



ARKANSAS POWER & LIGHT COMPANY

POST OFFICE BOX 551 LITTLE ROCK, ARKANSAS 72203 (501) 377-4000

May 31, 1989

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U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station P1-137
Washington, DC 20555

ATTN: Mr. Chester Poslusny, Jr., NRR Project Manager
NRR Mail Stop 13-D-18

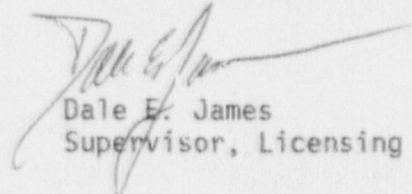
SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Additional Information Request Response -
Simulator Certification (TAC No. 72912)

Dear Mr. Poslusny:

Your letter dated March 27, 1989 (2CNA038902) requested additional information and data to assure complete documentation of our certification of the ANO-2 Simulator. The information you requested is included as an enclosure and its associated attachments to this letter, with the responses numbered according to the specific questions contained in your request.

It should be noted that in December 1987 members of our staff contacted Mr. Wachtel, the NRC reviewer designated for the ANO-2 Simulator review, to obtain guidance in preparing the certification submittal. Mr. Wachtel could not provide specific guidance on the submittal content, but stated that our process for selecting transients and our exception to the operating limit appeared to be adequate.

Very Truly Yours,


Dale E. James
Supervisor, Licensing

DEJ:RBT

Enclosure

8906130183 890531
PDR ADOCK 05000368
P PDC

M003
11

ENCLOSURE

ANSWERS

A-1. The answer to this question is broken down by section of the Performance Test. For each section all three parts of the question are answered. The format is as follows:

Performance Test Section Title

1. Final Conditions
2. Description of Baseline Data Used to Determine Fidelity to the Reference Plant
3. Deficiencies Found as a Result of the Test, Corrective Actions Planned and Dates by Which Corrections will be Made

Computer Real Time Test

1. Data was recorded and saved verifying computer real time during normal, abnormal, and emergency situations.
2. Not related to reference plant fidelity.
3. No deficiencies were identified.

Normal Operation Test

1. Normal operation procedures were completed, signed and attached. ICs were established and stored.
2. Baseline data used was the ANO Unit 2 Operating Procedures, 2102 series. These procedures direct operations for 100% power to cold shutdown and back to 100% power.
3. Fourteen discrepancies were identified, none of which were evaluated as to have a negative impact on training. All fourteen have been corrected.

Steady State Operation Test

1. Steady state data was collected for 30%, 60% and 100% power. This data was tape saved and compared to plant data.
2. Baseline data used was from plant computer logs.
3. No deficiencies were identified.

Surveillance Test

1. Surveillance procedures were completed, initialed and attached.
2. Baseline data used was the latest revision of ANO Unit 2 Plant Surveillance Test Procedures.
3. Five deficiencies were identified, none of which were evaluated as to have a negative impact on training. All five have been corrected.

Transient Test

1. Transients were run until such time that a stable, controllable and safe condition was attained which could be continued to a cold shutdown condition. Data was collected, saved and compared to baseline data.
2. Baseline data for 7 of the transients performed consisted of plant transient reports from ANO Unit 2. Baseline data for the other 2 transients performed consisted of sections from the ANO Unit-2 FSAR.
3. Five discrepancies were identified, none of which were evaluated as to have a negative impact on training. All five discrepancies have been corrected.

Malfunction Test

1. For malfunctions that did not result in a plant trip but did require a shutdown, the malfunction test was terminated when the shutdown was initiated.

For malfunctions that did result in a plant trip (automatic or manual), the malfunction test was terminated when the plant was being controlled in accordance with the appropriate section of the EOP.

For malfunctions that were not covered by the above, the malfunction test was terminated when the plant reached stable conditions.

2. The anticipated plant response, detailed on the APR form gives initial plant response. These responses were obtained by discussion between Training and Operations department personnel and were approved by SRO Licensed representatives of each group.

The simulator was operated in accordance with approved plant procedures. Symptoms, automatic actions, and plant response described in these procedures were used to evaluate simulator performance and there was no need to attempt to define every possible alarm or response in the malfunction test body.

3. Twenty deficiencies were identified, none of which were evaluated as to have a negative impact on training. All twenty have been corrected.

Included as an Attachment (see Attachment 1) to this letter are the "Anticipated Plant Response" sheets.

A-2. At the time Exception 2 was written, the interpretation of Section 4.3 of ANSI/ANS 3.5-1985 was that an "Operating Limit" is a limit on the simulator which caused a "Blow Up" or the simulator could not handle the condition it was placed in. In December of 1987, there was considerable confusion in the industry regarding the "Operating Limit". Mr. Wachtel was contacted to obtain clarification. He was told that to this date (12/87) there was not a condition into which the simulator was placed that would cause "Negative Training". He was told that our options were to create an operating limit with no basis or to take an exception and our decision was to take an exception. He agreed.

The statement in Items 6.1.3f and 6.3.3f, Attachment 3 of the submittal, "Simulator Fidelity Testing Guideline" of the submittal, was included to reflect the interpretation as stated above. If the simulator "Blew Up" or could not handle the condition it was placed in, then the test would have been terminated and deemed unsatisfactory. At that time if the condition could not be corrected, then according to Exception 2 an operating limit would have been established. If this interpretation, as stated in Exception 2, was still being used, then the means for alerting the instructor would still not be needed.

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

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

These operating limits have been implemented and tested. A flashing light on the instructor station is in place to alert the instructors that an operating limit has been reached.

A-3. The following were performed as transient tests:

- 1) Turbine Trip/Reactor Trip, High MSR Level
- 2) "A" MSIV Closure
- 3) Main Turbine Runback
- 4) Loss of Circulating Water
- 5) "D" RCP Trip/Reactor Trip
- 6) Reactor Trip, "A" SG Level
- 7) Partial Loss of Off-Site Power (Natural Circulation)
- 8) Main Steam Line Break
- 9) Loss of Coolant Accident

As stated in Item I.B, "Transient Testing", of the abstract, the purpose of this test was to ensure that simulator performance was consistent with real plant performance in areas where documented plant response is available. ANO Unit 2 Transient Reports and Licensing Event Reports were utilized to select the transients included in this section. In addition, the Safety Analysis Report was used as a standard for two of the transients selected. In all cases, the selection process for which transients would be performed was to match the list in Appendix B of ANSI/ANS 3.5-1985 as closely as possible while using best available plant data to compare the results. In December of 1987, Mr. Wachtel was informed of this process we were using to determine what the transients we tested would be. That is, we would use documented plant transients to evaluate simulator fidelity. Additionally, we would use the FSAR as a basis for the LOCA and MSLB because that is the best (only) information available.

The maximum power ramp (100% down to approximately 75% and back to 100%) was not chosen as a transient test due to the nature of operation at ANO-2. The power manipulation is controlled manually and the probability of being able to exactly replicate the test each year and produce comparable results would be nearly impossible.

A-4. Attachment 3, "Simulator Fidelity Testing Guideline" has recently been revised. (See Attachment 2.) During this review, several items were added to Section 4.1.c. The statement concerning 25% of the malfunctions being tested annually was one of the items added.

Also, refer to the operability test included with the submittal. On page 3, Item 1.0, 4, states as a purpose of the Simulator Operability Test, "test a minimum of 25% of malfunctions in ANS-3.5, 1985, 3.1.2".

A-5. Attachments 7, 8 and 9, "Simulator Modification Control Guidelines", "Simulator Design Control Guidelines", and "Simulator DCP Control Guideline", have recently undergone extensive review and revision. The "Simulator Design Control Guideline" has been incorporated into the "ANO Training Administrative Guideline: Simulator Modification Control". The "Simulator DCP Control Guideline" has been replaced with the "ANO Training Administrative Guideline: Documents Which Affect Training". Copies of these have been provided as attachments to this letter. (See Attachments 3 & 4.)

These documents reflect the simulator modification and the design control process.

A-6. The version (Rev. 0) of the Simulator Operability Test included with the submittal has undergone two revisions. The latest revision is included as an attachment (see Attachment 5) to this letter.

The tests performed for initial certification are a subset of the enclosed Simulator Operability Test. The tests listed in Rev. 0 of the Simulator Operability Test were performed for initial certification.

Refer to the answer for Question 1 regarding test results.

ATTACHMENT 1

ANTICIPATED PLANT RESPONSE SHEETS

ANTICIPATED PLANT RESPONSE

(1)

MAJORITY TITLE: LOCA (CVCS RELIEF UPSTREAM LOHA) DATE PERFORMED: 1/7/11 / 1

PERFORMED BY:

OTHER UNIQUE PARAMETERS/TRENDS	SECONDARY / NO CHANGES	
<p>LDFCV will size to compensate for the stroke open relief (based on per level). The LO Back pressure regulator will close down to control pressure. VCT level will decrease at a rate dependent on the size of the leak. Per level (i press) will be small based on the leak size.</p>	A	B
	MS FLOW	/
	MFW FLOW	/
	SG PRESS	/
	SG LEVEL	/
	GEN MW	/
	HDR FLOW	/
	COND FLOW	/
	COLSS FWR	/
	MFP SPEED	/
	CONTAINMENT	
	PRESS	/
	TEMP	/
	HUMIDITY	/
	SUMP LVL	/
RADIATION MONITORING		
MS LINE	/	
SG Sample	/	
Vacuum PMP	/	
CONT AREA	/	
CAMS	/	

RESULTS

DR 87-153

HD Flow was 28 gpm even with back pressure REG VALVES closed.

