNMENT
S-17.1	CONTAINMENT SPRAY SYSTEM
S-17.2	SPRAY ADDITIVE NAOH TANK DRAIN DOWN
S-17.3	CONTAINMENT SPRAY PUMP ISOLATION
S-17B	ADDITION OF 50% NAOH TO THE SPRAY ADDITIVE TANK
S-18	INCORE THERMOCOUPLE TOGGLE SWITCH READOUT DEVICE
S-1A	STARTUP OF ROD DRIVE MOTOR GENERATOR SETS
S-1B	SHUTDOWN OF ROD DRIVE MOTOR GENERATOR SETS
S-2.1	REACTOR COOLANT PUMP OPERATION
S-2.1A	PRE-STARTUP LINE-UP OF REACTOR COOLANT PUMPS
S-2.1B	REACTOR COOLANT PUMPS - ISOLATION FOR MAINTENANCE
S-2.2	PRESSURIZER PRESSURE AND SPRAY CONTROL
S-2.3	PRESSURIZER RELIEF TANK CONTROL
S-2.3B	BURPING PRESSURIZER RELIEF TANK (TO BE OPENED TO ATMOSPHERE)
S-2.4A	DRAINING THE PRESSURIZER (RCS DEGASSED)
S-2.4B	PRESSURIZER WARER LEVEL CHANGES (RCS NOT DEGASSED)
S-2.5A	BURPING REACTOR COOLANT DRAIN TANK (TO BE OPENED TO ATMOSPHERE)
S-2.5B	RESTORING REACTOR COOLANT DRAIN TANK TO SERVICE AFTER MAINTENANCE
S-21.1	1A HYDROGEN RECOMBINER PURGING AND OPERATION
S-21.2	1B HYDROGEN RECOMBINER PURGING AND OPERATION
S-23.1	1A CONTAINMENT RECIRCULATION FAN COOLERS PRE-STARTUP
S-23.2	1B CONTAINMENT RECIRCULATION FAN COOLERS PRE-STARTUP
S-23.2.2	CONTAINMENT PURGE PROCEDURE
S-23.2.3	CONTAINMENT MINI-PURGE SYSTEM OPERATION
S-23.3	1C CONTAINMENT RECIRCULATION FAN COOLERS PRE-STARTUP
S-23.3A	PENETRATION COOLING SYS, CONTROL ROD DRIVE COOLING SYSTEM
S-23.4	1D CONTAINMENT RECIRCULATIN FAN COOLER PRE-STARTUP
S-23.5	POST ACCIDENT CHARCOAL FILTER OPERTION
S-24.1	REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION
S-25.1	STEAM GENERATOR DRAINING TO RETENTION TANK

NUMBER	TITLE
S-25.4	PROCESSING WATER FROM EITHER STEAM GENERATOR
S-25.5	STEAM GENERATORS BLOWDOWN RELEASE
S-25.6	TRANSFERRING WATER FROM S/G BLOWDOWN TANK TO THE WASTE HOLDUP TANK
S-26.1	COMPUTER PROGRAM CHECK
S-26.2	COMPUTER OUT-OF-SERVICE
S-26.3	COMPUTER AXIAL TILT ALARM
S-27.1	VOLUME CONTROL TANK GRINNELL DIAPHRAGM VALVES ISOLATION FOR ----
S-27.1003	VALVE 1003 ISOLATION
S-27.110/111	ISOLATION OF BLEND FLOW CONTROL VALVE
S-27.1133	VALVE 1133 ISOLATION
S-27.1610B	ISOLATION OF DEMINERALIZER DRAIN VLVE 1610B
S-27.203	CVCS RELIEF VALVE 203 ISOLATION
S-27.211	ISOLATION OF CATION BED BYPASS VALVE 211
S-27.2238	VALVE 2238 ISOLATION
S-27.2276	ISOLATION OF OUTLET OF 110C TO VCT VALVE 2276
S-27.245	ISOLATION OF MIXED BED DEMINERALIZER BYPASS VALVE 245
S-27.282A/282B/282C	ISOLATION OF VALVES 282A, 282B, AND 282C
S-27.294/296/392A	ISOLATION OF AOV-294, AOV-296, OR AOV-392A
S-27.3	ISOLATION, FLUSHING, AND RESTORATION OF SELECTED 12% BORIC ACID PIPING
S-27.3	ISOLATION, FLUSHING & RESTORATION OF SELECTED 12% BORIC ACID PIPING FOR-
S-27.314	SEAL RETURN LINE RELIEF VALVE 314 ISOLATION
S-27.347	V-347 OR 349B ISOLATION AND RESTORATION
S-27.348A	VALVE 348A ISOLATION
S-27.348B	VALVE 348B ISOLATION
S-27.353	ISOLATION OF VALVE 353
S-27.354	ISOLATION OF V-354 FOR MAINTENANCE
S-27.356	ISOLATION OF VALVE 356
S-27.5.1	PRESSURIZER STEAM SPACE SAMPLE VALVES ISOLATION
S-27.5.3	RCS LOOP SAMPLE VALVES ISOLATION
S-27.515/516	PRESSURIZER RELIEF GUARD VALVES ISOLATION
S-27.801.A/B	ISOL OF THE RCS OVERPRESSURE PROTECTION SYSTEM HIGH PRESSURE NITRO TANKS
S-27.823	ISOLATION OF RMW TO COMPONENT COOLING VALVE 823
S-27.839A/839B	ISOLATION OF "A" AACCUMULATOR TEST LINE VALVES 839A & 839B
S-27.840A/840B	ISOLATION OF "B" CCUMULTAOR TEST LINE VALVE 840A/840B
S-27.861	RELIEF VALVE 861 ISOLATION
S-27.887	SI RELIEF VLV 887 AND FLOW XMTRS 924 AND 925 ORIFICES ISOLATION
S-27.951/966A	AOV-951/966A, PRESSURIZER STEAM SPACE SAMPLE VALVES ISOLATION

NUMBER	TITLE
S-27.953/966B	AOV-953/966B, PRESSURIZER LIQUID SPACE SAMPLE VALVES ISOLATION
S-27.955/966C	AOV-955 AND AOV-966C, RCS LOOP SAMPLE VALVES ISOLATION
S-27.966B	AOV-966B, PRESSURIZER LIQUID SPACE REMOTE SAMPLE VALVE ISOLATION
S-27.966C	AOV-966C, RCS LOOP SAMPLE VALVE ISOLATION
S-27.TCV145	ISOLATION OF CVCS LETDOWN TEMPERATURE DIVERSION VALVE TCV-145
S-29.1	PREALIGNMENT OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM
S-29.2	CHARGING THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM ACC W/ N2
S-3.1	BORON CONCENTRATION CONTROL
S-3.1.N.1	VALVE 398B FLUSHING
S-3.1.N.2	VALVE 341 FLUSHING
S-3.1.N.3	FLUSHING OF 1-A BORIC ACID PUMP DISCHARGE PIPING
S-3.1.N.4	FLUSHING OF 1-B BORIC ACID PUMP DISCHARGE PIPING
S-3.1B	PRE-OPERATIONAL LINE-UP OF BORIC ACID SYSTEM
S-3.1D	BORON CONTROL VALVE LINEUP
S-3.1E	1A BORIC ACID STORAGE TANK ISOLATION/RESTORATION5
S-3.1F	1B BORIC ACID STORAGE TANK ISOLATION/RESOTRATION
S-3.1G	ISOL; FLUSH AND DRAIN THE "A" BORIC ACID STORAGE TANK V-8
S-3.1H	ISOLATING, FLUSHING AND DRAINING THE "B" BORIC ACID STORAGE TANK
S-3.1J	BORIC ACID STORAGE TANK FILTER ISOLATION
S-3.1K	1A BORIC ACID TRANSFER PUMP ISOLATION/RESTORATION
S-3.1L	1B BORIC ACID TRANSFER PUMP ISOLATION/RESORATION
S-3.1M	ISOLATION OF BATCHING SYSTEM
S-3.1N	ISOLATION OF MISCELLANEOUS VALVES IN BORIC ACID STORAGE SYSTEM
S-3.1N.1	VALVE 398B FLUSHING
S-3.1N.2	VALVE 341 FLUSHING
S-3.1N.3	FLUSHING OF 1-A BORIC ACID PUMP DISCHARGE PIPING
S-3.1N.4	FLUSHING OF 1-8 BORIC ACID DISCHARGE PIPING
S-3.1P	ACTION FOR A BORIC ACID TANK EXCEEDING THE TECHNICAL SPECS
S-3.1Q	VOLUMETRIC CHECK OF BORIC ACID INTEGRATOR
S-3.2	CHARGING AND VOLUME CONTROL
S-3.2A	CHARGING AND VOLUME CONTROL SYSTEM PRE-STARTUP ALIGNMENT
S-3.2B	PLACING A MIXED BED DEMINER. IN SERVICE-BORON CONCENT. DIFF. THAN RCS
S-3.2C	PLACING AND REMOVING FROM SERVICE "B" HOT LEG CHARGING
S-3.2D	TRANSFERRING WATER FROM CVCS HUT'S TO RWST OR SFP
S-3.2E	ESTABLISHING NORMAL LETDOWN
S-3.2F	DRAINING THE A, B OR C CVCS HOLDUP TANK TO THE WASTE HOLDUP TANK
S-3.2G	CHARGING PUMP ISOLATION

NUMBER	TITLE
S-3.2H	LEAKOFF COLLECTION PUMP ISOLATION
S-3.2J	ISOLATION OF REACTOR COOLANT FILTER AND ASSOCIATED GRILL
S-3.2K	ISOLATION AND RESTORATION OF REGENERATIVE HX, CHARGING
S-3.2L	SWAPPING SEAL INJECTION FILTERS
S-3.2M	LEAKOFF COLLECTION PUMP SUCTION ISOLATION
S-3.3A	COOLANT CHEMISTRY ADDITION TANK
S-3.3B	HYDROGEN CONCENTRATION CONTROL
S-3.3C	H2 OR O2 REMOVAL FROM PRIMARY SYSTEM BY BURPING VOLUME CONTROL TANK
S-3.3D	CVCS CATION DEMINERALIZER BED OPERATIONS USING "A" DEB
S-3.3E	BURPING VCT FOR GAS REMOVAL
S-3.3G	CVCS DEBORATING DEMINERALIZER BED OPERATION USING "B"
S-3.3H	NON-CONDENSIBLE GAS BUBBLE IN THE RCS
S-3.3J	REACTOR HEAD VENT OPERATION
S-3.4A	CVCS HUT RECIRCULATION
S-3.4B	GAS STRIPPER STARTUP
S-3.4C	CALCULATIONS FOR BORON RECYCLE PROCESS
S-3.4D	BORON RECYCLE PROCESS START-UP
S-3.4E	BORON RECYCLE PROCESS OPERATION
S-3.4F	BORON RECYCLE PROCESS SHUTDOWN
S-3.4G	TRANSFER OF BORIC ACID CONCENTRATES
S-3.4H	BORON RECYCLE CATION, BASE REMOVAL AND CONDENSATE
S-3.4I	RECIRCULATING OF "A" OR "B" MONITOR TANK
S-3.4J	TRANSFERRING MONITOR TANK TO RMW TANK
S-3.4K	RELEASING MONITOR TANK TO DISCHARGE CANAL
S-3.4L	TRANSFER OF MONITOR TANK TO CVCS HUT
S-3.4M	MONITOR TANK RECIRCULATION THROUGH EVAPORATOR DI
S-3.4P	TRANS. CONCENTRATES FROM BORIC ACID EVAP. FEED TANK TO WASTE EVAP FEED--
S-3.4R	TRANSFER OF ANY CVCS HUT TO ANOTHER CVCS HUT
S-3.4U	CHEMICAL ADDITION TO MONITOR TANKS A/B
S-3.5.1	DEBORATING DEMINERALIZER (B) RINSE
S-3.6	AUXILIARY BUILDING HEAT TRACING SYSTEM OPERATION
S-30.0	SAFEGUARDS SYSTEMS VALVES AND BREAKERS
S-30.1	SAFETY INJECTION SYSTEM VALVE AND BREAKER POSITION VERIFICATION
S-30.2	RHR SYTEM VALVE AND BREAKER POSITION VERIFICATION
S-30.3	CONTAINMENT SPRAY VALVE AND BREAKER POSITION VERIFICATION
S-30.4	AUXILIARY FEEDWATER SYSTEM VALVE AND BREAKER POSITION
S-30.5	STANDBY AUXILIARY FEEDWATER PUMP VALVE AND BREAKER POSITION

NUMBER	TITLE
S-30.6	SAFEGUARD VALVE POSITION VERIFICATION (INSIDE C.V.)
S-30.7	CONTAINMENT ISOLATION VALVE VERIFICATION
S-31	DIGITAL METAL IMPACT MONITOR SYSTEM
S-319A/319B	ISOLATION OF VALVES 319A/319B
S-32	ADJUSTING THE SOURCE RANGE HIGH FLUX AT SHUTDOWN ALARM SETPOINT
S-33	BREATHING AIR SUPPLY TO THE AUXILIARY BUILDING
S-33.1	STEAM GENERATR BREATHING AIR SUPPLY TO CONTAINMENT
S-4.1	ACID CLEANING OF WASTE EVAPORATOR
S-4.1.22	.....
S-4.1.26	.....
S-4.1.27	TEMPORARY CHEM NUCLEAR WASTE SYSTEM OPERATION
S-4.1.28	TEMPORARY CHEM NUCLEAR WASTE SYSTEM FILTER REPLACEMENT
S-4.1.29	TEMPORARY CHEM NUCLEAR WASTE SYSTEM RESIN SLUICE OUT/SLUICE IN
S-4.1.30	CHEM NUCLEAR WASTE SYSTEM OPERATION/SAMPLING/ISOLATION AND RECORDS**
S-4.1.31	TRANSFER OF WHUT THRU CHEM NUCLEAR WASTE SYSTEM TO A MONITOR TANK
S-4.1.32	TEMPORARY CHEM NUCLEAR WASTE SYSTEM SETUP, LEAK TEST, AND BREAKDOWN
S-4.1A	LIQUID WASTE PROCESS STARTUP
S-4.1C	LIQUID WASTE PROCESS OPERATION AND SHUTDOWN
S-4.1E	WASTE CONDENSATE RELEASE - RELEASE # , TANK
S-4.1F	WASTE CONDENSATE POLISHER RECIRCULATION
S-4.1G	"A" OR "B" LAUNDRY AND HOT SHOWER TANK RELEASE TO DISCHARGE CANL OR**
S-4.1N	TRANSFER WASTE HOLDUP TANK TO "A" MONITOR TANK
S-4.1P	TRANSFER OF CHEMICAL DRAIN TANK TO WASTE HOLDUP TANK
S-4.1T	.....
S-4.1U	VELOCITY FLUSH OF R-18
S-4.1V	TRANSFER OF WASTE EVAPORATOR FEED TANK TO WASTE HOLDUP TANK
S-4.1W	N OH OR OTHER CHEMICAL ADDITION TO WASTE EVAPORATOR BOTTOMS
S-4.1X	LINE UP TO DIRECT WASTE EVAPORATOR DISTILLATE TO EITHER MONITOR TANK
S-4.1Y	.....
S-4.2.1	WASTE GAS SYSTEM VALVE ALIGNMENT FOR AUTOMATIC OPERATION
S-4.2.11	SECURING AND RESTORING TO SERVICE THE N2 SUPPLY SYSTEM FOR MAINTENANCE
S-4.2.12	O2/H2 GAS ANALYZER OPERATION
S-4.2.13	ISOLATION, N2 PURGE AND RESTORATION OF 1D GAS DECAY TANK FOR OPERATIONS
S-4.2.14	ISOLATION, N2 PURGE AND RESTORATION OF 1C GAS DECAY TANK FOR OPERATIONS
S-4.2.15	.....
S-4.2.16	ISOL, N2 PURGE & RESTOR. OF 1A GAS DECAY TANK FOR OPER. &/OR MAINTENANCE
S-4.2.17	WASTE GAS SYSTEM VENT HEADER ISOLATION FOR MAINTENANCE

NUMBER	TITLE
S-4.2.18	.....
S-4.2.19	WASTE GAS SYSTEM ISOLATION
S-4.2.2	1A WASTE GAS COMPRESSOR STARTUP
S-4.2.20	.....
S-4.2.21	ISOLATION OF THE GAS DECAY TANK REUSE VALVES
S-4.2.3	1B WASTE GAS COMPRESSOR STARTUP
S-4.2.4	GAS DECAY TANK OPERATIONS
S-4.2.5	RELEASE OF GAS DECAY TANK
S-4.2.6	ISOLATING REACTOR COOLANT DRAIN TANK FROM VENT HEADER
S-4.2.8	LIQUID NITROGEN STORAGE TANK
S-4.2.9	NITROGEN BACK-UP SUPPLY TO AUXILIARY BUILDING
S-4.4	SPENT RESIN REMOVAL TO SHIPPING CASKS
S-4.4.5A	"A" BORON RECYCLE CATION DI RESIN REPLACEMENT
S-4.4A	FLUSHING THE SPENT RESIN DISCHARGE LINE
S-4.4B	TRANSFERRING WATER/RESIN FROM THE "A" SRT TO THE "B" SRT
S-4.4C	FLUSHING SRT INLET HEADER
S-4.5	SLUICING WASTE CONDENSATE POLISHING DEMINERALIZER SPENT RESIN TO ------
S-4.5.10	"A" LETDOWN DEBORATING DI CATION RESIN REPLACEMENT
S-4.5.11	"B" LETDOWN DEBORATING DI RESIN REPLCEMENT
S-4.5.2	WASTE CONDENSATE POLISHING DEMINERALIZER RESIN REPLACEMENT
S-4.5.3A	.....
S-4.5.3B	"B" BORIC ACID EVAPORATOR CONDENSATE DEMINERALIZER RESIN REPLACEMENT
S-4.5.4A	"A" BORON RECYCLE BASE REMOVAL DI RESIN REPLACEMENT
S-4.5.4B	"B" BORON RECYCLE BASE REMOVAL DI RESIN REPLACEMENT
S-4.5.5A	.....
S-4.5.5B	"B" BORON RECYCLE CATION DI RESIN REPLACEMENT
S-4.5.6	SFP DI RESIN REPLACEMENT
S-4.5.7A	"A" LETDOWN MIXED BED DI RESIN REPLACEMENT
S-4.5.7B	"B" LETDOWN MIXED BED DI RESIN REPLACEMENT
S-5	NUCLEAR SAMPLE ROOM SAMPLING SYSTEM
S-6.1	QUANDRANT POWER TILT MONITOR OPERABILITY CHECK
S-64.4616	MOV-4616 ISOLATION AND RESTORATION FOR "MOVATS" TESTING
S-7A	RWST PURIFICATION
S-7B	REACTOR COOLANT LOW PRESSURE PURIFICATION
S-7C	TRANSFERING AND PURIFICATION OF RWST WATER FROM RWST
S-7D	SECURING REFUELING WATER PURIFICATION PUMP FROM REFUELING WATER PURIFIC.
S-7J	TRANSFERRING & PURIFICATION OF R.W.S.T. WATER FROM R.W.S.T.

NUMBER	TITLE
S-7L	MIXED BED D/I SATURATION WITH BORON USING REFUELING WATER PURIFIC. PUMP
S-8	COMPONENT COOLING WATER SYSTEM
S-839A/839B	ISOLATION OF "A" ACCUMULATOR TEST LINE VALVES 839A & 839B [C.P PP 'P PPA
S-8A	COMPONENT COOLING WATER SYSTEM START-UP AND NORMAL OPERATIONS
S-9.1S	STANDBY SFP COOLING SYSTEM OPERATION
S-9A	PLACING THE 1A SPENT FUEL PIT PURIFICATION AND/OR COOLING SYS IN SERVICE
S-9B	REMOVING 1A SFP SYSTEM FOR PURIFICATION AND COOLING FROM SERVICE
S-9D	FILTERING OF THE REFUELING CANAL
S-9E	DRAINING SPENT FUEL PIT TRANSFER CANAL TO REFUELING WATER STORAGE TANK
S-9F	XFER SPENT FUEL PIT XFER CANAL TO THE CVCS HUT, WHT OR MONITOR TANKS
S-9G	SPENT FUEL PIT SKIMMER PUMP
S-9J	BLENDING TO RWST
S-9L	BATCHING BORIC ACID AND TRANSFERRING TO SPENT FUEL PIT
S-9N	TRANSFER WATER FROM SPENT FUEL POOL TO ANY CVCS HOLDUP TANK
S-9T	REMOVING THE STANDBY (SKID-MOUNTED) SFP HEAT EXCHANGER FROM SERVICE
S-9W	BLENDER FLUSHING
S-9X	PLACING THE 1B SPENT FUEL PIT PURIFICATION AND/OR COOLING SYS IN SERVICE
S-9Y	REMOVING THE 1B SFP PURIFICATION COOLING FROM SERVICE
S04.5.3A	"A" BORIC ACID EVAPORATOR CONDENSATE DEMINERALIZER RESIN REPLACEMENT
SC-3.30.1	ALTERNATIVE SHUTDOWN FOR CONTROL COMPLEX FIRE
SC-4.1	LOW SCREENHOUSE WATER LEVEL
T-1	SERVICE AIR COMPRESSORS
T-14A	FEEDWATER HEATERS VALVE ALIGNMENT
T-14B	ISOLATION AND RESTORATION OF 5-A FEEDWATER HEATERS
T-14C	ISOLATION AND RESTORATION OF 5-B FEEDWATER HEATER
T-14D	ISOLATION AND RESTORATION TO SERVICE OF 4A FEEDWATER HEATER
T-14E	ISOLATION AND RESTORATION TO SERVICE OF 4B FEEDWATER HEATER
T-14F	S/G BLOWDOWN SYSTEM STARTUP
T-14G	STEAM GENERATOR BLOWDOWN HEAT RECOVERY SYSTEM SHUTDOWN
T-14H	MOISTURE SEPARATOR REHEATER PREOPERATIONAL ALIGNMENT
T-14I	FEEDWATER HEATER HYDROSTATIC TEST
T-14J	5B HEATER EXTRACTION STEAM ISOLATION
T-14K	COOLDOWN OF THE 4A FEEDWATER HEATER
T-14L	COOLDOWN OF THE 4B FEEDWATER HEATER
T-14M	BLOWDOWN SYSTEM FLOW CHANGES
T-14N	BLOWDOWN SYSTEM FLOW CHANGES
T-15A	ISOLATION OF MSR REHEATER 1A

NUMBER	TITLE
T-15B	ISOLATION OF MSR REHEATER 1B
T-15C	ISOLATION OF MSR REHEATER 2A
T-15D	ISOLATION OF MSR REHEATER 2B
T-15E	RESTORATION OF MSR REHEATER 1A
T-15F	RESTORATION OF MSR REHEATER 1B
T-15G	REACTION OF MSR REHEATER 2A
T-15H	RESTORATION OF MSR REHEATER 2B
T-16A	TURBINE PRE-STARTUP
T-16B	TURBINE E.H. SYSTEM PRE-STARTUP
T-16C	CONDENSER VACUUM STARTUP
T-16D	MAIN AIR EJECTOR STARTUP
T-16F	FILLING ELECTRO-HYDRAULIC RESERVOIR
T-16G	PRIME MOVER HOLD AT GINNA
T-16H	PRIME MOVER AT GINNA HOLD CLEARING
T-17D	STARTUP OF OIL PURIFIER ON TURBINE OIL RESERVOIR
T-17J	GENERATOR BEARING DRAIN VAPOR EXTRACTOR - NORMAL LINEUP
T-17K	GENERATOR BEARING DRAIN VAPOR EXTRACTOR BACK-UP EDUCTOR
T-17L	TURBINE LUBE OIL RESERVOIR ALTERNATE VAPOR EXTRACTOR
T-18A	INTERCEPT AND REHEAT STOP VALVE TEST
T-18B	TURBINE MAIN STEAM STOP TEST
T-18C	TURBINE OVERSPEED TRIP TEST
T-18D	TURBINE OVERSPEED TRIP MECHANISM OIL PRESSURE TEST
T-18E	TURBINE THRUST BEARING TRIP TEST
T-18F	TURBINE LOW BEARING OIL PRESURE TRIP TEST
T-18G	TURBINE LOW VACUUM TRIP TEST
T-18H	TURBINE OIL PUMPS START TEST
T-25	INSTRUMENT AND CONTROL BUS
T-27.1	1A EMERGENCY DIESEL GENERATOR PRE-STARTUP ALIGNMENT
T-27.2	1B EMERGENCY DIESEL GENERATOR PRE-STARTUP ALIGNMENT
T-27.3	FUEL OIL RECEIPT EMERGENCY/FIRE/SECURITY/TSC/DIESEL
T-27.4	DIESEL GENERATOR OPERATION
T-27.5	DIESEL STARTUP AIR COMPRESSOR ISOLATION
T-27.6	DIESEL FUEL OIL TRANSFER PUMP ISOLATION/RESTORATION
T-27.8	FUEL OIL SAMPLING
T-29A	PRE-STARTUP OF GENERATOR HYDROGEN COOLERS
T-29B	CONDENSATE COOLER LINEUP AND OPERATION
T-29C	ISOLATION OF CONDENSATE COOLER

NUMBER	TITLE
T-2A	PRE-STARTUP ALIGNMENT AND OPERATION OR INSTRUMENT AIR SYSTEM
T-2B	INSTRUMENT AIR DRYER 1A OR 1B ISOLATION/RESTORATION
T-2C	PRE-START ALIGNMENT AND OPERATION OR BREATHING AIR SUPPLY TO AUX BLDG
T-2D	FINAL SHUTDOWN AND NON-OP ALIGN OF BREATHING AIR SUPPLY TO THE AUX BLDG
T-2E	ISOL. AND RESTOR. OF INSTRUMENT AIR DRYER PRE-FILTER AND AFTER FILTERS
T-2F	EMERGENCY BACKUP TO INSTRUMENT AIR SYSTEM FROM PORTABLE AIR COMPRESSORS
T-3.1	HYDRAZINE ADDITION TO CONDENSATE SYSTEM
T-31.1	REMOVING AIR WITH CO2 REMOVING CO2 WITH HYDROGEN
T-31.10	DAILY CHECK OF TOXIC GAS ANALYZER GA-80 AND RADIATION MONITOR R-36,**
T-31.2	REMOVING HYDROGEN WITH CO2 REMOVING CO2 WITH INSTRUMENT AIR
T-31.3	RAISING H2 PRESSURE IN MAIN GENERATOR
T-31.4	T-G STATOR WINDINGS TEMPERATURE DEVIATIONS
T-31.5	HYDROGEN INNERCOOLED GENERATOR AIR PRESSURE TEST
T-32.1	FIRE SERVICE WATER SYSTEM VALVE AND BREAKER POSITION VERIFICATION
T-34A	GENERATOR SEAL OIL SYSTEM START-UP
T-34B	GENERATOR SEAL OIL SYSTEM OPERATION
T-34D	GENERATOR SEAL OIL SYSTEM SHUTDOWN
T-35A	AUXILIARY AND INTERMEDIATE BUILDING VENTILATION SYSTEM
T-35F	STEAM TO AUX BUILDING, SCREENHOUSE OR DIESEL GENERATORS AND OIL ROOM
T-35G	NUCLEAR HOUSE HEATING STEAM INTO SERVICE
T-35H	NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANNEL
T-35I	FUNCTIONAL ALIGNMENT OF THE CONTROL ROOM AIR HANDLING UNIT
T-35J	SHUTDOWN/START UP OF THE HOUSE HEATING BOILER
T-35K	SHUTDOWN OF NUCLEAR HOUSE HEATING
T-35M	SECURING BOILER FOR MAINTENANCE
T-36.1	STATION SERVICE WATER - HEADER VALVE ALIGNMENT FOR TWO LOOP OPERATION
T-36.2	SERVICE WATER REDUNDANT RETURN LINE OPERATION
T-38A	PROVIDING GLAND SEAL WATER TO CONDENSATE PUMPS
T-38B	PROVIDING GLAND SEAL WATER TO HEATER DRAIN PUMPS
T-38C	PROVIDING GLAND SEAL WATER TO BLOWDWON TRANSFER PUMP
T-38D	PROVIDING GLAND SEAL WATER TO TURBINE CONDENSER EXPANSION JOINT
T-38E	PROVIDING GLAND SEAL WATER TO VACUUM PACKED VALVES
T-38F	GLAND SEAL WATER TO MAIN FEED PUMPS
T-38N	PROVIDING GLAND SEAL WATER TO CONDENSATE BOOSTER PUMPS
T-41A	ALIGNMENT OF AUXILIARY FEEDWATER SYSTEM PRIOR TO POWER OPERATION
T-41B	TURBINE DRIVEN AUXILIARY FEED PUMP REMOVAL FROM SERVICE
T-41C	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP RESTORATION TO SERVICE

NUMBER	TITLE
T-41D	MOTOR DRIVEN AUXILIARY FEEDWARER PUMP ISOLATION AND
T-41E	ALTERNATE WATER SUPPLY TO FEEDWATER PUMPS
T-42	DRAIN RETENTION TANK SYSTEM
T-42.1	OPERATION OF TEMPORARY RETENTION TANK
T-42.1A	OPERATION OF THE TEMPORARY RETENTION TANK WHILE THE RETENTION TANK IS *
T-43.1	WAREHOUSE HEATING BOILER OPERATION
T-44.1	CONDENSATE SUPPLY TANK FOR STANDBY AUXILIARY FEEDWATER PUMPS
T-44.2	STANDBY AUXILIARY FEEDWATER (SAFW) SYSTEM ALIGNMENT FOR
T-44.3	STANDBY AUXILIARY FEEDWATER SYSTEM FILLING & VENTING
T-44.4	HVAC LINE-UP FOR STANDYBY AUXILIARY FEEDWATER SYSTEM
T-44.5	1C STANDBY AUXILIARY FEEDWATER PUMP ISOLATION AND RESTORATION
T-44.6	1D STANDBY AUXILIARY FEEDWATER PUMP ISOLATION AND RESTORATION
T-46	RECEIVING 29% AMMONIUM HYDROXIDE TO BULK STORAGE TANK
T-47	AMMONIA ADDITION SYSTEM LINE UP TO CONDENSATE SYSTEM
T-47.1	AMMONIA ADDITION SYSTEM LINE UP TO AVT REGENERATION
T-47.2	AMMONIA ADDITION SYSTEM LINE UP TO S/G CHEMICAL INJECTION TANKS
T-4A	MAIN FEEDWATER PUMPS 1A AND 1B
T-4B	MAIN FEEDWATER SYSTEM LINEUP
T-4C	REMOVING AND ISOLATING 1A FEEDWATER PUMP
T-4D	REMOVING AND ISOLATING 1B FEEDWATER PUMP
T-4E	RESTORING 1A FEEDWATER PUMP TO SERVICE AFTER MAINTENANCE
T-4F	RESTORING 1B FEEDWATER PUMP TO SERVICE AFTER MAINTENANCE OR PWR REDUCT.
T-4G	MAIN FEEDWATER PUMP ROOM VENTILATION SYSTEM
T-4H	FEEDWATER PMPS SUCT. AND DISCH. PIPING ISOLATION AND DRAINING
T-5A	CONDENSATE SYSTEM LINE-UP, CHARGING AND VENTING
T-5B	VENTING AND FILLING OF CONDENSATE PUMP
T-5C	CONDENSATE PUMP ISOLATION
T-5D	DRAINING CONDENSER HOTWELLS TO MONITOR TANKS
T-5E	CONDENSATE AND FEEDWATER SYSTEM OPERATION IN THE CLEANUP MODE
T-6.1	REGENERATION OF THE COND. POLISH. MIXED BED DEMINERALIZER UNITS
T-6.10	CONDENSATE POLISHER RESIN TRAP BACKWASH
T-6.11	NEUTRALIZING AND RELEASE OF WATER FROM THE HIGH CONDUCTIVITY WASTE TANK
T-6.12	TRANSFERRING WATER FROM THE OUTSIDE CONDENSATE STORAGE TANK TO THE ***
T-6.3	FILLING THE OUTSIDE CONDENSATE STORAGE TANK WITH REGENERATION SUPPLY WTR
T-6.4	FILLING THE COND POLISH SYS ACID AND CAUSTIC TANKS
T-6.6	CONDENSATE POLISHING SYSTEM RESIN LOADING
T-6.7	AVP CONCEN. ACID PMPS ISOLATING, FLUSHING, AND RETURNING TO NORMAL

NUMBER	TITLE
T-6.8	AVP CONCEN. CAUSTIC PMPS ISOLATING, FLUSHING AND RETURNING TO NORMAL
T-6.9	CONDENSTE POLISHING MIXED BED DEMINERALIZER UNITS
T-64.9746	MOV-9746 ISOLATION AND RESTORATION FOR "MOVATS" TESTING
T-7	CONDENSATE STORAGE TANK WARM UP
T-7.1.1	A & B STEAM GENERATOR SECONDARY SIDE N2 ASSISTED STATIC HEAD HYDRO
T-7A	WATER TREAT. FOR TURB. PLANT; "SERIES","PARALLEL" OR "ALTERNATE PARALLEL
T-7C	REGENERATION OF CATION - ANION DI UNIT
T-7D	REGENERATION OF MIXED BED UNITS
T-7E	WATER TREATMENT - CARBON FILTER BACKWASH
T-7F	DRAINING CONDENSATE STORAGE TANK(S) DURING NORMAL OPERATION
T-7H	RESTORING CONDENSATE STORAGE TANKS TO LAUNDRY HOT WATER SYSTEM
T-7K	PROCESSING 5 BED WATER USING CONDENSATE STORAGE TANK AND CONENSATE**
T-7L	RECEIVING ACID OR CAUSTIC SHIPMENT TO SERVICE BUILDING
T-7Q	CHEMICAL ADDITION USING 1E SECONDARY CHEMICAL ADDITION TANK
T-7R	CORS UNIT FILL AND VENT
T-7S	CORS START UP FOLLOWING SHORT TERM SHUTDOWN
T-7T	CORS UNIT STARTUP FOLLOWING LONG TERM SHUTDOWN
T-7U	CORS UNIT SHORT TERM SHUTDOWN
T-7V	CORS UNIT LONG TERM SHUTDOWN
T-7W	CORS UNIT RESIN UNLOAD/LOAD
T-8A	STARTUP AND SHUTDOWN "A" & "B" CIRCULATING WATER PUMPS
T-8B	CONDENSER HYDRO
T-8C	ISOLATION OF CONDENSER WATER BOX AT POWER
T-8F	FILLING THE HYYPOCHLORITE TANK
T-23.29	CONTAINMENT ISOL. VALLVE LEAK RATE TESTING AUX. COOLANT SYS. FROM **

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR MODIFICATION REPORT

This printout provides a listing of all Simulator Modifications for the Ginna Simulator.