APPROVED: [Signature] ACCEPTED: [Signature]

2

TOU UNIT ANTICIPATED PLAN: RESPONSE

MAJUNCTION TITLE: Loss of CGW to L/D HX DATE PERFORMED: 11/4/87 PERFORMED BY: Allair

OTHER UNIQUE PARAMETERS/TRENDS

Temp out of L/D HX will increase
Baronometer and Rackman, for will isolate
3-way valve will shift to bypass D/I's

	SECONDARY	A	B
MS FLOW	/	/	/
MFW FLOW	/	/	/
SG PRESS	/	/	/
SG LEVEL	/	/	/
GRW M/W	/	/	/
HDP FLOW	/	/	/
COND FLOW	/	/	/
COLSS FWR	/	/	/
MFP SPEED	/	/	/
CONSTAINMENT N/C			
PRESS	/	/	/
TEMP	/	/	/
HUMIDITY	/	/	/
SUMP LVL	/	/	/
RADIATION MONITORING			
MS LINE	/	/	/
SG Sample	/	/	/
Vacuum Pmp	/	/	/
CONST PRESS	/	/	/
CAMS	/	/	/

RESULTS

ACCEPTED: [Signature]

APPROVED: [Signature]

MAJORITY TITLE: Defect Selected Group Postmortem PERFORMED: 1/5/87 PERFORMED BY: *Affinity*

OTHER UNIQUE PARAMETERS/TRENDS

The group will fail to move when demand is initiated as indicated by CSR position and require intervention

Reactor Coolant System

SECONDARY	A	B
Press		
Level		
Flow		
Th		
Tc		
Tavg		
Pr Press		
LQ Flow		
Ch Flow		
VCT LVL		
VCT Press		
SIT LEVEL		
SIT PRESS		
QT LEVEL		
QT TEMP		
QT. Press		
ESFAS ACTUATION		

SECONDARY	A	B
MS Flow		
MFW Flow		
SG Press		
SG Level		
Gen MW		
HDR Flow		
CAND Flow		
COLSS PWR		
MFP Speed		

CONTAINMENT

PRESS	
TEMP	
HUMIDITY	
SUMP LVL	

RADIATION MONITORING

MS Line	
SG Sample	
Vacuum Pmp	
Coast Area	
CAMS	

RESULTS

APPROVED: *[Signature]*

[Signature]

ACCEPTED: *[Signature]*

[Signature]

ANTICIPATED PLAN RESPONSE

(4)

MAJORITY TITLE: Loss of All Feed Water DATE PERFORMED: 11/4/87 PERFORMED BY: Affair

Reactor Coolant System	SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS	
	A	B		
Press	↓	↓	The operator will have the feed when	
Level	↓	↓	Loss of FW is detected. Initial response	
Flow	↓	↓	the same in loss of both MFP's. RC	
Th	↑	↑	press, but temp will increase after	
Tc	↑	↑	initial transient. Response per the	
Tavg	↑	↑	EOP will be to feed w/ condenser	
Rp Pwr	↓	↓	pump or use ECC's vents to remove	
LO Flow	↑	↑	heat.	
Chg Flow	↓	↓		
VCT LVL	↑	↑		
VCT Press	↑	↑		
SIT LEVEL	N/C	N/A		
SIT PRESS	↓	↓		
QT LEVEL	↓	↓		
QT TEMP	↓	↓		
QT- Press	↓	↓		
ESFAS ACTUATION	↓	↓		

RESULTS

* Lx power did not increase
 The pump was eventually started
 after the reactor was cooled down
 and the system was stabilized
 (to)

ANTICIPATED PLANT RESPONSE

PERFORMED BY: H. K. ...

DATE PERFORMED: 11/3/77

MAJORITY TITLE: Loss of BWR MFP

OTHER UNIQUE PARAMETERS/TRENDS

The turbine will set back to 10% per hour
 The operator will tune the plant when
 loss of all MFW is detected. If not the
 plant will tune on his return or to SG
 level. EFAS will activate and return
 SG level

SECONDARY

	A	B
MS Flow	↓	↓
MFW Flow	↓	↓
SG Press	↑	↑
SG Level	↓	↓
Gen MW	↓	↓
HWR Flow	part ↓	part ↓
COND Flow	↓	↓
COLSS PWR	↓	↓
MFP SPEED	↓	↓

CONTAINMENT

PRESS	NC
TEMP	↓
HUMIDITY	↓
SUMP LVL	↓

RADIATION MONITORING

MS Line	VL
SG Sample	↓
Vacuum PMP	↓
CONT AREA	↓
CAMS	↓

RESULTS

Response was as expected.

EFAS ACTUATION

EFAS

APPROVED: [Signature]

DATE: 11/3/77

ACCEPTED: [Signature]

ANTICIPATED PLAN RESPONSE

MAJORITY TITLE: MFCV

7/1/17 DATE PERFORMED: 11/3/17

PERFORMED BY: A. Falls

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

Press	→	→	→
Level	→	→	→
Flow	→	→	→
Th	→	→	→
Tc	→	→	→
Tang	→	→	→
Br Pwr	→	→	→
LD Flow	→	→	→
Chf Flow	→	→	→
VCT LVL	→	→	→
VCT Press	→	→	→

MS FLOW	→	→
MFW FLOW	↑	↓
SG PRESS	→	→
SG LEVEL	↑	↓
GEN MW	→	→
HDP FLOW	→	→
SPARG FLOW TOTAL	↓	↓
COLSS PWR	→	→
MFP SPEED	↑	↑

Fw flow will decrease to the affected SG & MFCV bypass will open to try to restore level. The plant will trip on low s/g level. EFAS will activate and restore levels.

Total Fw Flow will initially decrease due to the failure. The above paragraph is the primary response we're looking for. We're not sure of primary response

CONTAINMENT

PRESS	IX
TEMP	→
HUMIDITY	→
SUMP LVL	→

RESULTS

RCS Pressure and low level did not trip. Simulator maintained steam flow as per turbine demand. RCS Flow Remained constant. RCS Temp did not significantly change out. The Reactor Trip ON to Steam Generator level. Reactor power remained constant at 7.1 Reactor Trip.

Not for contained charge were expected for the very possible. No problem with containment.

RADIATION MONITORING

MS Line	MX
SG Sample	→
Vacuum Imp	→
CONT AREA	→
CAMS	→

EFAS ACTUATION

APPROVED: [Signature]

ACCEPTED: [Signature]

7

MAJUNCTION TITLE: Generator Trip

DATE PERFORMED: 11/1/79 PERFORMED BY: M. Hall

	PRIMARY		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS
	A	B	A	B	
Press	↑	↘	↓	↘	A generator trip will initiate a generator W/O which opens the field to generator bars & cause a turbine trip. This will cause a reactor trip or hi re pressure or low sto lower the plant will respond to a normal Rx Trip. Else loads will refer to sk 3
Level	↑	↘	↓	↓	
Flow	→	↘	↓	↓	
Th	↑	↘	↑	↑	
Tc	↑	↘	↓	↓	
Tavg	↑	↘	↓	↓	
Rx Pwr	↓	↘	↓	↓	
LQ Flow	↑	↘	↓	↓	
Chg Flow	↑	↘	↓	↓	
VCT LVL	↑	↘	↓	↓	
VCT Press	↑	↘	↓	↓	
SIT Level	↑	↘	↓	↓	CONTAINMENT PRESS TEMP HUMIDITY SUMP LVL
SIT Press	↑	↘	↓	↓	
QT LEVEL	↑	↘	↓	↓	
QT TEMP	↑	↘	↓	↓	
QT. Press	↑	↘	↓	↓	RADIATION MONITORING MS Line SG Sample Vacuum Pmp CONT Press CAMS
ESFAS ACTUATION					
RESULTS					
no unexpected results					

APPROVED: [Signature] 25 Senior
 ACCEPTED: [Signature] 25 Senior

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: Turbine Trip

DATE PERFORMED: 11/3/17

PERFORMED BY: [Signature]

Reactor Coolant System

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

Press	↑
Level	↑
Flow	→
Th	↑
Tc	↑
Tang	↑
Rn Flow	↓
LO Flow	↑
Chg Flow	→
VCT LVL	↑
VCT Press	↑
SIT Level	→
SIT Press	→
QT Level	→
QT Temp	→
QT Press	→

	A	B
MS Flow	↓	↓
MFW Flow	↓	↓
SG Press	↑	↑
SG Level	↓	↓
GRW MW	↓	↓
HDR Flow	↓	↓
COND Flow	↓	↓
COLSS Flow	↓	↓
MFP Speed	↓	↓

CONTAINMENT

Press	NC
Temp	↓
Humidity	↓
Sump Lvl	↑

ESFAS ACTUATION

MS Line	NC
SG Sample	↓
Vacuum Pmp	↓
COND Drain	↓
CAMS	↓

Turbine trip will cause a generator tie. Rx will trip on hi R pressure ~~low steam~~. Elec loads will xfer to bus 3. The plant will respond to a normal reactor trip.

RESULTS

NO UNEXPECTED RESULTS

APPROVED: [Signature]

MS & DR

ACCEPTED: [Signature]

9

MAJORITY TITLE: STUCK CEA J J U DATE PERFORMED: 11/5/87 PERFORMED BY: *[Signature]*

SECONDARY

Press	MC		
Level			
Flow			
Th			
Tc			
Tang			
Ex Pwr			
LO Flow			
Chg Flow			
VCT LVL			
VCT Press			
SIT Level			
SIT Press			
QT Level			
QT Temp			
QT Press			

OTHER UNIQUE PARAMETERS/TRENDS

A CEA will be stuck during a portion of a start up. The operator will receive diversion alarm and attend to restore proper CEA configuration. This will give indication of miscalibrated CEA (per ADP)

CONTAINMENT

Press	MC	
Temp		
Humidity		
Sump Lvl		

RESULTS

NO UNEXPECTED RESULTS

ESFAS ACTUATION

MS Line	MC	
SG Sample		
Vacuum Pmp		
Cont Area		
CAMS		

RADIATION MONITORING

APPROVED: *[Signature]* JMS Ponder

ACCEPTED: *[Signature]* HP D/A

ANTICIPATED PLAN RESPONSE

10

MAJORITY TITLE: Degraded Coolant Motor

DATE PERFORMED: 11/5/87

PERFORMED BY: *[Signature]*

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

Press	MC
Level	/
Flow	/
Th	/
Tc	/
Tavg	/
En Flow	/
LD Flow	/
Cry Flow	/
VCT LVL	/
VCT Press	/
SIT Level	/
SIT Press	/
QT Level	/
QT Temp	/
QT Press	/

MS Flow	MC
MFW Flow	/
SG Press	/
SG Level	/
Geo MW	/
HDR Flow	/
COND Flow	/
COLSS PUR	/
MFP SPED	/

CONTAINMENT

Press	MC
Temp	/
Humidity	/
SUMP LVL	/

ESFAS ACTUATION

RADIATION MONITORING

MS Line	MC
SG Sample	/
Vacuum Pmp	/
CONT AREA	/
CAMS	/

During CRA withdrawal, motor of a selected CRA will be degraded (slowed). This will cause deviation in parameter which will alert the operator to the problem.

RESULTS

NO UNEXPECTED RESULTS

APPROVED: *[Signature]* 11/5/87

ACCEPTED: *[Signature]* 11/5/87

(11)

MAJORITY TITLE: Defect CEA Commands DATE PERFORMED: 11/3/87 PERFORMED BY: Affluent
 OTHER UNIQUE PARAMETERS/TRENDS

SECONDARY

	A	B
MS Flow	✓	
MFW Flow		
SG Press		
SG Level		
GRW MW		
HDR Flow		
COND Flow		
COISS PWR		
MFP SPEED	✓	

CONTAINMENT

PRESS	✓
TEMP	
HUMIDITY	
SUMP LVL	✓

RADIATION MONITORING

MS Line	✓
SG Sample	
Vacuum PMP	
CONT Area	✓
CAMS	

Reactor Coolant System

Press	✓
Level	
Flow	
Th	
Tc	
Tavg	
Rd Pwr	
LO Flow	
Chg Flow	
VCT LVL	
VCT Press	
SIT Level	
SIT Press	
QT Level	
QT Temp	
QT Press	

ESFAS ACTUATION

RESULTS

* NO UNEXPECTED RESULTS

Solicited CEA will not respond to movement command

APPROVED: [Signature]

Mr. Pond

ACCEPTED: [Signature]

[Signature]

ANTICIPATED PLANT RESPONSE

12

MAJUNCTION TITLE: Unvented CEA Core Withdrawal DATE PERFORMED: 11/5/87 PERFORMED BY: *A. Hill*

OTHER UNIQUE PARAMETERS/TRENDS

CEA will move out without demand signal as indicated by CEA position. The operator will follow the AOP which will call for tripping the reactor. This should be run during a plot stand up

SECONDARY

	A	B
MS FLOW	/	/
MFW FLOW	/	/
SG PRESS	/	/
SG LEVEL	/	/
GEN MW	/	/
HDR FLOW	/	/
COND FLOW	/	/
COLSS PWR	/	/
MFP SPEED	/	/

CONTAINMENT

PRESS	NO
TEMP	/
HUMIDITY	/
SUMP LVL	/

RADIATION MONITORING

MS Line	NO
SG Sample	/
Vacuum Pmp	/
CONT AREA	/
CAMS	/

RESULTS

NO UNEXPECTED RESULTS

* These parameters did not change due to test being performed below the POAH

NOTE

Reactor Coolant System

Press	/
Level	/
Flow	/
Th	/
Tc	/
Tang	/
Bp Pwr	/
LO Flow	/
Chg Flow	/
VCT LVL	/
VCT Press	/
SIT LEVEL	/
SIT PRESS	/
QT LEVEL	/
QT TEMP	/
QT. PRESS	/

ESFAS ACTUATION

APPROVED: *[Signature]* IN PERSON ACCEPTED: *[Signature]* / *[Signature]*

PROBLEMS - 1224 MTS: MICHIGAN - INTERNATIONAL
 ANTICIPATED PLANT RESPONSE
 ALPHA 5/4 7 1 1 ; 2
 DATE PERFORMED: 11/3/87 PERFORMED BY: *[Signature]*

MALEFUNCTION TITLE: SGTR (7 CCP CAPACITY)
 Reactor Coolant System

Press'	↓	↑
Level'	↓	↑
Flow	→	→
Th	→	→
Tc	→	→
Tavg'	→	→
Pr Pwr'	→	→
LD Flow	↓	↓
Chg Flow	↑	↑
VCT LVL	↓	↓
VCT Press	↓	↓
SIT Level	→	→
SIT Press	→	→
QT Level	→	→
QT Temp	→	→
QT Press	→	→

SECONDARY

MS Flow	→	→
MFW Flow	→	→
SG Press	* ↓	→
SG Level	→	→
Gen MW	→	→
HDR Flow	→	→
COND Flow	→	→
COLSS PWR	→	→
MFP Speed	→	→

CONTAINMENT

Press	NC	→
Temp	→	→
Humidity	→	→
Sump Lvl	→	→

RADIATION MONITORING

MS Line	1	↑	→
SG Sample	1	↑	→
Vacuum Pmp	1	↑	→
Cont Area	→	→	→
CAMS	→	→	→

OTHER UNIQUE PARAMETERS/TRENDS

There was a rupture from 100% followed by a manual by TME per EOP. Until the pressure is reduced, level in the effluent steam generator will increase.

RESULTS

- * A MFW Flow ↓ AS EXPECTED
- * A S/G Level ↑ AS EXPECTED
- * COLSS PWR ↑ SLIGHTLY DUE TO MFW ↓

Notes: SG level was going around 50%
 of pressure generator from MFW flow
 of pressure generator from MFW flow
 of pressure generator from MFW flow

APPORVED: *[Signature]*

DATE: 11/3/87

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: SGTR (w/CCP CAPACITY) DATE PERFORMED: 11/3/10 PERFORMED BY: JH Leiber

OTHER UNIQUE PARAMETERS/TRENDS

After initiation, level control sup (per) will act to restore level.

TERMINATION: Power until SCPE indications are available

RESULTS

NO unexpected results

ACCEPTED: Alpha [Signature]

REACTOR COOLANT SYSTEM

SECONDARY

	A	B
MS Flow	→	→
MFW Flow	→	→
SG PRESS	→	→
SG LEVEL	→	→
GEN MW	→	→
HDP FLOW	→	→
COND FLOW	→	→
COLSS FWR	→	→
MFP SPEED	→	→

CONTAINMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS LINE	↑
SG SAMPLE	↑
Vacuum PMP	↑
CONT AREA	→
CAMS	→

ESFAS ACTUATION

NONE

APPROVED: [Signature]

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: LICA (LARGE, IN CONT) DATE PERFORMED: 11/14/87 PERFORMED BY: *[Signature]* 15

OTHER UNIQUE PARAMETERS/TRENDS

The reactor will come quickly on low Dose/
Pressure. Operation will follow EOP
requiring PC termination. PC press will
quickly fall to saturation and continue
decreasing. PC temperatures will follow due
to injection. RAS and MSIS will activate
over time.

SECONDARY

	A	B
MS FLOW	→	↓
MFW FLOW	→	↓
SG PRESS	→	↓
SG LEVEL	→	↓
GRW MW	→	↓
HDR FLOW	→	↓
COND FLOW	→	↓
COLSS PUR	→	↓
MFP SPEED	→	↓

CONTAINMENT

PRESS	↑
TEMP	↑
HUMIDITY	↑
SUMP LVL	↑

RADIATION MONITORING

MS LINE	→
SG Sample	→
Vacuum Pmp	→
CONT AREA	↑
CAMS	↑

Reactor Coolant System

Press	↓
Level	↓
Flow	→
TH	→
Tc	→
Tang	→
Rn Pur	→
LO Flow	↓
Chg Flow	↑
VCT LVL	↓
VCT Press	↓
SIT LEVEL	↓
SIT PRESS	↓
QT LEVEL	→
QT TEMP	→
QT. PRESS	→

ESFAS ACTUATION

YES S1AS, C15, CSAS,

RESULTS

- * Flow decreases (lbm/hr) due to the sudden depressurization of the RCS and loss of mass
- * Ex. Purv. goes down due to the Trip on DMSA & LPA
- * Temp ↓ due to Reactor Trip and Safety Dry Flows.
- * Secondary Systems Respond to the Reactor/Turbine Trip thereby decreasing.

NO UNEXPECTED RESULTS

NOTE: After void the down reactor level on pipe & level and flow board on pipe, fall 5% in steam for reactor. *[Signature]*

ACCEPTED: *[Signature]*

APPROVED: *[Signature]*

ANTICIPATED PLAN: RESPONSE

16

MAJUNCTION TITLE: LOCAL/CCP INSIDE CONT DATE PERFORMED: 11/11/87 PERFORMED BY: J. Fisher

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

The operator will take the actions required by the AOP.