LEGEND

SOURCE	Origin of Simulator Modification
PCC	Plant Configuration Change
SDR	Simulator Discrepancy Report
RSE	Request for Simulator Enhancement
Impldate	Implementation Date NOTE - A 999999 in this field indicates that the SM was cancelled before reaching the implementation stage. A "....." in this field indicates that the SM is still open
SIMMOD	Simulator Modification Number

SIMMOD	TITLE	SOURCE	IMPLDATE
86-01	ADDITION OF VALVE 1599 TO PANEL 7	PCC	860826
86-02	REPLACEMENT OF RAD MONITORS WITH DIGITAL MONITORS	PCC	890712
86-03	NEW THOT AND TCOLD METERS ADDED TO PANEL 6	PCC	860731
86-04	NET WATTMETER SCALE CHANGE	PCC	860806
86-05	ANNUNCIATOR WINDOW CHANGES	PCC	861209
86-06	ADDITION OF HEATER DRAIN TANK LEVEL CONTROLLER (PANEL 6)	PCC	870105
86-07	INCORE THERMOCOUPLE MONITOR REPLACEMENT	PCC	870203
86-08	ADDITION OF FIRE CONTROL PANEL	PCC	870512
86-09	ADDITION OF R-33 & R-34	PCC	900227
86-10	REMOVAL OF 'UNRECOVERABLE' STATUS FROM MOST MALFUNCTIONS	RSE	860331
86-11	CHANGE RECORDERS RK-28A & B MONITOR POINTS TO MATCH CONTROL ROOM	SDR	860731
86-12	REQUESTED CHANGES FOR PL PERF RCS-3 AND RV-8621 SETPOINT	RSE	861212
86-13	CYCLE 16 CORE UPDATE	PCC	870302
86-14	CORRECTION FOR SDR-86-01 AND MALF NIS-5 CHANGE REQUEST	SDR	861216
86-15	MICROPROCESSOR ROD POSITION INDICATION SYSTEM ADDITION	PCC	880415
86-16	CORRECTIONS FOR MODELLING PROBLEMS IN SWS AND TGA.	SDR	861209
86-17	FIRE SYSTEM MODIFICATION (PANEL 2)	PCC	999999
86-18	REACTOR VESSEL LEVEL MONITORING SYSTEM	PCC	871002
86-19	SIMULATOR CONTROL ROOM LIGHTING UPGRADE	PCC	881122
86-20	RMS RACK 2 REPLACEMENT (CANCELLED - SEE SM-86-02)	PCC	999999
86-21	1A - 2A & 1B - 2B HEATER PUMP INTERLOCK CORRECTION	SDR	861216
86-22	RCP NO. 1 SEAL LEAKOFF CHECK VALVES (CANCELLED)	PCC	999999
86-23	OVERCURRENT PROTECT UPGRADE ON DB BREAKERS	PCC	999999
86-24	SAS/PPCS ADDITION	PCC	880929
86-25	CONTAINMENT PURGING MODIFICATION	PCC	900301
86-26	LOA FOR TIE BREAKER 52/BT 14-16	PCC	861216
86-27	CONTROL BOARD PAINT/TAPE/LABELLING (CRDR)	PCC	890202
86-28	MAIN FEEDWATER PUMP RECIRCULATION SYSTEM MODIFICATION	PCC	880113
86-29	DIVERSE TRIP MODIFICATION ON REACTOR TRIP BREAKERS	PCC	870930
86-30	OVEREXCITATION RELAY	PCC	900824
86-31	NEW RCS PRESSURE INDICATION BEHIND MCB	PCC	880113
86-32	MCB ALARM H-22	PCC	870325
86-33	POST ACCIDENT CHARCOAL FILTER TEMPERATURE MONITOR (SEE SM-86-08)	PCC	999999
86-34	'A' DIESEL GENERATOR EMERGENCY CONTROL PANEL	PCC	999999
86-35	ADDITION OF DIESEL GENERATOR FEEDER BREAKER TO BUS 17	PCC	870325
87-01	A AND B VITAL BATTERY SYSTEM REPLACEMENT	PCC	890331
87-02	MCB STATUS LIGHT SYSTEM	PCC	871130

SIMMOD	TITLE	SOURCE	IMPLDATE
87-03	INSTALLATION OF MCB PLATES (CONDENSATE BOOSTER PUMP AREA)	PCC	870901
87-04	BORIC ACID PIPING	PCC	870408
87-05	CORRECTIONS FOR SDR'S 86-07,86-08,87-01 & 87-08	SDR	880415
87-06	PT-420 POWER SUPPLY	PCC	890317
87-07	INCORPORATION OF PPCS POINTS INTO SIMULATOR	PCC	901003
87-08	STATION 13A SYNCHRONIZING RELAY	PCC	890112
87-09	ADDITION OF LOA'S FOR MOV'S PZR LEVEL AND CHANNEL N31	RSE	880415
87-10	SET POINT CHANGE FOR ALARM WINDOWS AA-6 & AA-7	PCC	881025
87-11	CONDENSATE BOOSTER PUMP START LOGIC	SDR	890117
87-12	CONDENSATE BYPASS VALVE DELAY CORRECTION.	SDR	890315
87-13	CORRECTION OF SETPOINT FOR SI BLOCK PERMISSIVE AND UNBLOCK.	SDR	890217
87-14	RCS OVERPRESSURIZATION PROTECTION ANNUNCIATOR SETPOINT CORRECTION.	SDR	881104
87-15	#1 SEAL DELTA P ALARM CORRECTION.	SDR	880707
87-16	ADDITION OF LOA'S FOR AOV-897 & 898.	SDR	890331
87-17	PT-950 & PT-479 POWER SUPPLIES INCORRECT.	SDR	890419
87-18	LEADING EDGE FLOWMETER INSTALLATION	PCC	890706
88-01	ADJUSTMENT OF RMS READING TO MATCH PLANT	SDR	880905
88-02	ALARM H-23 TO BE DISCONNECTED	SDR	880223
88-03	ADD CV EVACUATION ALARM TO ALL 7 CV NOISE MONITOR POINTS	SDR	.....
88-04	MFW AND FW BYPASS VALVE INDICATION	PCC	890728
88-05	C & D STANDBY AUX FEEDWATER PUMP INTERLOCK	PCC	999999
88-06	CT-1 SPING TERMINAL REPLACEMENT	PCC	910214
88-07	CORE RELOAD - CYCLE 18	PCC	890213
88-08	TOTAL CHARGING FLOW INDICATION	PCC	890422
88-09	STATUS LIGHT CHANGES	PCC	890827
88-10	WIDE RANGE PRT PRESSURE INDICATION	PCC	890422
88-11	HIGH FLOW THRU MFP BYPASS VALVE	SDR	900510
88-12	ANNUNCIATOR J-28 ALARM LOGIC	SDR	900523
88-13	VACUUM LOSS ON LOSS OF CW PUMPS OR TURBINE BUILDING STEAM	SDR	.....
88-14	STEAM GENERATOR BLOWDOWN SYSTEM MODIFICATION	PCC	999999
88-15	CONDENSER IN/OUT FLOW PROBLEM	SDR	.....
88-16	ANNUNCIATOR I-26 ALARMS INCORRECTLY	SDR	.....
88-17	EDS LOA'S FOR MOV-851A & B	SDR	890827
88-18	EH SYSTEM GREEN/RED LIGHTS FOR VALVE POSITIONS	SDR	891013
88-19	BAST LOW LOW LEVEL ALARMS	SDR	891109
88-20	SECONDARY BLOWUP WITH CND-26 & 28 LOA'S	SDR	890727
88-21	SYSTEM 75 TELEPHONES	PCC	901016

SIMMOD	TITLE	SOURCE	IMPLDATE
88-22	INCREASE OF RWST BORON CONCENTRATION	SDR	890313
88-23	RELABEL LOA'S AND ADD CRC LOA'S	SDR	.....
88-24	CONTROL ROOM ALARMS	PCC	910114
88-25	N31 HI LEVEL TRIP STPT INCORRECT	SDR	890111
88-26	PT-6.2 CORRECTIONS	SDR	890605
88-27	PT-6.3.1 CORRECTIONS	SDR	880811
88-28	PT-6.3.2 CORRECTIONS	SDR	880815
88-29	PT-6.2 CORRECTIONS	SDR	890605
88-30	PT-6.3.3 CORRECTIONS	SDR	880815
88-31	PT-6.3.4 CORRECTIONS	SDR	880811
88-32	S/G TUBE EFFECIENCY PROBLEMS	SDR	880721
88-33	MRPI ROD ON BOTTOM MESSAGE NOT RECEIVED	SDR	890508
88-34	D-15 ALARM NOT ACTIVATING CORRECTLY	SDR	999999
88-35	LOA DESCRIPTIONS SI/RHR NOT CORRECT	SDR	880812
88-36	CORRECTIONS FOR SDR-88-34	SDR	890827
88-37	E-7 & G-5 GROUPS INCORRECT - CORRECTION FOR SDR-88-41	SDR	890727
88-38	RCP THERMAL BARRIER FLOW INCORRECT (SDR-88-43)	SDR	890727
88-39	VCT VENT VALVE MAINTAINING INCORRECT PRESSURE (SDR-88-45)	SDR	890309
88-40	TURBINE GEN WARM GAS TEMP WRONG (SDR-88-46)	SDR	900615
88-41	S15 LIGHT ON FIRE PANEL NOT LIGHTING DURING LAMP TEST (SDR-88-48)	SDR	.....
88-42	MOV 857C OPEN DURING NORMAL POWER OPERATIONS	SDR	999999
88-43	RVLIS INDICATION TOO HIGH DURING POWER OPERATIONS	SDR	890827
88-44	11A & 11B TIE BREAKER CLOSING WITH EXCITER FIELD BKR OPEN	SDR	890524
88-45	CLOSING 11A-12A WITH 11A OPEN	SDR	890501
88-46	LOA CLG 8/9 VERSUS 738A/B OPERATION	SDR	999999
88-47	VALVES 431C,430 FAILING INCORRECTLY ON LOSS OF C INST BUS	SDR	890706
88-48	SV 591 & SV 593 LABEL REVERSAL	PCC	891013
88-49	PCN 88-T-824 ON PT-6.2	PCC	901120
88-50	BORIC ACID FLOW CONTROL	PCC	900530
88-51	RCS FLOW CYCLE 18	PCC	999999
88-52	RCS LOW PRESSURE ALARM	PCC	900715
88-53	MOV ANALYSIS & TESTING	PCC	900322
88-54	SIM BLOWUP WHEN 11A NORMAL SUPPLY OPENNED	SDR	999999
88-55	B S/G PRESSURE RESPONSE FOLLOWING C/D TRANSIENT	SDR	890904
88-56	CHARGING PUMP SPEED ALARM F-14	SDR	891109
88-57	CV SPRAY LOGIC RELAYS	SDR	890626
88-58	EWR-4554 4A/B FW HEATER REPLACEMENT	PCC	900810

SIMMOD	TITLE	SOURCE	IMPLDATE
88-59	MALF ROD1 ROD SPEED FAILURE	SDR	890728
88-60	ANN J-5 ALARM WITH LOW SYSTEM FREQUENCY	SDR	999999
88-61	ANN C-9 SI CONNECTIONS WRONG	SDR	890314
88-62	CLG 6 MALF CANNOT BE ISOLATED FROM CVCS SIDE	SDR	900525
88-63	S/G WR LEVELS	SDR	890904
88-64	SUMP A LEVEL LOW	SDR	891025
88-65	AUX BLDG VENT TRIPS BEFORE R-13/14 ON ALARM	SDR	890214
88-66	LOW POWER AUTO ROD WITHDRAWAL BLOCK STATUS LIGHT PROBLEM WITH RCS11 E&F	SDR	890809
88-67	IMMEDIATE EFFECTS OF BORATION NOTICED	SDR	891208
88-68	SBAFP PRESSURE LOCKUP ON V-4084 CLOSURE	SDR	890627
88-69	NEED TO INCREASE AIR LEAKAGE INTO CONDENSER	SDR	891212
88-70	I-26 SHOULD NOT ALARM ON CRC-3A MALFUNCTION	SDR	890605
88-71	CAN'T CLEAR MULTIPEN VALUES THROUGH MENUS	SDR	.....
88-72	CURSOR RESPONSE WHILE ENTERING MALF WHEN 1ST OUT OCCURS	SDR	.....
88-73	WRONG BUTTONS FLASHING ON PLANT STATUS PAGE DEPRESSION	SDR	.....
88-74	NORMAL OPS DISPLAY DELTA I AND DELTA I TIME INCORRECT	SDR	.....
88-75	CLG-4 MALFUNCTION PROBLEM	SDR	890626
88-76	XPRS DESCRIPTION IN PAR DATABOOK WRONG	SDR	900322
88-77	AUTO M/U RESPONSE WITH RMW DEVIATION	SDR	999999
88-78	1B BAST LEVEL NOT STABLE WITH LEAK IN 1A BAST ISOLATED	SDR	.....
88-79	FRV AUTO/MAN NULL METER DURING SGN-2 MALFUNCTION	SDR	.....
88-80	1500 - 12000 GPM LOCAS WITH ALL SI PUMPS TRIPPED SHOW TOO MUCH HEAT LOAD	SDR	890904
89-01	CONTAINMENT PENETRATION COOLING	PCC	.....
89-02	INCREASE NUMBER OF IC'S FROM 60 TO 90	RSE	890909
89-03	NIS ERRATIC FOLLOWING ROD RECOVERY (STUCK)	SDR	.....
89-04	MALF FOR C.V. NOT MATCHED TO PROPER C.V. ON BOARD	SDR	999999
89-05	SEC. BLOWUP ON CRC-3B MALF 100	SDR	999999
89-06	SI PUMP CAVITATE WHEN DEAD HEADED (A & B PUMPS)	SDR	890411
89-07	INCORE T/C DOESN'T RESPOND TO K7 ROD EJECTION	SDR	.....
89-08	SHOULD NOT BE ABLE TO OPEN SGN-8/9 WITH CV ISOL PRESENT	SDR	890812
89-09	HI RCP OIL LEVEL MALF VIBS INCREASE NOT STOPPING ON PUMP STOP	SDR	890727
89-10	DELETE EDS-8 MALF (REDUNDANT TO ENV PARAM MIS-10)	SDR	890331
89-11	INADEQUATE CORE COOLING WITH 300000 GPM LOCA (MALF RCS 2D)	SDR	999999
89-12	DIFFICULTY DECREASING RCS PRESSURE WITH 750 GPM SGN-4B LEAK	SDR	890904
89-13	LIGHTS NOT GOING OUT ALTHOUGH BUSSES 13 & 15 DEAD	SDR	890419
89-14	INABILITY TO MAINTAIN S/G LEVEL WITH 200 GPM AFW TO EACH S/G	SDR	890904
89-15	VALVE POSITION RECORDER NOT AGREEING WITH CONDITIONS	SDR	900214