	A	B
MS FLOW	→	→
MFW FLOW	→	→
SG PRESS	→	→
SG LEVEL	→	→
GRW MW	→	→
HDR FLOW	→	→
COND FLOW	→	→
COLSS FWR	→	→
MFP SPEED	→	→

CONTAINMENT

PRESS	↑
TEMP	↑
HUMIDITY	↑
SUMP LVL	↑

RADIATION MONITORING

MS Line	→
SG Sample	→
Vacuum Pmp	→
CONT AREA	→
CAMS	↑

Reactor Coolant System

Press	↓
Level	↓
Flow	→
Th	→
Tc	→
Tavg	→
Rn Flow	→
LD Flow	↓
Chg Flow	↑
VCT LVL	↓
VCT Press	↓
SIT LEVEL	→
SIT PRESS	→
QT LEVEL	→
QT TEMP	→
QT-Press	→

ESFAS ACTUATION

RESULTS

No Unexpected Results

APPROVED: J. Bennett

in line

ACCEPTED: J. Fisher / W. J. Thompson

MAJORITY TITLE: MSLB (LARGE, INSIDE CONT) 7 11/4/87 PERFORMED BY: *[Signature]*

REACTOR COOLANT SYSTEM		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS	
	A	B			
Press	↓	↑	↓	The plant will trip quickly (DRIE, no SG Press ---) at which time the affected s/c press will continue to decrease & the other will increase with the affected s/c holds dry.	
Level	↓	↑	↓		
Flow	→	↑	↑		
Th	↓	↓	↓		
Tc	↓	↑	↑		
Tavg	↓	↓	↓		
Rn Press	→	↓	↓		
LQ Flow	↓	↑	↑		
Chg Flow	↑	↑	↑		
VCT LVL	↓	↑	↑		
VCT Press	↓	↑	↑		
CONTAINMENT					
SIT Level	→	↑	↑	RESULTS * FLOW DECREASED UPON SECURING 2 RCP's * HDP Trip due to MSLS .00 Unexpected Results	
SIT Press	→	↑	↑		
QT Level	→	↑	↑		
QT Temp	→	↑	↑		
QT Press	→	↑	↑		
RADIATION MONITORING					
MS Line	→	→	→		
SG Sample	→	→	→		
Vacuum Imp	→	→	→		
Cont Area	→	→	→		
CAMS	→	→	→		
ESFAS ACTUATION					
YES: SIAS, CIS, CSAS, MSIS					

APPROVED: *[Signature]* ACC: *[Signature]*

ANTICIPATED PLANT RESPONSE

018

MAJORITY TITLE: MSIS (Pressure Loss from Main) DATE PERFORMED: 11/4/87 PERFORMED BY: C. Anderson

OTHER UNIQUE PARAMETERS/TRENDS

The reactor will trip quickly on DROOP or Low SG pressure. Tavg will decrease until MSIS activation at which time the SG's will isolate and pressure will increase. EFW will isolate & feed both generators.

SECONDARY

	A	B
MS FLOW	↑	↑
MFW FLOW	↑	↑
SG PRESS	↓	↓
SG LEVEL	↑	↑
GEN MW	↓	↓
HDR FLOW	→	→
COND FLOW	↑	↑
COLSS FLOW	↑	↑
MFP SPEED	↑	↑

CONTAINMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS LINE	→
SG Sample	→
Vacuum Pnd	→
CONT AREA	→
CAMS	→

RESULTS

NO UNEXPECTED RESULTS

Reactor Coolant System

Press	↓
Level	↓
Flow	→
Th	↓
Tc	↓
Tavg	↓
Rn Pwr	→
LQ Flow	↓
Chg Flow	↑
VCT LVL	↓
VCT Press	↓
SIT Level	→
SIF Press	→
QT LEVEL	→
QT TEMP	→
QT. Press	→

ESFAS ACTUATION

YES - MSIS / SIAS

APPROVED: [Signature]

ACCEPTED: [Signature]

MAJUNCTION TITLE: Steam (Small) DATE PERFORMED: 11/14/77 PERFORMED BY: [Signature]

PRIMARY		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS	
A	B	A	B		
Press	↓	MS FLOW	↑	This will be accomplished by opening the 5% TRV. MW will decrease initially and return to about the same value. Temp (LI) will decrease to compensate for steam demand increase. If this leak were inhibited inside the containment, response would be the same except containment parameter would increase. X Slightly lower because s/c gain is lower RESULTS	
Level	↓	MFW FLOW	↑		
Flow	→	SG PRESS	↓		
Th	↓	SG LEVEL	↑		
Tc	↓	GEN MW	↓		
Tang	↓	HDR FLOW	→		
Bn Pwr	↑	COND FLOW	↑		
LO Flow	↓	COLSS PWR	↑		
Chg Flow	↑	MFP SPEED	→		
VCT Lvl	↓	CONTAINMENT			
VCT Press	↓	PRESS	NC		
SIT Level	→	TEMP	↓		
SIT Press	→	HUMIDITY	↓		
QT Level	→	SUMP LVL	↓		
QT Temp	→	RADIATION MONITORING			
QT Press	→	MS Line	NC		
ESFAS ACTIVATION		SG Sample	↓		
		Vacuum Pmp	↓		
		CONT Press	↓		
		CAMS	↓		

NO UNEXPCTED RESULTS

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: PZR SYSTEM SPACE LEAK (LARGE) DATE PERFORMED: 11-4-87 PERFORMED BY: [Signature]

OTHER UNIQUE PARAMETERS/TRENDS

(ASSUME THAT OPERATOR STOPS REP AT < 30 MTS)

The plant will ramp quickly on MSR /w PRESS.

When RC press decrease to below sat (for head) pressure a bubble will form in the RV need increasing ppr level.

PRIMARY		SECONDARY	
		A	B
Press	↓	MS Flow	↑
Level	↓ *	MFW Flow	↑
Flow	→	SG PRESS	→
Th	→	SG LEVEL	→
Tc	→	GRW MW	→
Tavg	→	HDR FLOW	→
Rn Flow	→	COND FLOW	→
LQ Flow	↓ *	COLSS FLOW	→
Chg Flow	↑ *	MFP SPEED	→
VCT LVL	↓ *	CONTAINMENT	
VCT Press	↓ *	PRESS	↑
SIT LEVEL	→	TEMP	↑
SIT PRESS	→	HUMIDITY	↑
QT LEVEL	→	SUMP LVL	↑
QT TEMP	→	RADIATION MONITORING	
QT PRESS	→	MS LINE	→
ESFAS ACTUATION		SG SAMPLE	→
YES - SIAS, CIS, CWS		Vacuum Pmp	→
Depending on size		CONT AREA	→
		CAMS	→

RESULTS

* COMPENSATED PZR LVL ↓
UNCOMPENSATED LVL ↑ AS EXPECTED
CAUSING CWS PARAMETERS TO RESPOND
AS THEY SHOULD.

* CAMS SHOWED NO INCREASE DUE TO SIAS/ISOL

CONTAINMENT PARAMETERS DIDN'T RESPOND.

DR 87-307

Cleared

APPROVED: [Signature]

DATE: 12/1/87

ACCEPTED: [Signature]

ANTICIPATED PLAN RESPONSE

MAJORITY TITLE: PZR SAFETY VALVE FAIL OPEN DATE PERFORMED: 11/5/87 PERFORMED BY: [Signature]

Reactor Coolant System		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS	
		A	B		
Press	↓				
Level	↓				
Flow	↓				
Th	↓				
Tc	↓				
Tang	↓				
Rn Flow	↓				
LO Flow	↓				
Chg Flow	↓				
VCT Lvl	↓				
VCT Press	↓				
SIT Level	↓				
SIT Press	↓				
QT Level	↓				
QT Temp	↓				
QT Press	↓				

For safety will open fully a 100% power gain
 some response in steam space level expect
 that QT parameters, acoustic monitor &
 and rise temps will change. QT parameters
 will increase until rupture disc activates
 at which time temp will go to saturation
 for cont press & containment parameters will
 start to increase. For lvl will decrease until
 water in head reaches T set at which time
 lvl will increase. If energy into the QT
 is sufficient, containment parameter will ↑

CONTAINMENT		RESULTS	
Press	↓	NC	* compensated PZR level ↓, uncompensated lvl ↑ as expected, causing CVCS parameters to respond as expected
Temp	↓	NC	** Containment parameters increased as expected.
Humidity	↓	NC	
Sump Lvl	↓	NC	
RADIATION MONITORING			
MS Line	↓	NC	
SG Sample	↓	NC	
Vacuum PMP	↓	NC	
Cont Area	↓	NC	
CAMS	↓	NC	
ESFAS ACTUATION			
SIAS, ↓			

APPROVED: [Signature] REPORT NO: [Signature]

MAJORITY TITLE: PER PRESS VALVE FAILS OPEN DATE PERFORMED: 11/5/87 PERFORMED BY: C. Anderson

SECONDARY

	A	B
Press	NC	NC
Level	NC	NC
Flow	NC	NC
Th	NC	NC
Tc	NC	NC
Tang	NC	NC
Pr Power	NC	NC
LQ Flow	NC	NC
Chg Flow	NC	NC
VCT LVL	NC	NC
VCT Press	NC	NC

OTHER UNIQUE PARAMETERS/TRENDS

Per press will decrease and reactor will activate. The plant will trip in to base or to become.
 Pressure will continue to decrease until all PCP are stopped.
 NOTE: EOP require sequencing ALL RUCS w/ MTS < 30°F

CONTAINMENT

	A	B
PRESS	NC	NC
TEMP	NC	NC
HUMIDITY	NC	NC
SUMP LVL	NC	NC

RESULTS

After tripping the first 2 RUC's "B" & "D" an abnormally high % of DP developed.
 DR 07-309
 This does not result in negative training

RADIATION MONITORING

	A	B
MS Line	NC	NC
SG Sample	NC	NC
Vacuum Pmp	NC	NC
CONT AREA	NC	NC
CAMS	NC	NC

ESFAS ACTUATION

SIFAS possible

ANTICIPATED PLAN RESPONSE

DATE: 11/3/87

MAJORITY TITLE: LOSS OF 1 MFP (A phase) DATE PERFORMED: 11/3/87 PERFORMED BY: Campbell

OTHER UNIQUE PARAMETERS/TRENDS

The turbine will set back to 70% per.
 The operator will insert CIA (per AOP)
 to match Turb. T rel. Turbine by-pass
 valves will open as necessary to
 remove excess energy.