SIMMOD	TITLE	SOURCE	IMPLDATE
89-16	INDICATOR OVERRIDES NOT WORKING ON NIS	SDR	999999
89-17	SPENT FUEL POOL COOLING	PCC	910214
89-18	ROD EJECTION SHOULD CAUSE COIL STACK MRPI FAILURE	SDR	890331
89-19	FW VALVE CONTROLLER TROUBLE	SDR	890331
89-20	P-2 STATUS LIGHT ON AT WRONG TIME	SDR	890727
89-21	EXCESSIVE SUMP TEMPERATURE DURING LOCA	SDR	999999
89-22	NO FIRST OUT ALARM AFTER SPURIOUS SI	SDR	891208
89-23	RCS BORON HIGH DURING LOCA	SDR	891208
89-24	RHR LEAK MALF TROUBLE	SDR	999999
89-25	TURBINE TRIPPED WITH "FAILURE OF TURBINE TO TRIP" MALF ACTIVE	SDR	999999
89-26	BAST LEVEL INCREASED DURING SI	SDR	890411
89-27	LOA ROD1&2 TROUBLE	SDR	890301
89-28	ROD BANK DEMAND TROUBLE AFTER SNAPSHOT	SDR	.....
89-29	MASS GAIN DURING FW HEATER COOLDWON	SDR	891214
89-30	IND OVR'S CANNOT CLEAR OVR IF RAMP IS IN PROGRESS	SDR	.....
89-31	CURSOR CONTROL TO SELECT IDA FUNCTIONS	SDR	.....
89-32	HIGH GENERATOR HYDROGEN TEMP ON SHUTDOWN	SDR	900615
89-33	MOV-857A&B WON'T RESPOND FROM MCB AFTER LOCAL OPERATION	SDR	890313
89-34	RCP OIL LEVEL FLUCTUATES AFTER LOSS OF CCW	SDR	890706
89-35	MOV-878A OPENS ON SI WITH BKR OPEN (LOA EDS43 FALSE)	SDR	890313
89-36	RESET SFP ALARM TO 115 DEGREES AND CHANGE ANN WINDOW K-29	SDR	890303
89-37	OVERRIDES CVC 16E & 17E MISLABELLED	SDR	891020
89-38	STROKE TIME FOR SOV-8616A/B TOO LONG	SDR	890401
89-39	CORE EXIT T/C PANEL INDICATES ON PPCS EVEN THOUGH T/C PANEL IS OFF	SDR	900802
89-40	ACCUMULATOR FILL TIME TOO LONG	SDR	890313
89-41	VALVES OPERATE WITH POWER REMOVED 878B&D 720 721	SDR	890313
89-42	PCASAUX AND PCASCNM DECREASED TO 1 PSIA AFTER BLEEDING DOWN IA HEADER	SDR	901014
89-43	ATWS MITIGATION SYSTEM ACTUATION CIRCUITRY (AMSAC)	PCC	900810
89-44	S/G BLOWDOWN SYSTEM (EWR-4324A1)	PCC	910214
89-45	HIGH HEAD RECIRULATION EVALUATION (EWR-4761)	PCC	891023
89-46	SAFW PIPING MODIFICATIONS (EWR-3692A)	PCC	890827
89-47	CV RECIRC FAN CONDENSATE COLLECTORS(EWR-4282)	PCC	901120
89-48	PORV LIFTED WITH RCS AT ATMOSPHERIC PRESSURE	SDR	900222
89-49	NEW ANNUNCIATOR WINDOW FOR H-13	SDR	890414
89-50	HCV-133 FLOW CHARACTERISTIC INCORRECT	SDR	999999
89-51	HI TEMP ALARMS ON RCP SEAL WHEN CHARGING PUMPS TRIP ON SI	SDR	890727
89-52	R-11 INDICATES HIGH RADIATION WHEN CONTAINMENT PURGE/EXHAUST FANS STOP	SDR	.....

SIMMOD	TITLE	SOURCE	IMPLDATE
89-53	RMS TOO SENSITIVE TO LOCA (R-10A, R-11,R-12)	SDR	900222
89-54	TDAFP STEAM ADMISSION VALVES	PCC	890528
89-55	THROWOVER CONTACTOR REPLACEMENT - EWR-4785	PCC	910114
89-56	S/G WIDE RANGE LEVEL INDICATION (EWR-4653)	PCC	891013
89-57	PRT SHOULD READ 0 PSIG AFTER RUPTURE	SDR	890827
89-58	FIRE TANK PRESSURE IN ERROR (TEST 14.4.3.3)	SDR	890804
89-59	NEW LOA FOR BKRS ON MOV-851A, 851B, 817, 1813A, 1813B	SDR	890921
89-60	PLANT STATUS DISPLAY - INCORRECT DATA DISPLAY	SDR	.....
89-61	MFP LIGHT LOAD ALARM (H-2) DID NOT ACTUATE ON STOP OF B MFP	SDR	890827
89-62	MASS LOST FROM HOTWELL WHILE BYPASS VALVE OPEN	SDR	890915
89-63	SAFETY INJECTION PUMP RECIRCULATION FLOW (EWR-3881)	PCC	910214
89-64	BAST LEVEL IN SNAPSHOT NEED TO BE HIGHER TO CONFORM WITH PLANT	SDR	890616
89-65	RADIATION INDICATIONS DISAGEE DURING LOCA IN CONTAINMENT	SDR	890626
89-66	LOSS OF INSTRUMENT BUS OCCURS WHEN TRANSFERING TO MAINTENANCE SUPPLY	SDR	890626
89-67	NO FIRST OUT ALARM ON RCP FLOW DURING ATWS	SDR	.....
89-68	CODING ERROR IN G-CVCTHB (AUX BUILDING TEMPERATURE)	SDR	890626
89-69	MFP OPERATED WITH NO RECIRC FLOW AND DID NOT OVERHEAT	SDR	901120
89-70	LOSS OF HOTWELL LEVEL WITH AOV-3959 OPEN	SDR	890915
89-71	TRIP OF A MFP CAUSED TRIP OF B MFP	SDR	891214
89-72	SETPOINT ERROR IN FEED PUMP SEAL RETURN CODE	SDR	890827
89-73	ELECTRICAL INTERLOCKS INCORRECT (TEST 14.3.6.2)	SDR	999999
89-74	UNEXPLAINED CONDENSATE MASS LOSS (TEST 14.4.5.2)	SDR	890915
89-75	R29 AND R30 POWER SUPPLY INCORRECT	SDR	890915
89-76	GOT FLOW TO SG FORM CONDENSATE WITH CONSENSATE AT 390PSIG, SG AT 450 PSI	SDR	900510
89-77	SECONDARY MASS BALANCE ERRORS (TEST 14.4.5.2)	SDR	900320
89-78	MRPI DATA CABINET DOES NOT HEAT UP WHEN CONTAINMENT DOES	SDR	910214
89-79	FW FLOW INDICATED TO FAULTED SG WITH SG ISOALTED	SDR	891208
89-80	B MDAFW PUMP BREAKER OPERATED EVEN THOUGH NO DC TO CONTROL CIRCUIT	SDR	900509
89-81	AFW BYPASS VALVES DID NOT CLOSE ON A MANUAL SI	SDR	900222
89-82	ADVANCED DIGITAL FEEDWATER CONTROL SYSTEM INSTALLATION (EWR-4773)	PCC	.....
89-83	REQUEST TO SIMULATE GAS BINDING VIA CAVITATION IN SI/RHR PUMPS	RSE	.....
89-84	ALARM AR-A-21 LOGIC/SETPOINT CODING ERROR	SDR	890921
89-85	ALARM AR-A-22 CODING ERROR	SDR	890921
89-86	FRV SHOULD STROKE CLOSED WHEN HI LEVEL OVERRIDE BUTTON PRESSED	SDR	900509
89-87	INCORRECT RESPONSE TO MALFUNCTION TUR-15A	SDR	900523
89-88	TEST 14.3.4.1,3,21 AFFECTED ON NI 35/36 SETPOINTS	SDR	901120
89-89	OFFSITE POWER RECONFIGURATION (EWR-4525)	PCC	900320

SIMMOD	TITLE	SOURCE	IMPLDATE
89-90	RHR PUMP RECIRCULATION (EWR-4675)	PCC	910214
89-91	TURBINE CONTROL DIGITAL DISPLAY MISSING DOT	SDR	.....
89-92	PORV BLOCK VALVES REPLACEMENT	PCC	901120
89-93	SW PUMP DOES NOT RESTART ON LOSS OF ALL AC	SDR	900307
89-94	UPPER HEAD TC'S DO NOT COOLDOWN RATE SUSPECT	SDR	900620
89-95	NIS RESPONSE TO LOSS OF POWER	SDR	900306
89-96	BUS 2 IN SWITHCHYARD ENERGIZED DURING MALF EDS-6	SDR	900104
89-97	RCP SEAL TEMPERATURE PROBLEM DURING FR-H.1	SDR	.....
89-98	HOTWELL REJECT TOO LOW	SDR	890925
89-99	SWITCH DISAGREEMENT LITE	SDR	.....
89-100	B RCP VIBRATION SETPOINTS	SDR	900419
89-101	SUR RATE METERS SHOULD FAIL LOW ON LOSS OF INST BUS D	SDR	900315
89-102	RODS CONTINUE TO STEP AFTER SHIFT TO MANUAL	SDR	900530
89-103	PZR REFILL DURING BIG LOCA TEST 14.4.7.12.2	SDR	900620
89-104	IMPROPER COOLDOWN RESPONSE ON SG OVERFEED	SDR	900320
89-105	TEST 14.4.5.1 MASS BALANCE - PZR LOST MORE MASS THAN WAS GAINED BY VCT	SDR	999999
89-106	CONTAINMENT AOV DID NOT CLOSE WITH INST AIR PRESSURE AT 18PSIG	SDR	910114
89-107	EXCESS LETDOWN RELIEF SETPOINT WRONG	SDR	900504
89-108	VERIFY R-10B SETPOINT	SDR	900612
89-109	ANNUNCIATOR K-6 NOT MODELED	SDR	891208
89-110	LOA NIS97 SHOULD CAUSE FAILURE OF MANUAL SI PUSHBUTTON	SDR	900306
89-111	TESTING CONTAINMENT SUMP LIGHTS SHOULD NOT CAUSE LEVEL ALARMS	SDR	.....
89-112	SG LEVELS NOT CONTROLLING PROPERLY	SDR	891208
89-113	T:F464 MONITORS ACTUAL VICE INDICATED STEAM FLOW	SDR	901120
89-114	RVLIS & THERMOCOUPLE RESPONSE DURING LOCA TRAINING	RSE	891116
89-115	TEST 14.4.3.1 MS-PI-2001 TOO LOW	SDR	900423
89-116	TEST 14.4.3.1 GN-WI-GEN TOO LOW	SDR	900810
89-117	TEST 14.4.3.1 EH-20, EH-CP-UPPER OSS HIGH	SDR	.....
89-118	TEST 14.4.3.1 PRZR PORV TAILPIECE TEMPS SHOULD BE HIGHER	SDR	901120
89-119	TEST 14.4.3.1 RC-LT-432 TOO LOW	SDR	900424
89-120	TEST 14.4.3.1 SEAL INJ/CHARGING/LETDOWN PARAMETERS OOS	SDR	.....
89-121	TEST 14.4.3.1 TURBINE BRG VIBRATION OOS HIGH	SDR	901120
89-122	TEST 14.4.3.1 COMPONENT COOLING FLOW TOO NRHX TOO LOW	SDR	900509
89-123	TEST 14.4.3.1 RCP PARAMETERS OOS LOW	SDR	910114
89-124	TEST 14.4.3.1 CF-LC-2013A OOS HIGH	SDR	900509
89-125	TEST 14.4.3.1 FW HEATER LEVELS INDICATE OOS LOW	SDR	.....
89-126	RCP TEMPERTURES SHOULD NOT REGISTER ON RECORDER R-30A WHEN PPCS SELECTED	SDR	900622

SIMMOD	TITLE	SOURCE	IMPLDATE
90-01	ALARM F-29 REFLASH	SDR	.....
90-02	MQ-483 INVERTER REPLACEMENT (EWR-4670)	PCC	901120
90-03	RECORDER 47 B&C DO NOT OPERATE LIKE THOSE IN THE PLANT (PT-42)	SDR	900426
90-04	TURBINE VIBRATION RECORDER DOES NOT AGREE WITH TSI METERS	SDR	.....
90-05	TEST 14.4.7.6.1 MFW PUMPS TRIP BUT CAUSE NOT APPARENT	SDR	999999
90-06	NO LETDOWN FLOW INSTABILITY WHEN LETDOWN TEMPERATURE IS HIGH	SDR	900509
90-07	AOV-110A FAILED CLOSED ON A LOSS OF AIR TO AUX BLDG - SHOULD FAIL OPEN	SDR	900530
90-08	BORIC ACID FLOW DEVIATION NOT DEFEATED WHEN BA CONTROLLER IN MANUAL	SDR	901014
90-09	14.4.3.1 VAPOR SPACE TEMP IN PRZR TOO HIGH	SDR	900509
90-10	14.4.3.1 FC-626 CONTROLLER DOES NOT TRACK CORRECT DEVIATION WITH NO FLOW	SDR	.....
90-11	CORRECTIONS FOR SDR'S 89-234 & 235 (MALF NIS-6A PROBLEMS)	SDR	.....
90-12	WIND SPEED AND DIRECTION RECORDER RK-32 - 3 PROBLEMS	SDR	.....
90-13	CORRECTION FOR SDR'S 89-242 & 243 (MALF TEST 14.4.7.2.5)	SDR	901120
90-14	TEST 14.4.7.20.15 MAL TUR-15C DID NOT CLOSE MSR STEAM SUPPLY 1A	SDR	.....
90-15	CONTROL POWER FOR C & D SAFW TRAINS BACKWARDS	SDR	999999
90-16	RECORDERS RK-47A,B,& C TO BE DISABLED WHEN SIMULATOR FROZEN	RSE	900504
90-17	PRZR SPRAY FLOW SHORT CIRCUITS THRU IDLE LOOP	SDR	900509
90-18	TEST 14.3.4.10 CS INCORRECT FLOW RESPONSE DURING SPRAY TEST	SDR	910114
90-19	RCS PRESSURE CYCLED RAPIDLY WITH STUCK OPEN PRIMARY SAFETY	SDR	900620
90-20	TEST 14.4.7.20.3 VITAL BATTERY MONITORING SYSTEM RESPONSE	SDR	.....
90-21	POST TRIP REVIEW DATA POINTS ARE MISSING	SDR	.....
90-22	VOLTAGE PROBLEM DURING T-18C	SDR	.....
90-23	SR NIS FAILURE HIGH MALF CAUSED MCB METER INDICATION WITH NIS OFF	SDR	910214
90-24	RHR TOO EFFECTIVE IN REMOVING DECAY HEAT	SDR	.....
90-25	TUNE EFFECT OF OPENING TRUBINE DRAIN VALVES ON PLANT MW	SDR	900516
90-26	SIMULATOR OPERATING LIMITS MONITOR	RSE	900817
90-27	IMPROPER CCW RESPOSNE TO LEAK ISOLATION	SDR	.....
90-28	LETDOWN FLOW PRESENT WITH AOV-427 CLOSED	SDR	.....
90-29	N-41 FAILURE DID NOT CAUSE RUNBACK	SDR	.....
90-30	BUS METER SWITCHES NOT MODELED CORRECTLY	SDR	900715
90-31	TAVG BISTABLE RESET POINT	SDR	910114
90-32	SAFETY INJECTION RECIRCULATION PHASE III (EWR-3881C)	PCC	900801
90-33	MIDLOOP INSTRUMENTATION ENHANCEMENT (EWR-4892-90)	PCC	.....
90-34	LETDOWN SYSTEM FLOW & TEMPERATURE PROBLEMS (SDR'S 90-76 & 77)	SDR	.....
90-35	IMAGINARY POWER TO BUS 14 AND 18	SDR	901109
90-36	SUMP A INCREASE ON THERMAL BARRIER LEAK	SDR	900817
90-37	MODIFICATION TO MALFUNCTION RPS-5 (RSE-89-003A)	RSE	900810