SECONDARY

	A	B
MS Flow	↓	↓
MFW Flow	↓	↓
SG Press	↑	↑
SG Level	↓	↓
Gen MW	↓	↓
HDP Flow	→*	↓*
COND Flow	↓	↓
COLSS PWR	↓	↓
MFP SPEED	↑**	↓**

CONTAINMENT

PRESS	VC
TEMP	↓
HUMIDITY	↓
SUMP LVL	↓

RADIATION MONITORING

MS Line	VC
SG Sample	↓
Vacuum Pmp	↓
CONT AREA	↓
CAMS	↓

Reactor Coolant System

Press	↑
Level	↑
Flow	→
Th	↑
Tc	↑
Tavg	↑
Bp Pwr	↓
LQ Flow	↑
Chg Flow	→
VCT Lvl	↑
VCT Press	↑

SIT Level	→
SIT Press	→
QT LEVEL	→
QT TEMP	→
QT. Press	→

ESFAS ACTUATION

RESULTS

* HDP Flow ↓ DUE TO LOWER POWER LEVEL.
 ** A MFP SPEED ↓ ON LOSS OF A MFP
 BMFP SPEED ↑ ON LOSS OF 8 MFP

APPROVED: [Signature]

ACCEPTED: [Signature]

[Signature]

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: MFRV

partial open

DATE PERFORMED: 1/15/77

PERFORMED BY: Michael D. J.

Reactor Coolant System

Press	→
Level	→
Flow	→
Th	→
Tc	→
Tavg	→
Rd Flow	→
LO Flow	→
Chg Flow	→
VCT LVL	↓
VCT Press	↓
SIT LEVEL	→
SIT PRESS	→
QT LEVEL	→
QT TEMP	→
QT. Press	→

SECONDARY

MS FLOW	→	A	→	B	→
MFW FLOW	↓	↓	↓	↓	↓
SG PRESS	→	→	→	→	→
SG LEVEL	↓	↓	↓	↓	↓
GEN MW	→	→	→	→	→
HDP FLOW	→	→	→	→	→
COND FLOW	→	→	→	→	→
COLSS FWR	→	→	→	→	→
MFP SPEED	↑	↑	↑	↑	↑

CONTAINMENT

PRESS	↓
TEMP	→
HUMIDITY	→
SUMP LVL	↓

RADIATION MONITORING

MS LINE	↓
SG SAMPLE	→
Vacuum Pmp	→
CONST AREA	→
CAMS	→

ESFAS ACTUATION

OTHER UNIQUE PARAMETERS/TRENDS

Fw flow to the affected S/G will increase as well level. Flow to the opposite S/G will decrease initially until FWCS compensates. S/G level will continue to increase until both MFP's are taken to manual; speed is reduced to control feed rate. The opposite MFP will open to compensate for decrease in Fw flow/level.

RESULTS

less temp changes were minimal due to prompt, correct operator action.

NO Unexpected Results

APPROVED: [Signature]

DATE: 1/15/77

PERFORMED BY: Michael D. J.

ANTICIPATED PLANT RESPONSE

87

MAINTENANCE TITLE: Failure of R₁ Trip DATE PERFORMED: 1/25-87 PERFORMED BY: C.A. Lewis

PRIMARY		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS
A	B	A	B	
Press	/	MS FLOW	/	For Selected parameter verify that Trip lights on ROM 1.7E when setpoint is reached and that the reactor does NOT trip.
Level	/	MFW FLOW	/	
Flow	/	SG PRESS	/	
Th	/	SG LEVEL	/	
Tc	/	GRW MW	/	
Tavg	/	HDR FLOW	/	
R ₁ PWR	/	COND FLOW	/	
LD Flow	/	COLSS PWR	/	
Chg Flow	/	MFP SPEED	/	
VCT Lvl	/	CONTAINMENT		
VCT Press	/	PRESS	/	
SIT Level	/	TEMP	/	
SIT Press	/	HUMIDITY	/	
QT LEVEL	/	SUMP LVL	/	
QT TEMP	/	RADIATION MONITORING		
QT. Press	/	MS Line	/	
ESFAS ACTUATION		SG Sample	/	
		Vacuum Pmp	/	
		COND PWR	/	
		CAMS	/	

RESULTS

- NO unexpected results
- Manual trip still in effect
- tested on high sly bishble

APPROVED: Sand, Edu, K in person

ACCEPTED: [Signature]

MANUFACTURE TITLE:

U U

DATE PERFORMED: 11-2-87 PERFORMED BY: [Signature]

Residual Coolant System

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

Press	↓
Level	↓
Flow	↓
Th	↓
Tc	↓
Tavg	↓
Br Flow	↓
LD Flow	↓
Chg Flow	↔
VCT Lvl	↓
VCT Press	↓
SIT Level	NC
SIT Press	NC
QT Level	↓
QT Temp	↓
QT. Press	↓

MS Flow	↓	↓
MFW Flow	↓	↓
SG Press	↓	↓
SG Level	↓	↓
GRD M/W	↓	↓
HPS Flow	↓	↓
COND Flow	↓	↓
COLSS Flow	↓	↓
MFP Speed	↓	↓

CONTAINMENT

Press	NC
Temp	↓
Humidity	↓
Sump Lvl	↓

RADIATION MONITORING

MS Line	NC
SG Sample	↓
Vacuum Pmp	↓
Cont Press	↓
CAMS	↓

to be accomplished by shifting
 charging pump suction to
 spouts per procedure

RESULTS

No change observed.

APPROVED: [Signature]

DATE: 11-4-87

ACCEPTED: [Signature]

MANUFACTURE TITLE: Loss of AC Chiller U DATE PERFORMED: 11-25-87

PERFORMED BY: C. A. [Signature]

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

Due To The variety of buses that can be lost the Test Director should verify that all loads associated with the selected bus deenergizes

	A	B
MS FLOW	/	/
MFW FLOW	/	/
SG PRESS	/	/
SG LEVEL	/	/
GRW MW	/	/
HDP FLOW	/	/
COND FLOW	/	/
COLSS FLOW	/	/
MFP SPEED	/	/

CONTAINMENT

PRESS	/
TEMP	/
HUMIDITY	/
SUMP LVL	/

RADIATION MONITORING

MS LINE	/
SG SAMPLE	/
VACUUM PMP	/
CONT PRESS	/
CAMS	/

Press	/
Level	/
Flow	/
Th	/
Tc	/
Tang	/
Ex Flow	/
LD Flow	/
Chy Flow	/
VCT LVL	/
VCT PRESS	/
SIT LEVEL	/
SIT PRESS	/
QT LEVEL	/
QT TEMP	/
QT. Press	/

ESFAS ACTUATION

RESULTS

- main chiller brings
- 40 reservoir vapor extraction
- 400 man hrs

DR-87 -310
-87-311
87-312

APPROVED: [Signature]

DATE: 11-25-87

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

MANUFACTURE TITLE: Loss of DC BUS 1 DATE PERFORMED: 11-6-87 PERFORMED BY: D Seabrook

REACTOR COOLANT SYSTEM	SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS
	A	B	
Press	/	/	Due to the variety of busses that can be lost. The test director should verify that all loads associated with the selected bus deenergizes.
Level	/	/	
Flow	/	/	
Th	/	/	
Tc	/	/	
Tavg	/	/	
B ₂ flow	/	/	
LO Flow	/	/	
Chg Flow	/	/	
VCT LVL	/	/	
VCT Press	/	/	
SIT Level	/	/	
SIT Press	/	/	
QT Level	/	/	
QT Temp	/	/	
QT Press	/	/	

CONTAINMENT	RESULTS
Press	DE's 87-313
Temp	87-314
Humidity	87-315
Sump Lvl	These discrepancies were minor and do not result in negative findings
RADIATION MONITORING	
MS Line	/
SG Sample	/
Vacuum Pmp	/
Cont Area	/
CAMS	/
ESFAS ACTUATION	

APPROVED: [Signature] ACCEPTED: [Signature]

(21)

MAJORITY TITLE: Dropped CEA (MOL) DATE PERFORMED: 11/4/87 PERFORMED BY: *[Signature]*

OTHER UNIQUE PARAMETERS/TRENDS

The operator will respond per AOP by reducing turbine load to motor Trip! Tag. The plant will stabilize at some lower power with all indications & a dropped cca. Depending on location, a difference in VI power could exist. (constant to Quadrad)

* May increase due to some shrink.

RESULTS

* DECREASED AS EXPECTED
 MIN TAG - 570.4
 MIN POWER - 96.57 (222-9033)
 MIN MW - 895

Note - *[Signature]* due to reduction of *[Signature]* Feed Water / Turbine *[Signature]*

ACCEPTED: *[Signature]*

SECONDARY

	A	B
MS FLOW	↓	↓
MFW FLOW	↓*	↓*
SG PRESS	↓	↓
SG LEVEL	↓	↓
GEN MW	↓	↓
HDR FLOW	→	→
COND FLOW	↓	↓
COLSS FLOW	↓	↓
MFP SPEED	↓	↓

CONTAINMENT

PRESS	↓
TEMP	↓
HUMIDITY	↓
SUMP LVL	↓

RADIATION MONITORING

MS LINE	↓
SG Sample	↓
Vacuum Pmp	↓
CONT AREA	↓
CAMS	↓

Reactor Coolant System

Press	↓
Level	↓
Flow	→
Th	↓
Tc	↓
Tang	↓
Bp Pwr	↓
LO Flow	↓
Chg Flow	↓
VCT Lvl	↓
VCT Press	↓
SIT Level	→
SIT Press	→
QT Level	→
QT Temp	→
QT Press	→

ESFAS ACTUATION

APPROVED: *[Signature]*

Wd

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: TBV and open & low flow
 DATE PERFORMED: 11-5-87
 PERFORMED BY: Dan Seaback

OTHER UNIQUE PARAMETERS/TRENDS

Simulator will be at 270 FP 2P7B NO MFW pumps.