SIMMOD	TITLE	SOURCE	IMPLDATE
90-38	MODIFICATION TO MALFUNCTION TUR-2 (RSE-89-003B)	RSE	900817
90-39	NEW MALFUNCTION TO PREVENT AUTO-START OF SELECTED COMPONENTS	RSE	900817
90-40	NEW MALFUNCTION FOR CONTAINMENT SPRAY FAILURE TO ACTUATE (RSE-89-011)	RSE	900817
90-41	MSIV POSITION LITES DARK WHILE VALVES STROKE	SDR	.....
90-42	TURBINE LATCHES TOO QUICKLY	SDR	.....
90-43	TOO MUCH WATER IN CONTAINMENT DURING LOCA	SDR	999999
90-44	GENERATOR VOLTMETER DOES NOT RESPOND TO SELECTOR SWITCH	SDR	.....
90-45	RK-30 (COLD GAS TEMP HOTTEST POINT IN GENERATOR)	SDR	.....
90-46	N32	SDR	.....
90-47	HCV-133 BYPASS FLOW	SDR	.....
90-48	PRESS INPUTS TO OVERPRESSURE PROTECTION	SDR	.....
90-49	CONTROL ROOM HABITABILITY (EWR-3595B) (PCC-88-36)	PCC	.....
90-50	REACTOR COOLANT PUMP OIL LEVEL MONITORING (EWR-4534) (PCC-88-38)	PCC	.....
90-51	DIESEL FUEL OIL SYSTEM UPGRADE - PHASE 2 (EWR-4526B) (PCC-90-08)	PCC	.....
90-52	LOOP LEVEL UPGRADE (EWR-4671) (PCC-89-14)	PCC	.....
90-53	EWR-3881C BAST PIPING	PCC	910214
90-54	R2/R7 NO ALARM ON TUBE/FEED BREAK IN CV AFTER DRYOUT	SDR	.....
90-55	REPRESSURIZATION DOES NOT OCCUR AFTER DRYOUT	SDR	.....
90-56	REPLAY FEATURE NOT WORKING PROPERLY	SDR	.....
90-57	LBLOCA/STM BREAK CAUSES CONTAINMENT TEMP TO EXCEED DESIAGN TEMP	SDR	.....
90-58	CENTER SECTION LOCKUP	SDR	.....
90-59	SBAFW PROBLEMS (TEST 14.3.4.19 SDR'S 90-180 THRU 90-184)	SDR	.....
90-60	CORE INSTABILITY DURING LOCA	SDR	999999
90-61	12A TRANSFORMER MWHR METER NOT OPERATING PROPERLY	SDR	.....
90-62	AOV 4147 MFW RECIRC	SDR	.....
90-63	RT55 MESSAGE ON INSTRUCTOR CONSOLE	SDR	.....
90-64	DROPPED ROD ON G-3 DOESN'T WORK WHEN STUCK ROD CLEARED	SDR	.....
90-65	NON REGEN HX TEMP DID NOT INCREASE ON LOSS OF CCW	SDR	.....
90-66	REMOTE CONTROL IC INITIALIZATION	SDR	.....
90-67	TRIM VALVES NOT OPEN FAR ENOUGH	SDR	910114
90-68	ELECTRICAL SYSTEM VALUES & CONTROLLER POSITIONS INCORRECT	SDR	.....
90-69	GENERATOR GROSS MW LOW	SDR	.....
90-70	SF HIGH IN "A" S/G	SDR	.....
90-71	FW HEATER LEVEL IS LOW - 2005	SDR	.....
90-72	S/G L460 WR IS LOW	SDR	910114
90-73	LC-2013A IS HIGH - CONTROLLER PROBLEM LI-2013A IS LOW	SDR	.....
90-74	431A/B DEVIATION IS WRONG	SDR	.....

SIMMOD	TITLE	SOURCE	IMPLDATE
90-75	TA - TC - BOIL LOW - LUBE OIL COOLER	SDR	.....
90-76	FLOW CONTROLLER 480 OOS LOW	SDR	.....
90-77	NRHX CCW TC - 130 OOS	SDR	.....
90-78	FC - 626 OOS HIGH	SDR	.....
90-79	RCP VIBRATIONS AND LUBE OIL LEVELS OUT PER SSA	SDR	910110
90-80	TEST 14.3.4.2, STEP 5.3.8.3	SDR	.....
90-81	TEST 14.4.7.3.7, ALARM I-5 CAME IN	SDR	.....
90-82	S/G BLOWDOWN HEAT RECOVERY SYSTEM ALARM K-32	SDR	910214
90-83	GLAND SEAL STEAM PRESSURE TOO LOW	SDR	.....
90-84	TEST 14.3.4.15 PROBLEMS (SDR'S 90-177 & 178)	SDR	.....
90-85	TEST 14.3.4.23 PROBLEMS (SDR'S 90-199, 198, 187, 189, 195, 190 & 193)	SDR	.....
90-86	ALARM H-28 PROBLEMS (SDR'S 90-196 & 197)	SDR	.....
90-87	TEST 14.3.4.15 PROBLEMS (SDR'S 90-201 & 200)	SDR	.....
90-88	TEST 14.4.3.3 PROBLEMS (SDR'S 90-205,202, & 204)	SDR	.....
90-89	TEST 14.3.4.11, STEP 5.9, MASS BALANCE ON S/G BLOWDOWN DOES NOT WORK	SDR	.....
90-90	TEST 14.3.4.19, STEP 5.2.2, COULD NOT REFILL CST PER STEP 5.2.2	SDR	.....
90-91	TEST 14.4.7.1.1, DID NOT GET TURBINE LOW VACUUM TRIP	SDR	.....
90-92	HOTWELL LEVEL CONTROLLER DEVIATION METER INCORRECT RESPONSE	SDR	.....
90-93	CHANGE PASSWORD ON IC-64 & 65	RSE	901109
90-94	GROUP II BANK A STEPS FIRST	SDR	.....
90-95	FIRE SYSTEM UPGRADE	RSE	.....
90-96	CONTROLLER FOR LC-428F	RSE	.....
90-97	MODIFICATION TO MALFUNCTION TUR-10B	RSE	.....
90-98	DATAPOOL ADDITIONS FOR MCRFPA VARIABLES	RSE	.....
90-99	AA-6 LIT ON MALFUNCTION RCS11Q	SDR	.....
90-100	PT-485 AND PT-486 PROVING LAMPS	SDR	.....
91-001	VARIOUS RMS PROBLEMS (SDR'S 90-185,186,192 & 237)	SDR	.....
91-002	TEST 14.4.7.15.3 SDR'S (INCLUDES 90-238 & 239)	SDR	.....
91-003	POWER TO COMPONENTS ON PANEL 27	SDR	.....
91-004	MAJOR RCS UPGRADE	SDR	.....
91-005	ELECTRICAL TRIPPING PROBLEM (INCLUDES SDR'S-90-316 & 310)	SDR	.....
91-006	AUX BLDG SUMP TANK PUMPS DON'T AUTO START	SDR	.....
91-007	DELETE MALFUNCTIONS MIS8-15	SDR	.....
91-008	EXCESSIVE D/G VOLTAGE DROP	SDR	.....
91-009	ANNUNCIATOR G-27/29 LO LO STM PRESS CHANNEL ALERT NOT ALARMING	SDR	.....
91-010	VCT ENTHALPY PROBLEM	SDR	.....
91-011	INST AIR COMPRESSOR TRIPS BUT SERVICE AIR COMPRESSOR DIDN'T	SDR	.....

SIMMOD	TITLE	SOURCE	IMPLDATE
91-012	EHC DID NOT SHIFT TO IMP OUT	SDR	.....
91-013	VALVE HANDLER CORRECTIONS (VALVE34)	SDR	.....
91-014	MAIN CONTROL BOARD ANNUNCIATOR	PCC	.....
91-015	INSTR AIR PRESSURE DECREASES TOO SLOW WITH LEAK	SDR	.....
91-016	HI FLUX AT SHUTDOWN SETPOINT LOA	RSE	.....
91-017	S/G RESPONSE DURING LOCA INCORRECT	SDR	.....
91-018	FRV STROKE TIME VS FEED FLOW INCREASE INCORRECT	SDR	.....
91-019	PPCS UPDATE (PLANT BUILD AS OF JAN 10, 91)	SDR	.....

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

ALL OPEN SIMULATOR MODIFICATIONS AND
SCHEDULED COMPLETION DATES

LEGEND

SIMMOD	Simulator Modification Number
BYDATE	Scheduled Completion Date (YYMMDD)

SIMMOD	BYDATE	TITLE
88-03	910924	ADD CV EVACUATION ALARM TO ALL 7 CV NOISE MONITOR POINTS
88-13	910324	VACUUM LOSS ON LOSS OF CW PUMPS OR TURBINE BUILDING STEAM
88-15	910924	CONDENSER IN/OUT FLOW PROBLEM
88-16	910924	ANNUNCIATOR I-26 ALARMS INCORRECTLY
88-23	910924	RELABEL LOA'S AND ADD CRC LOA'S
88-41	910924	S15 LIGHT ON FIRE PANEL NOT LIGHTING DURING LAMP TEST (SDR-88-48)
88-71	910924	CAN'T CLEAR MULTIPEN VALUES THROUGH MENUS
88-72	910924	CURSOR RESPONSE WHILE ENTERING MALF WHEN 1ST OUT OCCURS
88-73	910924	WRONG BUTTONS FLASHING ON PLANT STATUS PAGE DEPRESSION
88-74	910924	NORMAL OPS DISPLAY DELTA I AND DELTA I TIME INCORRECT
88-78	910924	1B BAST LEVEL NOT STABLE WITH LEAK IN 1A BAST ISOLATED
88-79	910924	FRV AUTO/MAN NULL METER DURING SGN-2 MALFUNCTION
89-01	910230	CONTAINMENT PENETRATION COOLING
89-03	910228	NIS ERRATIC FOLLOWING ROD RECOVERY (STUCK)
89-07	910924	INCORE T/C DOESN'T RESPOND TO K7 ROD EJECTION
89-28	910924	ROD BANK DEMAND TROUBLE AFTER SNAPSHOT
89-30	910924	IND OVR'S CANNOT CLEAR OVR IF RAMP IS IN PROGRESS
89-31	910924	CURSOR CONTROL TO SELECT IDA FUNCTIONS
89-52	910924	R-11 INDICATES HIGH RADIATION WHEN CONTAINMENT PURGE/EXHAUST FANS STOP
89-60	910924	PLANT STATUS DISPLAY - INCORRECT DATA DISPLAY
89-67	910324	NO FIRST OUT ALARM ON RCP FLOW DURING ATWS
89-82	910325	ADVANCED DIGITAL FEEDWATER CONTROL SYSTEM INSTALLATION (EWR-4773)
89-83	900728	REQUEST TO SIMULATE GAS BINDING VIA CAVITATION IN SI/RHR PUMPS
89-91	910430	TURBINE CONTROL DIGITAL DISPLAY MISSING DOT
89-97	910324	RCP SEAL TEMPERATURE PROBLEM DURING FR-H.1
89-99	910924	SWITCH DISAGREEMENT LITE
89-111	910924	TESTING CONTAINMENT SUMP LIGHTS SHOULD NOT CAUSE LEVEL ALARMS
89-117	910924	TEST 14.4.3.1 EH-20, EH-CP-UPPER OSS HIGH
89-120	910628	TEST 14.4.3.1 SEAL INJ/CHARGING/LETDOWN PARAMETERS OOS
89-125	910924	TEST 14.4.3.1 FW HEATER LEVELS INDICATE OOS LOW
90-01	910924	ALARM F-29 REFLASH
90-04	910115	TURBINE VIBRATION RECORDER DOES NOT AGREE WITH TSI METERS
90-10	910924	14.4.3.1 FC-626 CONTROLLER DOES NOT TRACK CORRECT DEVIATION WITH NO FLOW
90-11	910924	CORRECTIONS FOR SDR'S 89-234 & 235 (MALF NIS-6A PROBLEMS)
90-12	910924	WIND SPEED AND DIRECTION RECORDER RK-32 - 3 PROBLEMS
90-14	910324	TEST 14.4.7.20.15 MAL TUR-15C DID NOT CLOSE MSR STEAM SUPPLY 1A
90-20	910324	TEST 14.4.7.20.3 VITAL BATTERY MONITORING SYSTEM RESPONSE

SIMMOD	BYDATE	TITLE
90-21	910419	POST TRIP REVIEW DATA POINTS ARE MISSING
90-22	910228	VOLTAGE PROBLEM DURING T-18C
90-24	910419	RHR TOO EFFECTIVE IN REMOVING DECAY HEAT
90-27	900630	IMPROPER CCW RESPOSNE TO LEAK ISOLATION
90-28	901130	LETDOWN FLOW PRESENT WITH AOV-427 CLOSED
90-29	901130	N-41 FAILURE DID NOT CAUSE RUNBACK
90-33	910612	MIDLOOP INSTRUMENTATION ENHANCEMENT (EWR-4892-90)
90-34	910628	LETDOWN SYSTEM FLOW & TEMPERATURE PROBLEMS (SDR'S 90-76 & 77)
90-41	910208	MSIV POSITION LITES DARK WHILE VALVES STROKE
90-42	910808	TURBINE LATCHES TOO QUICKLY
90-44	910808	GENERATOR VOLTMETER DOES NOT RESPOND TO SELECTOR SWITCH
90-45	910808	RK-30 (COLD GAS TEMP HOTTEST POINT IN GENERATOR)
90-46	910208	N32
90-47	910208	HCV-133 BYPASS FLOW
90-48	910808	PRESS INPUTS TO OVERPRESSURE PROTECTION
90-49	910822	CONTROL ROOM HABITABILITY (EWR-3595B) (PCC-88-36)
90-50	910822	REACTOR COOLANT PUMP OIL LEVEL MONITORING (EWR-4534) (PCC-88-38)
90-51	910822	DIESEL FUEL OIL SYSTEM UPGRADE - PHASE 2 (EWR-4526B) (PCC-90-08)
90-52	910822	LOOP LEVEL UPGRADE (EWR-4671) (PCC-89-14)
90-54	911014	R2/R7 NO ALARM ON TUBE/FEED BREAK IN CV AFTER DRYOUT
90-55	911014	REPRESSURIZATION DOES NOT OCCUR AFTER DRYOUT
90-56	911017	REPLAY FEATURE NOT WORKING PROPERLY
90-57	911017	LBLOCA/STM BREAK CAUSES CONTAINMENT TEMP TO EXCEED DESIAGN TEMP
90-58	910827	CENTER SECTION LOCKUP
90-59	911009	SBAFW PROBLEMS (TEST 14.3.4.19 SDR'S 90-180 THRU 90-184)
90-61	910817	12A TRANSFORMER MWHR METER NOT OPERATING PROPERLY
90-62	910614	AOV 4147 MFW RECIRC
90-63	910824	RT55 MESSAGE ON INSTRUCTOR CONSOLE
90-64	910913	DROPPED ROD ON G-3 DOESN'T WORK WHEN STUCK ROD CLEARED
90-65	910402	NON REGEN HX TEMP DID NOT INCREASE ON LOSS OF CCW
90-66	911001	REMOTE CONTROL IC INITIALIZATION
90-68	911004	ELECTRICAL SYSTEM VALUES & CONTROLLER POSITIONS INCORRECT
90-69	911004	GENERATOR GROSS MW LOW
90-70	911004	SF HIGH IN "A" S/G
90-71	911004	FW HEATER LEVEL IS LOW - 2005
90-73	911014	LC-2013A IS HIGH - CONTROLLER PROBLEM LI-2013A IS LOW
90-74	911004	431A/B DEVIATION IS WRONG