SECONDARY

	A	B
MS FLOW	↑	↑
MFW FLOW	→	→
SG PRESS	↓	↓
SG LEVEL	↑	↑
GRW MW	→	→
HDR FLOW	→	→
COND FLOW	→	→
COLSS FLOW	↑	↑
MFP SPEED	→	→

CONTAINMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS Line	→
SG Sample	→
Vacuum Pmp	→
CONT PRESS	→
CAMS	→

Reactor Coolant System

Press	↓
Level	↓
Flow	→
Th	↓
Tc	↓
Tang	↓
Bp flow	↑
LO Flow	↓
Chg Flow	↑
VCT LVL	↓
VCT Press	↓
SIT Level	→
SIT Press	→
QT Level	→
QT Temp	→
QT Press	→

ESFAS ACTUATION

RESULTS

NO unexpected results

APPROVED: [Signature]

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

(1)

MAJORITY TITLE: Loss of SW to SDAX (more) PERFORMED BY: *[Signature]* DATE PERFORMED: 11-4-87

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

SW return temperature will increase followed by SOC inlet temp as the RCS temp increases. CET's will follow. If level is being maintained in the pressurizer, it will increase.

	A	B
MS FLOW	UC	NC
MFW FLOW	NC	NC
SG PRESS	NC	NC
SG LEVEL	NC	NC
GEN MW	NC	NC
HDR FLOW	NC	NC
COND FLOW	NC	NC
COLSS FLOW	NC	NC
MFP SPEED	NC	NC

CONTAINMENT

PRESS	UC
TEMP	NC
HUMIDITY	NC
SUMP LVL	NC

RADIATION MONITORING

MS LINE	NC
SG Sample	NC
Vacuum PMP	NC
CONT AREA	NC
CAMS	NC

RESULTS

RESPONDED AS EXPECTED

Reactor Coolant System

Press	↑
Level	↑
Flow	→
Th	↑
Tc	↑
Tavg	↑
Rn Pwr	→
LO Flow	→
Chg Flow	→
VCT LVL	→
VCT Press	→
SIT LEVEL	→
SIT PRESS	→
QT LEVEL	→
QT TEMP	→
QT. Press	→

ESFAS ACTUATION

APPROVED: *[Signature]* *[Signature]*

ACCEPTED: *[Signature]*

ANTICIPATED PLAN RESPONSE

MAJORITY TITLE: Loss of S.W. to Components DATE PERFORMED: 7/1/87 PERFORMED BY: Dan Sebolt

OTHER UNIQUE PARAMETERS/TRENDS

This failure will not be tested on each component since the response is similar. Temperature of the system/component being supplied by service water will increase.

RESULTS

TESTED COMPONENTS

- EOG-B
- T/G lube Oil Cooler
- MFWP 40 CLR
- CCW HX - Loop 2
- SDC HX

Secondary	A	B
MS Flow	/	/
MFW Flow	/	/
SG PRESS	/	/
SG LEVEL	/	/
GEN MW	/	/
HDR FLOW	/	/
COND FLOW	/	/
COLSS FLOW	/	/
MFP SPEED	/	/
CONTAINMENT		
PRESS	/	/
TEMP	/	/
HUMIDITY	/	/
SUMP LVL	/	/
RADIATION MONITORING		
MS Line	/	/
SG Sample	/	/
Vacuum Pmp	/	/
CONT AREA	/	/
CAMS	/	/

APPROVED: [Signature] IN LONDON

ACCEPTED: [Signature] OFFICIAL

ANTICIPATED PLANT RESPONSE

PERFORMED BY: *[Signature]* (23)

DATE PERFORMED: 11/3/87

MANUFACTURE TITLE: Loss of A HOP

OTHER UNIQUE PARAMETERS/TRENDS

This will start the other condenser pump because the hi level dump on 2740 is open. MW will decrease slightly due to the efficiency decrease.

SECONDARY

	A (TRENDS)	B (TRENDS)
MS FLOW	→	→
MFW FLOW	→	→
SG PRESS	→	→
SG LEVEL	→	→
GEN MW	→	→
HDP FLOW	↓	→
COND FLOW	↑	→
COLSS PWR	→	→
MFP SPEED	→	→

CONTAINMENT

PRESS	NC
TEMP	
HUMIDITY	
SUMP LVL	↓

RADIATION MONITORING

MS Line	NC
SG Sample	
Vacuum Pmp	
CONT AREA	
CAMS	

Reactor Coolant System

Press	NC
Level	
Flow	
Th	
Tc	
Tang	
Rx Pwr	
LO Flow	
Chg Flow	
VCT LVL	
VCT Press	
SIT LEVEL	
SIT PRESS	
QT LEVEL	
QT TEMP	
QT. Press	

ESFAS ACTUATION

RESULTS

NO UNEXPECTED OBSERVES

APPROVED: *[Signature]* P.C.

ACCEPTED: *[Signature]*

AVULIATED PLANT RESPONSE

(3)

MAJFUNCTION TITLE: Loss of SDC Flow (mode 2) DATE PERFORMED: 11-6-87 PERFORMED BY: [Signature]

OTHER UNIQUE PARAMETERS/TRENDS

When SDC flow is lost, RC Temp (CETS) will increase. If ppg level is being maintained, it will increase. Temp will continue to increase until action is taken by the operator to re-establish a heat - removal configuration.

SECONDARY		A	B
MS FLOW	/	/	/
MFW FLOW	/	/	/
SG PRESS	/	/	/
SG LEVEL	/	/	/
GEN MW	/	/	/
HDR FLOW	/	/	/
COND FLOW	/	/	/
COLDS PWR	/	/	/
MFP SPEED	/	/	/
CONTAINMENT			
PRESS	/	/	/
TEMP	/	/	/
HUMIDITY	/	/	/
SUMP LVL	/	/	/
RADIATION MONITORING			
MS Line	/	/	/
SG Sample	/	/	/
Vacuum Pmp	/	/	/
CONT PRESS	/	/	/
CAMS	/	/	/

REACTOR COOLANT SYSTEM	
Press	/
Level	/
Flow	/
Th	/
Tc	/
Tavg	/
Ex Pwr	/
LQ Flow	/
Chg Flow	/
VCT LVL	/
VCT Press	/
SIT Level	/
SIT Press	/
QT Level	/
QT Temp	/
QT Press	/
ESFAS ACTUATION	

RESULTS

RES TEMP & PRESS INCREASED AS EXPECTED. OTHER LOST PUMP WAS STARTED TO STABILIZE THE PLANT.

APPROVED: [Signature]

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

MANUFACTURE TITLE: Loss of Inert Air DATE PERFORMED: 10/10/00 PERFORMED BY: (25)

SECONDARY

OTHER UNIQUE PARAMETERS/TRENDS

Instrument air header pressure will decrease when pressure drops to less than 15 psig, air operated valves go to "Failed" position. Possible Reactor/Turbine trip due to valves drifting on a loss of air pressure

	A	B
MS FLOW	/	/
MFW FLOW	/	/
SG PRESS	/	/
SG LEVEL	/	/
GRW MW	/	/
HDP FLOW	/	/
COND FLOW	/	/
COLSS FWR	/	/
MFP SPEED	/	/

CONTAINMENT

PRESS	/
TEMP	/
HUMIDITY	/
SUMP LVL	/

RADIATION MONITORING

MS LINE	/
SG SAMPLE	/
Vacuum Pmp	/
CONT AREA	/
CAMS	/

RESULTS

DR - 87-301
87-302
87-303

ESFAS ACTUATION

Press	/
Level	/
Flow	/
Th	/
Tc	/
Tang	/
Ex Pwr	/
LD Flow	/
Chg Flow	/
VCT LVL	/
VCT Press	/
SIT Level	/
SIT Press	/
QT LEVEL	/
QT TEMP	/
QT. Press	/

APPROVED: [Signature]

APPROVED: [Signature]

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

MANUFACTURE TITLE: Fuel Channel Failure / APCS AIA DATE PERFORMED: 11/15/17 PERFORMED BY: J. N. Fink 36

SECONDARY N/C

OTHER UNIQUE PARAMETERS/TRENDS

CVC5 Radiation Monitor will show increase for both Gross and Isotope specific activity.

	A	B
MS FLOW	/	/
MFW FLOW	/	/
SG PRESS	/	/
SG LEVEL	/	/
GRD MW	/	/
HDP FLOW	/	/
COND FLOW	/	/
COLSS FWR	/	/
MFP SPEED	/	/

CONTAINMENT N/C

RESULTS

PRESS	/
TEMP	/
HUMIDITY	/
SUMP LVL	/

RADIATION MONITORING

MS LINE	/
SG Sample	/
Vacuum Pmp	/
CONT AREA	/
CAMS	/

Reactor Coolant System

	N	C
Press	/	/
Level	/	/
Flow	/	/
Th	/	/
Tc	/	/
Tavg	/	/
Rd Pwr	/	/
LQ Flow	/	/
Chg Flow	/	/
VCT LVL	/	/
VCT Press	/	/
SIT Level	/	/
SIT Press	/	/
QT LEVEL	/	/
QT TEMP	/	/
QT. Press	/	/

ESRAS ACTUATION

ACCEPTED: [Signature]

APPROVED: [Signature]

FORUM - 1000 ... ANTICIPATED PLAN RESPONSE

MAJORITY TITLE: Loss of Protective System Channel DATE PERFORMED: 11/5/99 PERFORMED BY: SAM CECIL

REACTOR COOLANT SYSTEM	SECONDARY	
	A	B
Press	/	/
Level	/	/
Flow	/	/
Th	/	/
Tc	/	/
Tavg	/	/
Ex Flow	/	/
LD Flow	/	/
CH Flow	/	/
VCT LVL	/	/
VCT Press	/	/
SIT Level	/	/
SIT Press	/	/
QT Level	/	/
QT Temp	/	/
QT Press	/	/
ESFAS ACTUATION	/	/
MS Flow	/	/
MFW Flow	/	/
SG Press	/	/
SG Level	/	/
GEN MW	/	/
HDR Flow	/	/
COND Flow	/	/
COLSS Flow	/	/
MFP SPEED	/	/

CONTAINMENT

PRESS	/
TEMP	/
HUMIDITY	/
SUMP LVL	/

RADIATION MONITORING

MS LINE	/
SG SAMPLE	/
VACUUM PMP	/
CONT AREA	/
CAMS	/

RESULTS

OTHER UNIQUE PARAMETERS/TRENDS
 Plant will not trip.
 Receive trips on parameters supplied by the lost channel -> also picture

APPROVED: [Signature] DATE: 11/5/99

ANTICIPATED PLANT RESPONSE

40

MAJORITY TITLE: Loss of a CCW pump DATE PERFORMED: 11-5-87 PERFORMED BY: C. A. Lerso

OTHER UNIQUE PARAMETERS/TRENDS

Standby pump will auto start and align to supply flow. Nonco to the associated ccw paramter (Temp) should change.