SIMMOD	BYDATE	TITLE
90-75	911004	TA - TC - BOIL LOW - LUBE OIL COOLER
90-76	911004	FLOW CONTROLLER 480 OOS LOW
90-77	911004	NRHX CCW TC - 130 OOS
90-78	911004	FC - 626 OOS HIGH
90-80	911007	TEST 14.3.4.2, STEP 5.3.8.3
90-81	911012	TEST 14.4.7.3.7, ALARM I-5 CAME IN
90-83	911007	GLAND SEAL STEAM PRESSURE TOO LOW
90-84	911008	TEST 14.3.4.15 PROBLEMS (SDR'S 90-177 & 178)
90-85	911009	TEST 14.3.4.23 PROBLEMS (SDR'S 90-199, 198, 187, 189, 195, 190 & 193)
90-86	911010	ALARM H-28 PROBLEMS (SDR'S 90-196 & 197)
90-87	911010	TEST 14.3.4.15 PROBLEMS (SDR'S 90-201 & 200)
90-88	911010	TEST 14.4.3.3 PROBLEMS (SDR'S 90-205,202, & 204)
90-89	911009	TEST 14.3.4.11, STEP 5.9, MASS BALANCE ON S/G BLOWDOWN DOES NOT WORK
90-90	911009	TEST 14.3.4.19, STEP 5.2.2, COULD NOT REFILL CST PER STEP 5.2.2
90-91	911011	TEST 14.4.7.1.1, DID NOT GET TURBINE LOW VACUUM TRIP
90-92	911006	HOTWELL LEVEL CONTROLLER DEVIATION METER INCORRECT RESPONSE
90-94	911029	GROUP II BANK A STEPS FIRST
90-95	910430	FIRE SYSTEM UPGRADE
90-96	911006	CONTROLLER FOR LC-428F
90-97	911006	MODIFICATION TO MALFUNCTION TUR-10B
90-98	910304	DATAPOOL ADDITIONS FOR MCRFPA VARIABLES
90-99	910925	AA-6 LIT ON MALFUNCTION RCS11Q
90-100	911130	PT-485 AND PT-486 PROVING LAMPS
91-001	920108	VARIOUS RMS PROBLEMS (SDR'S 90-185,186,192 & 237)
91-002	920108	TEST 14.4.7.15.3 SDR'S (INCLUDES 90-238 & 239)
91-003	920108	POWER TO COMPONENTS ON PANEL 27
91-004	911129	MAJOR RCS UPGRADE
91-005	910708	ELECTRICAL TRIPPING PROBLEM (INCLUDES SDR'S-90-316 & 310)
91-006	920108	AUX BLDG SUMP TANK PUMPS DON'T AUTO START
91-007	920108	DELETE MALFUNCTIONS MIS8-15
91-008	910708	EXCESSIVE D/G VOLTAGE DROP
91-009	920108	ANNUNCIATOR G-27/29 LO LO STM PRESS CHANNEL ALERT NOT ALARMING
91-010	920108	VCT ENTHALPY PROBLEM
91-011	920108	INST AIR COMPRESSOR TRIPS BUT SERVICE AIR COMPRESSOR DIDN'T
91-012	920108	EHC DID NOT SHIFT TO IMP OUT
91-013	920111	VALVE HANDLER CORRECTIONS (VALVE34)
91-014	920116	MAIN CONTROL BOARD ANNUNCIATOR

SIMMOD	BYDATE	TITLE
91-015	920117	INSTR AIR PRESSURE DECREASES TOO SLOW WITH LEAK
91-016	920117	HI FLUX AT SHUTDOWN SETPOINT LOA
91-017	910721	S/G RESPONSE DURING LOCA INCORRECT
91-018	910721	FRV STROKE TIME VS FEED FLOW INCREASE INCORRECT
91-019	.....	PPCS UPDATE (PLANT BUILD AS OF JAN 10, 91)

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

CONFIGURATION MANAGEMENT

STATUS REPORT:

ALL PLANT CHANGE RELATED SIMULATOR MODIFICATIONS INSTALLED

LEGEND

SM NO.	SIMULATOR MODIFICATION NUMBER
RE	RESPONSIBLE ENGINEER
SOURCE	PLANT MODIFICATION TRACKING DOCUMENT

PLANT CHANGE SIMULATOR MODS THAT HAVE BEEN INCORPORATED

SM NO.	RE	SOURCE	TITLE
86-01	DAMBROSIA	E3749	ADDITION OF VALVE 1599 TO MCB PANEL 07
86-02	DOBBINS	E4068A	REPLACEMENT OF RMS RACK 1
		E4068B	REPLACEMENT OF RMS RACK 2
86-03	DAMBROSIA	E3983	INSTRUMENTATION REROUTE FOR TORNADOES AND HELB
86-04	DAMBROSIA	E1607	NET WATTMETER SCALE CHANGE
86-05	DOBBINS	E3595	CONTROL ROOM HABITABILITY
		T80-20	INVERTER CONSTANT VOLTAGE TRANSFORMER (CVT) ALARM
86-06	DAMBROSIA	E3100C	HEATER DRAIN TANK MODIFICATION
86-07	DOBBINS	E3744	INCORE THERMOCOUPLE MONITOR
86-08	DOBBINS	E3505	MODERNIZATION OF STATION 13A
		E4067	ADDITION OF 13A GRAPHIC DISPLAY PANEL
86-09	DOBBINS	E3866	ADDITION OF R-33 AND R-34
86-15	DOBBINS	E3797	MICROPROCESSOR ROD POSITION INDICATION SYSTEM MRPI
86-17	DOBBINS	E4064	FIRE SYSTEM MODIFICATION
		E4176	APPENDIX R DETECTION UPGRADE
86-18	DAMBROSIA	E2799	REACTOR VESSEL LEVEL MONITORING SYSTEM RVLIS
86-19	DOBBINS	E4374	CONTROL ROOM LIGHTING UPGRADE
86-22	DOBBINS	E3072A	RCP NO.1 SEAL LEAKOFF
86-23	SMITH	E4225	OVERCURRENT PROTECTION UPGRADE ON DB STYLE BREAKERS
86-24	DOBBINS	E3272	SAS PPCS COMPUTER SYSTEMS
		E4491	STIMULATED SAS/PPCS SYSTEM
86-25	DOBBINS	E2504B	MINIPURGE SYSTEM INSTALLATION
		E2504B	CONTAINMENT MINIPURGE SYSTEM
86-26	DAMBROSIA	E1832A	CIRCUIT SEPARATION
86-27	MUNDING	E3264A	CONTROL BOARD PAINT/TAPE/LABEL
86-28	DAMBROSIA	E4330	FEEDWATER PUMPS RECIRCULATION SYSTEM
86-29	DAMBROSIA	E3698	DIVERSE TRIP MODIFICATION OF RX TRIP BREAKERS
86-30	MUNDING	E3678	GENERATOR STEPUP VOLTAGE HERTZ RELAY
86-31	DAMBROSIA	T81-03	NEW RCS PRESSURE INDICATION
86-32	DAMBROSIA	M86-2858	MCB ALARM H-22
86-33	DOBBINS	T83-06	REPLACE CHARCOAL FILTER TEMPERATURE INDICATION
86-34	SMITH	E4136	A DG CONTROL PANEL
86-35	DAMBROSIA	E3693	PROTECTIVE BREAKER FOR B D/G
87-01	DOBBINS	E3891	A AND B VITAL BATTERY
87-02	DOBBINS	E4235	MCB STATUS LIGHTS
87-03	LEACH	M86-2368	MAIN CONTROL BOARD PLATES

PLANT CHANGE SIMULATOR MODS THAT HAVE BEEN INCORPORATED

SM NO.	RE	SOURCE	TITLE
87-04	DAMBROSIA	E3092A	BORIC ACID PIPING REPLACEMENT
87-06	LEACH	E4228	PT-420 POWER SUPPLY
87-07	DOBBINS	E4345	RCS STEAM GENERATOR DIFFERENTIAL PRESSURE
		E3912	FEEDWATER TEMPERATURE MEASUREMENTS
87-08	LEACH	E3679	STATION 13A SYNCHRONIZING RELAY
87-10	LEACH	M87-4502	CHANGE SETPOINTS FOR AA-6 AND AA-7
87-18	SMITH	E4057	LEADING EDGE FLOW METER LEFM
88-04	DOBBINS	E4350	FEEDWATER AND FEEDWATER BYPASS VALVE INDICATION
88-05	SMITH	E4269	SAFW PUMP INTERLOCKS
88-06	DOBBINS	E4037	CT-1 TERMINAL REPLACEMENT
88-07	DOBBINS	NONE	CORE RELOAD CYCLE 18
88-08	DOBBINS	E4118	TOTAL CHARGING FLOW
88-09	DOBBINS	E4235	ECN 4235-2 STATUS LIGHT CHANGES
88-10	DOBBINS	E4346	WIDE RANGE PRT PRESSURE
88-14	DOBBINS	E4324A	S/G BLOWDOWN SYSTEM
88-21	HUDNUT	M87-5762	SYSTEM 75 TELEPHONE
88-24	DOBBINS	E4347	CONTROL ROOM ALARMS
88-48	DOBBINS	M86-978	SV 591 AND SV 593 LABEL REVERSAL
88-49	SMITH	P88T-824	NIS SETPOINTS
88-50	SMITH	E4375	BORIC ACID FLOW CONTROL
88-51	SMITH	NONE	RCS FLOW CYCLE 18
88-52	DOBBINS	E4344	RCS LOW PRESSURE ALARM ON PPCS
88-53	LEACH	E4539	MOTOR OPERATED VALVE TESTING MOVATS
88-58	SMITH	E4554	4A/4B FEEDWATER HEATER REPLACEMENT
89-17	DOBBINS	E1594B2	SPENT FUEL POOL COOLING
89-43	SMITH	E4230	ATWS MITIGATING SYSTEM ACTUATION CIRCUIT AMSAC
		E4230	AUX FW TURBINE TRIP ATWS MOD (AMSAC) - 1990
89-44	SMITH	E4324B	S/G BLOWDOWN SYSTEM - TURBINE BUILDING
89-45	DOBBINS	E4761	HIGH HEAD RECIRC EVALUATION
89-46	DOBBINS	E3692A	SAFW PIPING MOV 9746
89-47	DOBBINS	E4282	CV RECIRC FAN CONDENSATE COLLECTOR LEVEL
89-54	DOBBINS	E4789	TDAFP STEAM ADMISSION VALVES
89-55	DOBBINS	E4785	THROWOVER CONTACTOR REPLACEMENT
89-56	SMITH	E4653	S/G WIDE RANGE LEVEL INDICATION
89-63	SMITH	E3881	SAFETY INJECTION PUMP RECIRCULATION SYSTEM
89-89	DOBBINS	E4525	GINNA OFFSITE POWER SYSTEM RECONFIGURATION

PLANT CHANGE SIMULATOR MODS THAT HAVE BEEN INCORPORATED

SM NO.	RE	SOURCE	TITLE
89-90	DOBBINS	E4675	RHR PUMP RECIRCULATION-1989 AI&O
89-92	DOBBINS	E3755	PRESSURIZER BLOCK VALVE REPLACEMENT
90-02	DOBBINS	E4670	MQ-483 INVERTER REPLACEMENT
90-32	DOBBINS	E3881C	SAFETY INJECTION RECIRCULATION - PHASE III
90-53	SMITH	E3881C1	BORIC ACID STORAGE TANK (BAST) PIPING

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

CONFIGURATION MANAGEMENT

STATUS REPORT:

PLANT CHANGE RELATED SIMULATOR MODIFICATIONS NOT INSTALLED

LEGEND

SIMMOD	SIMULATOR MODIFICATION NUMBER
BYDATE	THE REQUIRED DATE FOR IMPLEMENTATION TO SATISFY ANSI/ANS-3.5 REQUIREMENTS

SIMMOD	BYDATE	TITLE
39-01	910230	CONTAINMENT PENETRATION COOLING
39-82	910325	ADVANCED DIGITAL FEEDWATER CONTROL SYSTEM INSTALLATION (EWR-4773)
90-33	910612	MIDLOOP INSTRUMENTATION ENHANCEMENT (EWR-4892-90)
90-49	910822	CONTROL ROOM HABITABILITY (EWR-3595B) (PCC-88-36)
90-50	910822	REACTOR COOLANT PUMP OIL LEVEL MONITORING (EWR-4534) (PCC-88-38)
90-51	910822	DIESEL FUEL OIL SYSTEM UPGRADE - PHASE 2 (EWR-4526B) (PCC-90-08)
90-52	910822	LOOP LEVEL UPGRADE (EWR-4671) (PCC-89-14)
91-014	920116	MAIN CONTROL BOARD ANNUNCIATOR

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SDR'S ASSOCIATED WITH OPEN SIMULATOR MODIFICATIONS

SDR's are closed when assigned to a Simulator Modification (SM). This listing provides a cross-reference between Simulator Modification and SDR's assigned.

LEGEND

SIMMOD	Simulator Modification Number
SDRNUM	Simulator Discrepancy Report Number
TITLE	Title of Simulator Modification

SDRS ASSOCIATED WITH OPEN SIMULATOR MODIFICATIONS

SIMMOD	INITDATE	SDRNUM	TITLE
88-03	880229	87-02	ADD HFS/D & CV EVACUATION ALARMS TO CV NOISE MONITOR POINTS
88-13	880419	89-257	TEST 14.4.7.19.8 GLAND SEAL REGULATOR MALF DOES NOT WORK
	880419	88-005	VACUUM LOSS ON LOSS OF CW PUMPS OR TURB BLDG STEAM
	880419	89-187	STEAM HEADER DEPRESSURIZATION RATE
	880419	90-033	TEST 14.4.7.6.1
88-15	880426	88-006	CONDENSER IN/OUT FLOW PROBLEM
	880426	89-256	TEST 14.4.7.8.3 CFW RESPONSE ON HDT LEVEL CONTROL VALVE FAILURE
88-16	880426	88-007	ANNUNCIATOR I-26 ALARMS INCORRECTLY
88-23	880509	88-013	RELABEL LOA'S AND ADD INLET VALVE LOA'S
88-41	880822	88-048	S-15 AUTO DEFEAT LIGHT DOESN'T LIGHT
88-71	881031	88-064	CAN'T CLEAR MULTIPEN VALUES THROUGH MENUS
88-72	881129	88-065	CURSOR RESPONSE WHILE ENTERING MALF WHEN 1ST OUT OCCURS
88-73	881129	88-066	WRONG BUTTONS FLASHING ON PLANT STATUS PAGE DEPRESSION
88-74	881129	88-069	NORMAL OPS DISPLAY DELTA I AND DELTA I TIME INCORRECT
88-78	881129	88-074	1B BAST LEVEL NOT STABLE WITH LEAK IN 1A BAST ISOLATED
88-79	881129	90-137	MALF FDW7 E-H DOES NOT WORK
	881129	89-236	FAILING PT-468 TO ZERO SHOULD FAIL FI-464 TO ZERO VICE 50%
	881129	88-076	FRV AUTO/MAN NULL METER DURING SGN-2 MALFUNCTION
89-01	890103	89-237	SHROUD FAN TEMP DECREASES WHEN FANS TRIP
89-03	890129	88-079	NIS ERRATIC FOLLOWING ROD RECOVERY (STUCK)
	890129	89-231	DROPPED ROD DOES NOT CAUSE NIS DROPPED ROD PROTECTION
89-07	890129	88-086	INCORE T/C DOESN'T RESPOND TO K7 ROD EJECTION
89-111	890915	89-198	TESTING CONTAINMENT SUMP LIGHTS SHOULD NOT CAUSE LEVEL ALARMS
89-117	891220	90-015	EHC PANEL LIGHTS NOT LIT LIKE PLANT
	891220	89-212	TEST 14.4.3.1 EH-20, EH-CP-UPPER OSS HIGH
89-120	891220	90-317	MINIMUM CHARGING WITH HCV-142 SHUT SHOULD NOT CAUSE LAB DELTA P ALARM
	891220	89-215	TEST 14.4.3.1 SEAL INJ/CHARGING/LETDOWN PARAMETERS OOS
89-125	891220	90-024	TEST 14.3.4.14 5B HTR LEVEL RESPONSE ON ISOLATION OF EXTRACTION STEAM
	891220	89-220	TEST 14.4.3.1 FW HEATER LEVELS INDICATE OOS LOW
	891220	90-020	TEST 14.3.4.14 MALF HTR-5A RAMP IN FEATURE DID NOT WORK
	891220	90-022	TEST 14.3.4.14 HDT PUMP DISCHARGE PRESSURE TOO LOW
	891220	90-023	TEST 14.3.4.14 EXTRACTION STEAM PROBLEMS
	891220	90-021	TEST 14.3.4.14 HDT HI ALARM ON PPCS DID NOT ACTUATE
	891220	90-026	TEST 14.3.4.14 FW HEATER 4A RESPONSE TO DRAIN LINE ISOLATION
	891220	90-025	TEST 14.3.4.14 FW HTR LEVEL CONTROL PROBLEMS
	891220	90-029	LOA LIST FOR EDS HAS TYPO

SDRS ASSOCIATED WITH OPEN SIMULATOR MODIFICATIONS

SIMMOD	INITDATE	SDRNUM	TITLE
89-28	890221	89-022	ROD BANK DEMAND TROUBLE AFTER SNAPSHOT
89-30	890221	88-088	IND OVR'S CANNOT CLEAR OVR IF RAMP IS IN PROGRESS
89-31	890221	88-098	CURSOR CONTROL TO SELECT IDA FUNCTIONS
89-52	890418	89-196	NO RAD MONITOR ALARMS DURING MALF CVC-11
	890418	89-076	R-11 INDICATES HIGH RADIATION WHEN CONTAINMENT PURGE/EXHAUST FANS STOP
89-60	890523	89-107	PLANT STATUS DISPLAY - INCORRECT DATA DISPLAY
89-67	890620	89-111	NO FIRST OUT ALARM ON RCP FLOW DURING ATWS
89-91	890810	89-125	TURBINE CONTROL DIGITAL DISPLAY MISSING DOT
89-97	890906	89-180	RCP SEAL TEMPERATURE PROBLEM DURING FR-H.1
89-99	890906	89-183	SWITCH DISAGREMENT LITE
90-01	900104	89-199	ALARM F-29 REFLASH
90-04	900115	90-242	TEST 14.4.7.20.4
	900115	90-039	NO TURBINE VIBRATION ON SG OVERFILL
	900115	89-202	TURBINE VIBRATION RECORDER DOES NOT AGREE WITH TST METERS
90-10	900122	89-230	14.4.3.1 FC-626 CONTROLLER DOES NOT TRACK CORRECT DEVIATION WITH NO FLOW
90-100	901210	90-302	PT-485 AND PT-486 PROVING LAMPS
90-11	900207	89-235	MALF NIS-6A DELTA FLUX SIGNAL EFFECTS NOT SEEN ON DELTA T PROTECTION
	900207	89-234	MALF NIS-6A 1MA FAILURE CURRENT SEEN AS 400 MICROAMPS
90-12	900207	89-233	WIND SPEED AND DIRECTION RECORDER RK-32 - 3 PROBLEMS
90-14	900207	89-246	TEST 14.4.7.20.15 MAL TUR-15C DID NOT CLOSE MSR STEAM SUPPLY 1A
90-20	900318	90-004	TEST 14.4.7.20.3 VITAL BATTERY MONITORING SYSTEM RESPONSE
90-21	900419	90-043	POST TRIP REVIEW DATA POINTS ARE MISSING
90-22	900419	90-044	VOLTAGE PROBLEM DURING T-18C
90-24	900419	90-050	RHR TOO EFFECTIVE IN REMOVING DECAY HEAT
90-27	900531	90-060	IMPROPER CCW RESPOSNE TO LEAK ISOLATION
90-28	900531	90-063	LETDOWN FLOW PRESENT WITH AOV-427 CLOSED
90-29	900531	90-064	N-41 FAILURE DID NOT CAUSE RUNBACK
90-34	900628	90-076	EXCESS LETDOWN TEMP AND PRESSURE NEED TUNING
	900628	90-077	INADEQUATE FLOW THRU HCV-133 BYPASS LINE
90-41	900808	90-079	MSIV POSITION LITES DARK WHILE VALVES STROKE
90-42	900808	90-081	TURBINE LATCHES TOO QUICKLY
90-44	900808	90-130	GENERATOR VOLTMETER DOES NOT RESPOND TO SELECTOR SWITCH
	900808	90-090	GENERATOR VOLTMETER
90-45	900808	90-119	RK-30 (COLD GAS TEMP HOTTEST POINT IN GENERATOR)
90-46	900808	90-108	N32
90-47	900808	90-109	HCV-133 BYPASS FLOW

SDRS ASSOCIATED WITH OPEN SIMULATOR MODIFICATIONS

SIMMOD	INITDATE	SDRNUM	TITLE
90-48	900808	90-110	PRESS INPUTS TO OVERPRESSURE PROTECTION
90-54	901014	90-135	R2/R7 NO ALARM ON TUBE/FEED BREAK IN CV
90-55	901014	90-134	REPRESSURIZATION DOES NOT OCCUR AFTER S/G DRYOUT
90-56	901017	90-136	REPLAY FEATURE NOT WORKING PROPERLY
90-57	901017	90-141	LBLOCA/STM BREAK CAUSES CONTAINMENT TEMP TO EXCEED DESIAGN TEMP
90-58	901017	90-148	CENTER SECTION LOCKUP
90-59	901017	90-183	TEST 14.3.4.19, SBAFW PUMP SERVICE WATER SUPPLY
	901017	90-180	TEST 14.3.4.19, STEP 5.1.4.20, MOV-9746
	901017	90-182	TEST 14.3.4.19, STANDBY AUX FEED CROSS-CONNECT VALVES MOV 9703 A & B
	901017	90-184	TEST 14.3.4.19, NO FLOW FI-4084 & FI-4085
	901017	90-181	TEST 14.3.4.19, MOV 9701 A & B THROTTLING IMPROPER
90-61	901017	90-284	#12 TRANSFORMER WATTHOUR METER INOPERABLE
	901017	90-138	12A AMP METER DOES OPERATE LIKE PLANT
90-62	901017	90-120	AOV 4147 MFW RECIRC
90-63	901017	90-145	MALF EDS 7A
90-64	901017	90-320	P-2 - LOW POWER AUTO FED W/D BLOCKED - STATUS LIGHT DID NOT COME ON
	901017	90-156	DROPPED ROD ON G-3 DOESN'T WORK WHEN STUCK ROD CLEARED
90-65	901017	90-062	NON REGEN HX TEMP DID NOT INCREASE ON LOSS OF CCW
90-66	901017	90-159	REMOTE CONTROL IC INITIALIZATION
90-68	901017	90-161	MAGASTAT/TRINISTAT/EXCITER FIELD/GEN VOLT/GEN VARS/BUS 13, BUS 15 VOLT
90-69	901017	90-162	GENERATOR GROSS MW LOW
90-70	901017	90-163	SF HIGH IN "A" S/G
90-71	901017	90-164	FW HEATER LEVEL IS LOW - 2005
90-73	901017	90-166	LC-2013A IS HIGH - CONTROLLER PROBLEM LI-2013A IS LOW
90-74	901017	90-167	431A/B DEVIATION IS WRONG
90-75	901017	90-168	TA - TC - BOIL LOW - LUBE OIL COOLER
90-76	901017	90-169	FLOW CONTROLLER 480 OOS LOW
90-77	901017	90-170	NRHX CCW TC - 130 OOS
90-78	901017	90-171	FC - 626 OOS HIGH
90-80	901017	90-174	TEST 14.3.4.2, STEP 5.3.8.3
90-81	901017	90-209	TEST 14.4.7.3.7, ALARM I-5 CAME IN
90-83	901017	90-176	GLAND SEAL STEAM PRESSURE TOO LOW
90-84	901017	90-177	TEST 14.3.4.15
	901017	90-178	AFW BYPASS OPENS WITH SWITCH IN NORM
90-85	901017	90-199	TEST 14.3.4.23, CK SOURCE DOES NOT CAUSE ALARMS
	901017	90-189	TEST 14.3.4.23, R29/30 TEST FUNCTION

SDRS ASSOCIATED WITH OPEN SIMULATOR MODIFICATIONS

SIMMOD	INITDATE	SDRNUM	TITLE
90-85	901017	90-198	TEST 14.3.4.23, R-14 AFFECTS ON HVAC
	901017	90-195	TEST 14.3.4.23
	901017	90-187	TEST 14.3.4.23, CHECK SOURCE METER INCORRECT
	901017	90-190	TEST 14.3.4.23, R29 SETPOINTS LOW
	901017	90-193	TEST 14.3.4.23, R-11 BARGRAPH
90-86	901017	90-197	TEST 14.3.4.15, STEP 5.46, ALARM H-28 DID NOT COME IN WHEN MCC-1D TRIP
	901017	90-196	TEST 14.3.4.15, STEPS 5.3.14 AND 5.3.15, ALARM H-28, MDAFWP OIL PUMP OFF
90-87	901017	90-200	TEST 14.3.4.15, DID NOT GET PROPER FLOW & PRESSURE PER TEST PROCEDURE
	901017	90-201	TEST 14.3.4.15, NO PRESSURE INDICATED ON PI-2048
90-88	901017	90-204	TEST 14.4.3.3, STEP 5.2.5
	901017	90-205	TEST 14.4.3.3, 100% SWEEP TEST
	901017	90-202	TEST 14.4.3.3, RMW INTEGRATOR
90-89	901017	90-179	TEST 14.3.4.11, STEP 5.9, MASS BALANCE ON S/G BLOWDOWN DOES NOT WORK
90-90	901017	90-188	TEST 14.3.4.19, STEP 5.2.2, COULD NOT REFILL CST PER STEP 5.2.2
90-91	901017	90-206	TEST 14.4.7.1.1, DID NOT GET TURBINE LOW VACUUM TRIP
90-92	901017	90-173	HOTWELL LEVEL CONTROLLER DEVIATION METER INCORRECT RESPONSE
90-94	901106	90-278	GROUP II BANK A STEPS FIRST
90-99	901128	90-158	AA-6 LIT ON MALF RCS-11Q
91-001	910108	90-237	TEST 14.4.7.12.16, R-11,12,29,30, E-16 AND A-15 DID NOT COME IN
	910108	90-185	TEST 14.3.4.23, RMS SOURCE WEAK
	910108	90-192	TEST 14.3.4.23, R10B LOCAL ALARM
	910108	90-186	TEST 14.3.4.23, ALARM E-24 RESET
91-002	910108	90-238	TEST 14.4.7.15.2, POWER DID NOT DECREASE ON 41 AND 43 MOVE THE 42 AND 44
	910108	90-239	TEST 14.4.7.15.3, AFTER MALF ROD3A WAS CLOSED, ROD G-11 DID NOT DROP
91-004	910108	89-109	TEST 14.4.5.1 MASS BALANCE - PZR LOST MORE MASS THAN WAS GAINED BY VCT
	910108	90-312	ISOTHERMAL TEMPERATURE COEFFICIENT TOO POSITIVE TEST 14.4.6.1
	910108	88-094	INADEQUATE CORE COOLING WITH 300000 GPM LOCA (MALF RCS 2D)
	910108	90-085	TOO MUCH WATER IN CONTAINMENT DURING LOCA
	910108	90-309	LOCA TO VCT
	910108	90-208	CORE INSTABILITY DURING LOCA
	910108	90-236	TEST 14.4.5.1, 1 HOUR PRS-VCT MASS NOT WITHIN 2%
91-005	910108	90-310	FAILURE OF A BATP AND A RMW PUMP FOLLOWING LOSS OF 767
	910108	90-316	ELECTRICAL TRIPPING PROBLEM 767/751
91-006	910108	90-315	AUX BLDG SUMP TANK PUMPS DO NOT START
91-007	910108	90-329	DELETE MALFUNCTION MIS 8-15 FROM SIMULATOR DATA BASE
91-008	910108	90-292	EXCESSIVE D/G VOLTAGE DROP TO BUS

SDRS ASSOCIATED WITH OPEN SIMULATOR MODIFICATIONS

SIMMOD	INITDATE	SDRNUM	TITLE
91-009	910108	90-258	ANNUNCIATOR G-27/29 LO LO STEAM PRESSURE CHANNEL ALERT DO NOT ALARM
91-010	910108	90-298	VCT ENTHALPY PROBLEM
91-011	910108	90-299	INST AIR COMPRESSORS TRIP AT 475F AND SERVICE AIR COMPRESSORS DOES NOT
91-012	910108	90-319	EHC DID NOT SHIFT TO IMP OUT
91-013	910111	90-330	VALVE HANDLER CORRECTIONS
91-015	910117	90-314	INST AIR PRESSURE DECREASE TOO SLOW WITH LEAK
91-017	910121	91-006	S/G RESPONSE DURING LOCA INCORRECT
91-018	910121	91-008	FRV STROKE TIME VS FEED FLOW INCREASE INCORRECT
91-019	910204	91-013	PPCS UPDATE

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

SIMULATOR DISCREPANCY REPORT

Open SDR's sorted by type:

TYPE	LEGEND
A	Software
B	Hardware
LAB	Label
GSSD	Ginna Station Simulator Difference
TVA	Training Value Assessment Required

Note that SDR's are closed upon assignment to a Simulator Modification (SM). The SM listing thus provides the scheduled completion date for items that originated as SDR's. The GSSD related items have the scheduled completion date provided on the associated exception. The non-GSSD type SDR's on this listing are awaiting disposition.

OPEN SDRS SORTED BY TYPE,SDR NUMBER

TYPE	SDRNUM	SYSTEM	TITLE
A	90-282	MIS	100% POWER
	90-283	EDS	CKT 751 LOADS INDICATED ON GENERATOR WATTMETER
	90-303	STM	STEAM FLOW CHANNEL FAILURE MALF INOP
	90-327	MIS	LOA MIS 40, 41, 42 DO NOT WORK PROPERLY
	91-001	EDS	L20 AND L28
	91-003	SGN	HI STEAM FLOW B/S
	91-004	EDS	LOSS OF DC BUS
	91-005	EDS	LOSS OF RX MAKEUP CAPABILITY
	91-007	CTMT	CONTAINMENT DEPRESSURIZES TOO RAPIDLY ON LOCA
	91-011	LAB	CONDENSATE HEATER LEVEL LABELS
	91-014	RPS	PORV B/S
	91-016	RPS	OP DELTA T SETPOINT
	91-017	PPCS	CALORIMETRIC
B	89-126	COMM	CO DESK INTERCOM LIGHTS DO NOT RESPOND LIKE THOSE IN PLANT
	90-216	GSSD	BA/RMW RECORDER PEN COLOR
	90-244	GSSD	RK-29, RK-28A RECORDER SCALES
	90-262	GSSD	FUSE COVERS FOR N41A, N42, N43A, N49A
	90-268	GSSD	RECORDER 77 HAS NO UNITS AND EXTRA LABEL
	90-269	GSSD	SCALES ON INCORE RECORDERS
	90-270	GSSD	LABELS AND MARKS FOR AUX BENCHBOARD
	90-273	GSSD	SEAL LEAK OFF RECORDER LABEL AND PEN
	90-332	PPCS	PPCS FUNCTION KEYS NOT IN AGREEMENT WITH C/R
	91-002	COMM	SITE EVAC/FIRE/ATTEN GETTER ALARM MUTING
LAB	90-100	GSSD	MCB METERS DO NOT HAVE OPERATING RANGE COLOR BANDS
	90-228	GSSD	SEAL LEAKOFF RECORDERS LABEL & PEN
	90-230	GSSD	SWITCH LIGHT LABELS AND P.B. COLOR
	90-274	GSSD	LABELS FOR CONTROL ROOM DC LIGHTING PANEL MISSING
	90-275	GSSD	FIRE ZONE PANEL LABELS DO NOT MATCH PLANT STATUS
	90-287	LAB	AIR SYSTEM AND SUMP PUMP LABELS
	90-288	LAB	CS PUMP LABELS
	90-289	LAB	AFW LABELS
	90-290	LAB	CIRC WATER AND CONDENSATE SYSTEM LABELS
	90-291	LAB	CONTAINMENT VENT SYSTEM LABELS
	90-293	LAB	SW AND CNDST SYSTEM LABELS
	90-294	LAB	FW AND RCDT PUMP LABELS
	90-295	LAB	CCW, SI AND RHR LABELS