SECONDARY

	A	B
MS FLOW	/	/
MFW FLOW	/	/
SG PRESS	/	/
SG LEVEL	/	/
GRW MW	/	/
HDR FLOW	/	/
COND FLOW	/	/
COLSS FWR	/	/
MFP SPEED	/	/

CONTAINMENT

PRESS	/
TEMP	/
HUMIDITY	/
SUMP LVL	/

RADIATION MONITORING

MS Line	/
SG Sample	/
Vacuum PMP	/
CONT Press	/
CAMS	/

Reactor Coolant System

Press	/
Level	/
Flow	/
Th	/
Tc	/
Tavg	/
Rx Pwr	/
LO Flow	/
Chg Flow	/
VCT LVL	/
VCT Press	/
SIT LEVEL	/
SIT PRESS	/
QT LEVEL	/
QT TEMP	/
QT - PLANS	/

ES&H EVALUATION

RESULTS

This malfunction was performed by losing 2A1/2A2. The standby pump auto started; fed the preferred ccw loop as expected.

APPROVED: [Signature]

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

MANUFACTURE TITLE: LOSS OF CCW, DATE PERFORMED: 11-5-87

PERFORMED BY: Sam Cecil



OTHER UNIQUE PARAMETERS/TRENDS

CCW Temperatures on all components will increase until the operator is required to manually trip the reactor possible isolation of C/D due to increase Temp return to MAX.

REACTOR COOLANT SYSTEM	SECONDARY	
	A	B
Press	/	/
Level	/	/
Flow	/	/
TH	/	/
Tc	/	/
Tang	/	/
Pr Flow	/	/
LQ Flow	/	/
CH ₂ Flow	/	/
VCT LVL	/	/
VCT Press	/	/
SIT LEVEL	/	/
SIT PRESS	/	/
QT LEVEL	/	/
QT TEMP	/	/
QT- Press	/	/
ESRAS ACTUATION	/	/
CONTAINMENT		
PRESS	/	/
TEMP	/	/
HUMIDITY	/	/
SUMP LVL	/	/
RADIATION MONITORING		
MS Line	/	/
SG Sample	/	/
Vacuum Pmp	/	/
CONT AREA	/	/
CAMS	/	/

RESULTS

ALTHOUGH this is not a specific malfunction, the loss of CCW was was performed by putting the H/S in pull-to-look. There were no unexpected results

APPROVED: [Signature]

ACCEPTED: [Signature]

PRODUCTION IS ON...
 ANTICIPATED PLANT RESPONSE

4/2

MANUFACTURING TITLE: Linear Power Channel Failed

DATE PERFORMED: 11/5/87

PERFORMED BY: [Signature]

Remover Coolant System

SECONDARY

	A	B
Press	/	/
Level	/	/
Flow	/	/
Th	/	/
Tc	/	/
Tavg	/	/
Pr Flow	/	/
LQ Flow	/	/
Chf Flow	/	/
VCT LVL	/	/
VCT Press	/	/
SIT Level	/	/
SIT Press	/	/
QT LEVEL	/	/
QT TEMP	/	/
QT. Pressure	/	/

OTHER UNIQUE PARAMETERS/TRENDS

When selected channel fails high you receive trips on affected parameters associated with that channel.

CONTAINMENT

PRESS	/
TEMP	/
HUMIDITY	/
SUMP LVL	/

RESULTS

NO UNEXPECTED RESULTS

ESPAR ACTIVATION

RADIATION MONITORING	/
MS Line	/
SG Sample	/
Vacuum Pmp	/
CONT PRESS	/
CAMS	/

APPROVED: [Signature]

DATE: 11/5/87

BY: [Signature]

MAJORITY TITLE: 2 Linear Channels Failed High DATE PERFORMED: 7/1/77

PERFORMED BY: C. Anderson

Reactor Coolant System		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS
	A	B		
Press	↓	↓	↓	Reactor will trip quickly on high linear power with normal transient to Hot Standby
Level	↓	↓	↓	
Flow	→	→	→	
Th	↓	↓	↓	
Tc	↓	↓	↓	
Tang	↓	↓	↓	
Br Flow	↓	↓	↓	
LO Flow	↓	↓	↓	
CH Flow	↑	↓	↓	
VCT LVL	↓	↓	↓	
VCT Press	↓	↓	↓	
SIT LEVEL	→	→	→	
SIT PRESS	→	→	→	
QT LEVEL	→	→	→	
QT TEMP	→	→	→	
QT. Press	→	→	→	
ESPAS ACTUATION				
CONTAINMENT				
PRESS				RESULTS No Abnormal or unexpected Transients or parameters
TEMP				
HUMIDITY				
SUMP LVL				
RADIATION MONITORING				
MS Line				
SG Sample				
Vacuum PMP				
CONT Press				
CAMS				

APPROVED: R. M. Smith

ACCEPTED: Campbell M. Febo

ANTICIPATED PLANT RESPONSE

414

MAJORITY TITLE: Blackout

DATE PERFORMED: 11/5/17

PERFORMED BY: M. [Signature]

OTHER UNIQUE PARAMETERS/TRENDS

Plant will trip quickly on BWR
 Plant will cooldown thru open MSRC valves
 UNTIL MSIS occurs.

SECONDARY

	A	B
MS Flow	↓	↓
MFW Flow	↓	↓
SG PRESS	↓	↓
SG LEVEL	↓	↓
GRW MW	↓	↓
HDR FLOW	↓	↓
COND FLOW	↓	↓
COLSS FWR	↓	↓
MFP SPEED	↓	↓

CONSTRAINTMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS Line	→
SG Sample	→
Vacuum PMP	→
CONT AREA	→
CAMS	→

Residual Coolant System

PRESS	↓
Level	↓
Flow	↓
Th	↓
Tc	↓
Tang	↓
BWR	↓
LO Flow	↓
CH Flow	↓
VCT LVL	↓
VCT PRESS	↓
SIT LEVEL	→
SIT PRESS	→
QT LEVEL	→
QT TEMP	→
QT. PRESS	→

ESRAS ACTUATION

RESULTS

* NO Meter Indication available for many of the above parameters, however checking through the caps & flow control parameters were verified.

APPROVED: [Signature]

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

46

MAJORITY TITLE: LOSS OF 2P7A DATE PERFORMED: 11/3/87 PERFORMED BY: A. Hall

Reactor Coolant System		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS	
		A	B		
Press	↘	↓	↓	MS Flow	↘
Level	↘	↓	↓	MFW Flow	↘
Flow	→	↗	↗	SG PRESS	↗
Th	↗	↗	↗	SG LEVEL	↗
Tc	↗	↗	↗	GRAB MW	↘
Tang	↘	↓	↓	HDP FLOW	↘
Rx Pwr	↓	↓	↓	COND FLOW	↘
LQ Flow	↓	↓	↓	COLSS PWR	↘
Chg Flow	↑	↓	↓	MFP SPEED	↓
VCT LVL	↓	↓	↓	CONTAINMENT	
VCT Press	↓	↓	↓	Press	↗
SIT Level	→	↗	↗	TEMP	↗
SIT Press	→	↗	↗	HUMIDITY	↗
QT LEVEL	→	↗	↗	SUMP LVL	↗
QT TEMP	→	↗	↗	RADIATION MONITORING	
QT. Press	→	↗	↗	MS Line	↗
ESFAS ACTUATION				SG Sample	↗
				Vacuum Pmp	↗
				CONT AREA	↗
				CAMS	↗

Malfunction should be entered and the Reactor Manually Tripped. Expected Results should be that S/G level will recover slower than on a normal Reactor Trip, due to the loss of a Feedwater Source (2P7A). If the malfunction is run in conjunction with a loss of the MFW Pumps, the S/G levels will drop excessively and take even longer to recover due to the SDBCS and Decay Heat. As the Decay heat begins to diminish, the feedwater pumps (2P7B) will start to feed the S/G in excess of the demand for heat removal.

RESULTS

APPROVED: A. Hall

in file

ACCEPTED: M. J. Cranstall

MANUFACTURE TITLE: Dilution AT Power DATE PERFORMED: 12-1-87 PERFORMED BY: Craig Anderson
 OTHER UNIQUE PARAMETERS/TRENDS

SECONDARY

	A	B
Press	/	/
Level	/	/
Flow	/	/
Th	/	/
Tc	/	/
Tang	/	/
Rx Power	/	/
LQ Flow	/	/
Chg Flow	/	/
VCT Lvl	/	/
VCT Press	/	/

CONTAINMENT

PRESS	NC	NC
TEMP	/	/
HUMIDITY	/	/
SUMP LVL	/	/

RADIATION MONITORING

MS Line	NC	NC
SG Sample	/	/
Vacuum Pnk	/	/
CONT AREA	/	/
CAMS	/	/

RESULTS

As expected

ESFAS ACTUATION

APPROVED: 1/10/87

ACCEPTED: [Signature]

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: Loss of SW Loss of DATE PERFORMED: 7/6/87 PERFORMED BY: A. Nealon

49

OTHER UNIQUE PARAMETERS/TRENDS

- Sequence - Loss of 2P/C
- Low Press Alarm SW NR #2
- Panel Trip alarm for 2P/C
- Low ACW Press alarm
- START STBY SW Pump Loop 2 (2P/C)
- Alarms for ACW and SW NR #2 clear.