OPEN SDRS SORTED BY TYPE,SDR NUMBER

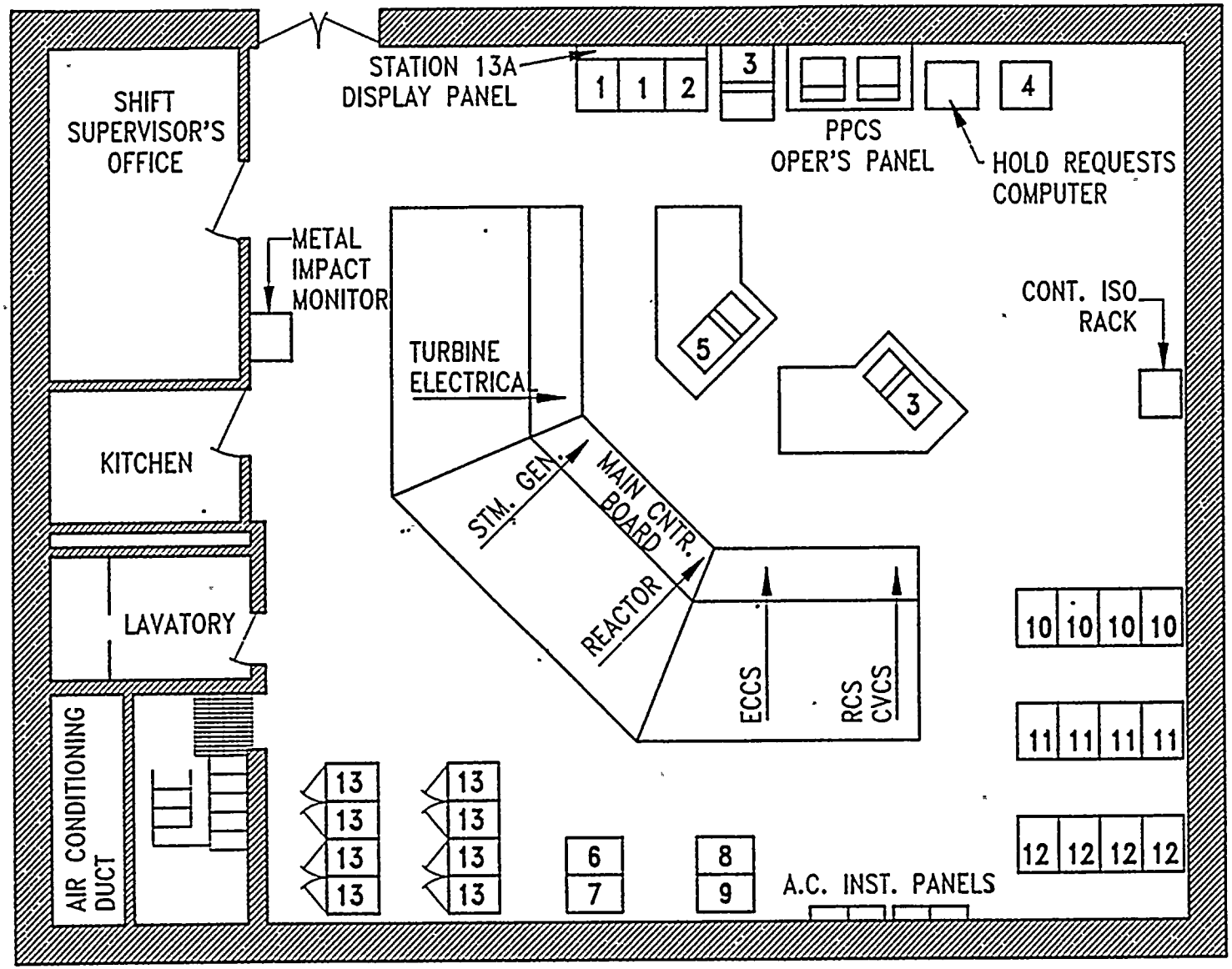
TYPE	SDRNUM	SYSTEM	TITLE
LAB	90-296	LAB	PRZR HEATER LABLES
	90-297	LAB	BA AND RCS SYSTEM LABELS
	90-322	LAB	SI SYSTEM LABELS
	90-323	LAB	FEEDWATER SYSTEM LABELS
	90-324	LAB	TURBINE OIL LABELS
	90-325	LAB	CNMT VENT SYSTEM LABELS
	90-326	LAB	CNMT VENT SYSTEM LABELS
	90-328	LAB	ELECTRICAL SYSTEM LABELS
	90-333	PPCS	PPCS LABELS NOT IN AGREEMENT WITH C/R
	91-009	LAB	ELECTRICAL SYSTEM LABEL
	91-010	LAB	CNMT FIRE HOSE SPRAY LABEL
	91-012	LAB	AEH CONTROLS AND BATTERY FLOW MONITOR
TVA	90-080	GEN	J-5 ALARM SHOULD CLEAR WHEN SYNCH SCOPE AT 12 O'CLOCK

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

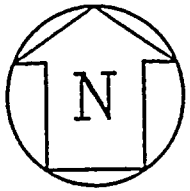
SIMULATOR CERTIFICATION REPORT

ATTACHMENT 6

PHYSICAL CONFIGURATION



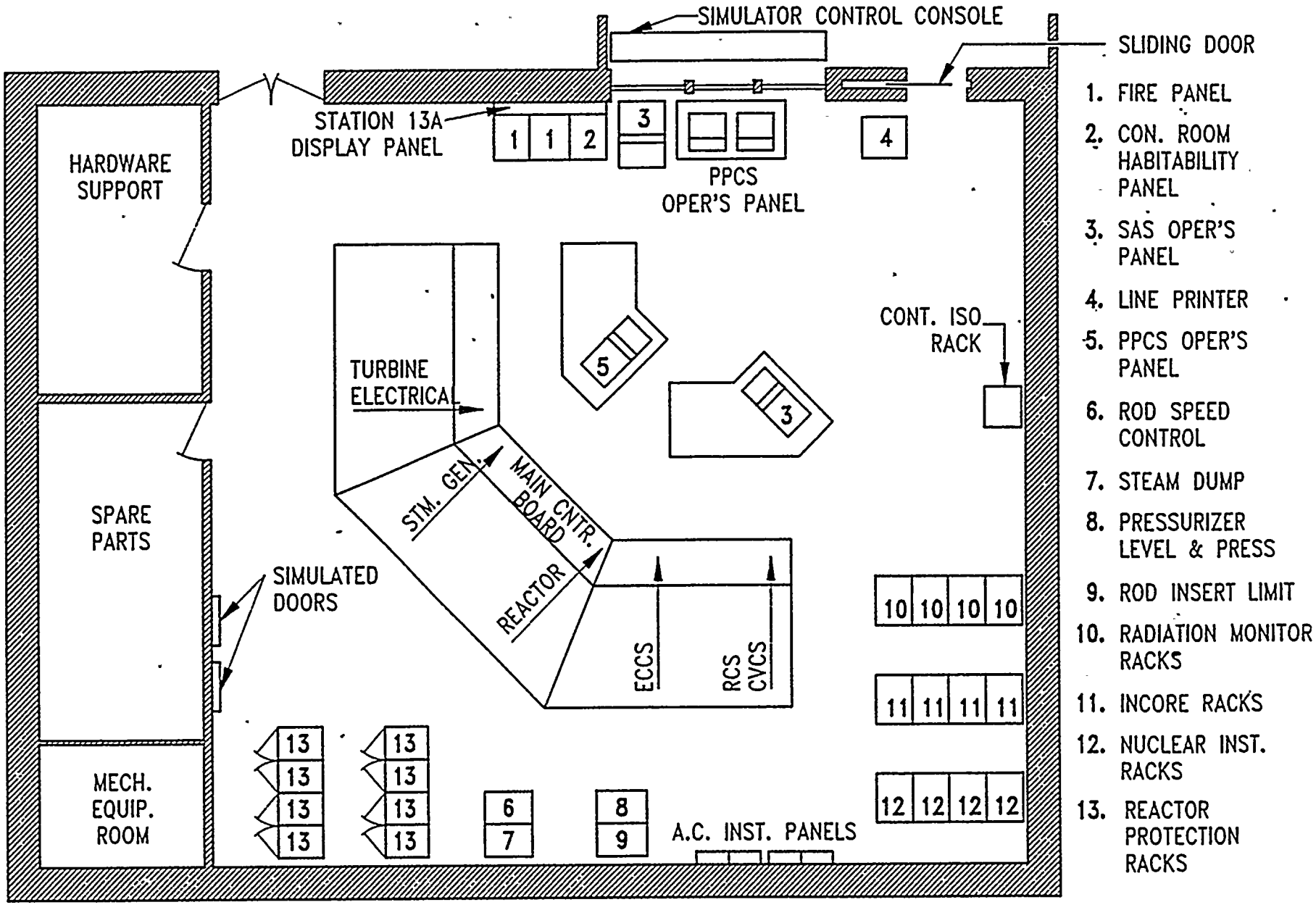
1. FIRE PANEL
2. CON. ROOM HABITABILITY PANEL
3. SAS OPER'S PANEL
4. LINE PRINTER
5. PPCS OPER'S PANEL
6. ROD SPEED CONTROL
7. STEAM DUMP
8. PRESSURIZER LEVEL & PRESS
9. ROD INSERT LIMIT
10. RADIATION MONITOR RACKS
11. INCORE RACKS
12. NUCLEAR INST. RACKS
13. REACTOR PROTECTION RACKS

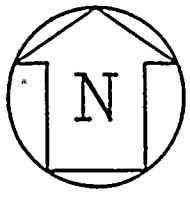


CONTROL ROOM LAYOUT

Figure 1

LT-1
REV. 00
11/9/90





SIMULATOR CONTROL ROOM LAYOUT

Figure 2

LT-2
REV. 00
11/9/90

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

PHYSICAL FIDELITY

GINNA STATION SIMULATOR DIFFERENCES

This listing provides the GSSD's that have not been corrected. The details, justifications and scheduled completion dates are provided in the associated Exceptions to ANSI/ANS 3.5-1985.

GSSDNUM	TITLE
90-001	K20, K21, K32, L4 ANNUNCIATOR WORDING
90-004	AOV CONTROL SWITCHES - ARROWS VS. DOTS FOR POSITION
90-006	VENDOR NAME ON INDICATORS ABSENT
90-007	INSIDE BEZEL MOUNTED LABELS
90-014	PRESSURE INDICATOR "SAFE" ZONES
90-016	PANEL 5 ZONE BANDING
90-018	PANEL 6 ZONE BANDING
90-019	RED DOTS ON VALVE SWITCHES
90-020	PANEL 6 METER POINTERS
90-022	BA/RMW RECORDER PEN COLORS
90-024	LI-432A AND LI-432B RCS LOOP LEVEL INDICATORS
90-029	RCS TEMPERATURE RECORDER
90-041	RED DOTS ON CONTROL SWITCHES
90-049	METER POINTER COLOR ON PRESSURE INDICATOR
90-054	TRANSPARENT SCALES FOR 3 S/G RECORDERS AND 2 SEAL LEAKOFF RECORDERS..
90-058	MISSING MAGNETIC COVER PLATE
90-064	SEAL LEAKOFF RECORDER LABEL AND PEN
90-070	D/G A AND B VOLTAGE SHUTDOWN PUSHBUTTON COLOR
90-073	ZONE BANDING
90-075	RED DOTS ON CONTROL SWITCHES
90-076	CONTROL BOARD AC/DC PANELS BLANK
90-077	PI-2036 POINTER COLOR BLACK VS. RED
90-079	RCP/CW/MFW PUMP AND MISC TEMPERATURE RECORDER SCALES
90-080	RED DOTS ON COND IN/OUT MOV SWITCHES
90-082	VISUALLY SIMULATED RELAYS
90-086	PEN COLORS ON RK-32, WIND SPEED/DIRECTION RECORDER.
90-089	SCALES FOR RECORDERS RK-78 AND RK-79
90-091	NO UNITS ON RECORDER 77 SCALE
90-093	SIGNAL ISOLATOR COMPUTER AND RECORDER ABSENT IN SIMULATOR
90-094	RCP LUBE OIL LEVEL INSTRUMENTATION
90-095	NEW RADIATION MONITORS
90-096	OUTSIDE AIR TEMPERATURE
90-097	PANEL 11 LABEL.....
90-103	PANEL 12 RECORDER LOCATIONS
90-104	RECORDER SIGNAL SWITCHES
90-105	SCALES ON INCORE RECORDERS
90-106	SCALER TIMER DRAWER REMOVAL FROM NI RACK

GSSDNUM	TITLE
90-109	RK-81, RK-82 LABELS AND CONTROLS
90-111	AC CONTROL POWER FUSE COVERS FOR POWER RANGE CIRCUITS
90-112	DEVICES NOT ON PLP RACK
90-120	DEVICES NOT IN SIMULATOR
90-121	COMPONENTS NOT IN SIMULATOR
90-122	DEVICES NOT IN SIMULATOR
90-126	COMPONENTS NOT IN B-2 RACK
90-127	COMPONENTS NOT IN B-1 RACK
90-128	COMPONENTS NOT IN W-1 RACK
90-129	COMPONENTS NOT IN W-2 RACK
90-130	COMPONENTS NOT IN V-1 RACK
90-131	COMPONENTS NOT IN Y-2 RACK
90-132	COMPONENTS NOT IN R-2 RACK
90-133	COMPONENTS NOT IN R-1 RACK
90-134	EXTRA RCP-1A,1B BEARING LUBE OIL LEVEL INDICATORS
90-135	NO PHASE ADJUSTMENT FOR PCV-435, PCV-434, POSITION INDICATORS
90-137	POWER AVAILABLE MOTOR FIRE PUMP BREAKER CLOSED INDICATING LIGHT
90-138	CONTROL ROOM MANUAL RECIRCULATION LIGHT
90-140	MIMIC BOARD CONFIGURATION
90-141	FIRE SWITCH LABEL MISSING
90-142	AC INSTRUMENT PANEL BREAKER LABELS
90-143	CONTROL ROOM TOOL BOX ABSENT
90-144	FIRE SYSTEM ALARMS
90-145	FIRE ZONE PANEL LABELS DO NOT REFLECT PLANT STATUS
90-146	EQUIPMENT NOT PRESENT ON SIMULATOR WEST WALL
90-147	EQUIPMENT NOT PRESENT ON SIMULATOR NORTH WALL
90-148	EQUIPMENT ON NORTH WALL OF SIMULATOR NOT IN MCB
90-149	CONTROL ROOM SOUTH WALL DISCREPANCIES.
90-150	CONTROL ROOM EAST WALL DISCREPANCIES
90-151	SIMULATOR CEILING DISCREPANCIES
90-152	ANNUNCIATOR ALARMS TONE - HUM VS. CLAPPER
90-153	PORTABLE RADIOS
90-154	CONTROL ROOM PANELS, FLOORS
90-156	BUMPERS ON CONTROLLERS HCV-466, 476
90-157	RK-76 SCALES
90-159	BUS 12A/12B MODE SELECT SWITCH MOUNTING
90-164	AOV-897, AOV-898 INCORRECT STATUS LIGHT AND SWITCH LABELS

SSSDNUM	TITLE
90-167	ANNUNCIATOR B15 INCORRECT
90-187	ZONE BANDING PANEL 7
90-189	MCB FAN SHROUD
90-190	METER POINTER COLORS ON FLOW AND PRESSURE INDICATORS
90-191	PI-944 ZONE BANDING
90-192	METAL IMPACT MONITOR PANEL NOT IN SIMULATOR
90-193	CONTROL ROOM DC LIGHTING PANEL LABELS MISSING
90-194	RK-76 CONTROLS
90-195	CONTROL ROOM LIGHTING LEVELS NORMAL/EMERGENCY
90-196	MICROPHONES ON SIMULATOR PANELS 5, 6, 7
90-197	R-1, CONTROL ROOM RADIATION DETECTOR
90-198	REINFORCEMENT MOUNTING BRACKETS FOR FLOOR MOUNTED PANELS

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

PHYSICAL FIDELITY

DISCREPANCY REPORTS ASSOCIATED WITH
GINNA STATION - SIMULATOR DIFFERENCES

This report [illegible] SDR number with the GSSD(s) to be resolved.

ROCHESTER GAS & ELECTRIC CORPORATION
R. E. GINNA

PHYSICAL FIDELITY

SIMULATOR DISCREPANCY REPORTS ASSOCIATED WITH
GINNA STATION - SIMULATOR DIFFERENCES

This report associates the SDR number with the GSSD(s) to be resolved.

OPEN SIMULATOR DISCREPANCIES ASSOCIATED WITH GSSD'S

SDR	GSSDNUM	TITLE
90-100	90-187	ZONE BANDING PANEL 7
	90-073	ZONE BANDING
	90-191	PI-944 ZONE BANDING
	90-018	PANEL 6 ZONE BANDING
	90-016	PANEL 5 ZONE BANDING
90-216	90-022	BA/RMW RECORDER PEN COLORS
90-228	90-043	GREEN DOT ABOVE AOV-745 INDICATING LIGHT
	90-057	EXTRA GREEN DOT FOR AOV-310 NORMAL POSITION
	90-044	GREEN DOTS FOR AOV-111, 110C, 110B CONTROL SWITCHES AUTO POSITION.....
	90-058	MISSING MAGNETIC COVER PLATE
	90-059	BAST LO-LO LOCKOUT RESET PUSHBUTTON COLOR
	90-060	ROD CONTROL STARTUP PUSHBUTTON COLOR
	90-061	EXTRA "FC" LABELS FOR MOV-897, MOV-898
	90-062	EXTRA LABELS "FUTURE" NEAR RHR PUMP INDICATING LIGHTS
	90-063	SWITCH KEY NUMBER ON CONTAINMENT VENT ISOLATION RESET SWITCH
90-230	90-070	D/G A AND B VOLTAGE SHUTDOWN PUSHBUTTON COLOR
	90-067	SWITCH PLATE ENGRAVING
	90-071	DOTS FOR INDICATING LIGHTS
90-244	90-079	RCP/CW/MFW PUMP AND MISC TEMPERATURE RECORDER SCALES
90-262	90-111	AC CONTROL POWER FUSE COVERS FOR POWER RANGE CIRCUITS
90-268	90-091	NO UNITS ON RECORDER 77 SCALE
	90-092	RECORDER 77 EXTRA LABEL
90-269	90-105	SCALES ON INCORE RECORDERS
90-270	90-141	FIRE SWITCH LABEL MISSING
	90-139	WHITE ARROWS ON PISTOL GRIP SWITCHES
	90-136	CONTAINMENT CHARCOAL FILTER MONITOR MODULE NOT ACTIVE
90-273	90-064	SEAL LEAKOFF RECORDER LABEL AND PEN
90-274	90-193	CONTROL ROOM DC LIGHTING PANEL LABELS MISSING
90-275	90-145	FIRE ZONE PANEL LABELS DO NOT REFLECT PLANT STATUS