SECONDARY

	A	B
MS Flow	→	→
MFW Flow	→	→
SG PRESS	→	→
SG LEVEL	→	→
GRW MW	→	→
HDR FLOW	→	→
COND FLOW	→	→
COLSS FLOW	→	→
MFP SPEED	→	→

CONSTRAINTMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS Line	→
SG Sample	→
Vacuum Pump	→
Cont Area	→
CAMS	→

RESULTS

REACTOR COOLANT SYSTEM

Press	→
Level	→
Flow	→
TH	→
Tc	→
Tavg	→
Reflow	→
LO Flow	→
CH Flow	→
VCT LVL	→
VCT Press	→
SIT Level	→
SIT Press	→
QT Level	→
QT Temp	→
QT Press	→

ESFAS ACTIVATION

APPROVED: [Signature]

DATE: 7/6/87

ACCEPTED: [Signature]

PERFORMED BY: A. Nealon

MAJUNCTION TITLE: Loss of SWC () () DATE PERFORMED: 1/6/87 PERFORMED BY: *[Signature]* 50

OTHER UNIQUE PARAMETERS/TRENDS

Loss of Aux Cooling To The stator water Coolers. Expected Events will be a Turbine Ruckback and a Reactor Trip if the malfunction is NOT cleared. CEA insertion and/or Boration should be initiated per the operating procedure.

PRIMARY		SECONDARY		CONTAINMENT	
A	B	A	B	A	B
Reactor Coolant System					
Press	↗	↘	↘	↗	↗
Level	↗	↘	↘	↗	↗
Flow	→	↘	↘	↗	↗
Th	↗	↘	↘	↗	↗
Tc	↗	↘	↘	↗	↗
Tavg	↗	↘	↘	↗	↗
Ex Flow	↘	↘	↘	↗	↗
LQ Flow	↗	↘	↘	↗	↗
Chg Flow	→	↘	↘	↗	↗
VCT Lvl	→	↘	↘	↗	↗
VCT Press	→	↘	↘	↗	↗
SIT Level	→	↘	↘	↗	↗
SIT Press	→	↘	↘	↗	↗
QT Level	→	↘	↘	↗	↗
QT Temp	→	↘	↘	↗	↗
QT Press	→	↘	↘	↗	↗
ESFAS ACTUATION		RADIATION MONITORING		PRESS	
		MS Line	↗	↗	↗
		SG Sample	↗	↗	↗
		Vacuum Pmp	↗	↗	↗
		CONT AREA	↗	↗	↗
		CAMS	↗	↗	↗
				TEMP	↗
				HUMIDITY	↗
				SUMP LVL	↗

RESULTS

APPROVED: *[Signature]* ACCEPTED: *[Signature]*

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: RZ BU HKS ON / 17 / DATE PERFORMED: 11/6/87 PERFORMED BY: M. J. ...

OTHER UNIQUE PARAMETERS/TRENDS

PER SPLAY SHOULD ACTIVATE AS NECESSARY TO MAINTAIN PRESSURE WITHIN ACCEPTABLE VALUES.

PRIMARY		SECONDARY	
		A	B
Press	↑	→	→
Level	→	→	→
Flow	→	→	→
Th	→	→	→
Tc	→	→	→
Tavg	→	→	→
Bp Press	→	→	→
LQ Flow	→	→	→
Chg Flow	→	→	→
VCT Lvl	→	→	→
VCT Press	→	→	→
SIT Level	→	→	→
SIT Press	→	→	→
QT Level	→	→	→
QT Temp	→	→	→
QT Press	→	→	→
ESFAS ACTUATION			
CONSTRAINTMENT			
Press	→	→	→
Temp	→	→	→
Humidity	→	→	→
Sump Lvl	→	→	→
RADIATION MONITORING			
MS Line	→	→	→
SG Sample	→	→	→
Vacuum Pmp	→	→	→
Cont Area	→	→	→
CAMS	→	→	→
RESULTS			

APPROVED: + M.H. ...

ACCEPTED: M.S. ...

M.S. ...

ANTICIPATED PLANS: RESPONSE

MAJORITY TITLE: Loss of L.O. to Main Turbine Date Performed: 11/6/87 PERFORMED BY: M. Seaton

SECONDARY

MS Flow	↓	↓
MFW Flow	↓	↓
SG PRESS	↑	↑
SG LEVEL	↓	↓
GRAB MW	↓	↓
HDR FLOW	↓	↓
COND FLOW	↓	↓
COLSS FWE	↓	↓
MFP SPREAD	↓	↓

CONSTRAINTMENT

PRESS	→	→
TEMP	→	→
HUMIDITY	→	→
SUMP LVL	→	→

RADIATION MONITORING

MS Line	→	→
SG Sample	→	→
Vacuum PMP	→	→
CONST AREA	→	→
CAMS	→	→

Reactor Coolant System

Press	↻
Level	↻
Flow	→
Th	↻
Tc	↻
Tang	↻
Rx Pwr	↓
LO Flow	↻
Chg Flow	↑
VCT LVL	↓
VCT Press	↓

SIT LEVEL	→
SIT PRESS	→
QT LEVEL	→
QT TEMP	→
QT. PRESS	→

ESFAS ACTUATION

ESFAS ACTUATION	→
-----------------	---

RESULTS

OTHER UNIQUE PARAMETERS/TRENDS
 Rx Trip on High Pressure (~2162)
 Parameters show Trend due to Turbine Trip
 and subsequent Process to HOT STOP

TOU UNIT... ANTICIPATED PLANT RESPONSE

MAJUNCTION TITLE: FWCS Failure DATE PERFORMED: 11/6/87 PERFORMED BY: H. Healy

OTHER UNIQUE PARAMETERS/TRENDS

Parameters logged, should be their response prior to the reactor trip. The reactor trip will occur in a very short period of time. The primary response should be due to the malfunction and not due to the reactor trip.

* FWCS Failure malif. Fails selected FWCS To High L.

RESULTS

SECONDARY

Table with 3 columns (A, B) and rows for MS Flow, MFW Flow, SG PRESS, SG LEVEL, GRW PWR, HDR FLOW, COND FLOW, COLSS PWR, MFP SPEED.

CONTAINMENT

Table with 1 column and rows for PRESS, TEMP, HUMIDITY, SUMP LVL.

RADIATION MONITORING

Table with 1 column and rows for MS Line, SG Sample, Vacuum Pmp, CONT PRESS, CAMS.

REACTOR Coolant System

Table with 2 columns and rows for Press, Level, Flow, Th, Tc, Tavg, Bwr Pwr, LO Flow, Chg Flow, VCT LVL, VCT Press, SIT Level, SIT Press, QT Level, QT Temp, QT Press.

ESFAS ACTUATION

APPROVED: H. Healy

NOTED: M. P. N. J. S. J.

MANUFACTURE TITLE: Ejected CEA 1 1 1 DATE PERFORMED: 11/5/87 PERFORMED BY: M. Sealad

OTHER UNIQUE PARAMETERS/TRENDS

Performed at start-up (11/5/87) with various CEA's to determine effects of ECCA on the system. It is noted at this time that the rising temperature was due to decrease in the ECCA.

SECONDARY

	A	B
MS FLOW	→	→
MFW FLOW	→	→
SG PRESS	→	→
SG LEVEL	→	→
GRW MW	→	→
HDR FLOW	→	→
COND FLOW	→	→
COLSS FWR	→	→
MFP SPEED	→	→

CONTAINMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS LINE	→
SG Sample	→
Vacuum Pmp	→
CONT AREA	→
CAMS	→

Reactor Coolant System

Press	→
Level	→
Flow	→
Th	→
Tc	→
Tang	→
Rx FWR	→
LO Flow	→
Chg Flow	→
VCT LVL	→
VCT Press	→
SIT Level	→
SIT Press	→
QT Level	→
QT Temp	→
QT. Press	→

ESFAS ACTUATION

RESULTS

1. Ejected CEA caused Reactor Level and Temperature to increase.
2. VCT level did not change due to diverting to the ST12 Tank.
3. SBOCS maintained to control SG Pressure.
4. All Feed Pumps - HRP were successful due to still being in S/LC.

ACCEPTED: M. Sealad

APPROVED: M. Sealad

MAJORITY TITLE: Vacuum Pump Failure DATE PERFORMED: 11/6/87 PERFORMED BY: M. Schell

OTHER UNIQUE PARAMETERS/TRENDS

Should Auto Start STBY Vacuum Pump

SECONDARY

Press	→	→	→
Level	→	→	→
Flow	→	→	→
Th	→	→	→
Tc	→	→	→
Tang	→	→	→
Br Flow	→	→	→
LQ Flow	→	→	→
Chg Flow	→	→	→
VCT Lvl	→	→	→
VCT Press	→	→	→
SIT Level	→	→	→
SIT Press	→	→	→
QT Level	→	→	→
QT Temp	→	→	→
QT Press	→	→	→

CONTAINMENT

PRESS	→	→	→
TEMP	→	→	→
HUMIDITY	→	→	→
SUMP LVL	→	→	→

RADIATION MONITORING

MS Line	→	→	→
SG Sample	→	→	→
Vacuum Pmp	→	→	→
CONT AREA	→	→	→
CAMS	→	→	→

ESFAS ACTUATION

RESULTS

no unexpected results. on loss of VAC pump, Condenser Pressure spiked to high, resulting in an auto start of the STBY Vacuum Pump. Condenser Press returned to slowly decrease back to its initial value

APPROVED: + M. Schell

DATE: 11/6/87

ACCEPTED: M. Schell

Signature: M. Schell

ANTICIPATED PLANT RESPONSE

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MAJORITY TITLE: LRSI Pump Failure DATE PERFORMED: 11/6/87 PERFORMED BY: J. J. Johnson

Reactor Coolant System		SECONDARY		OTHER UNIQUE PARAMETERS/TRENDS	
		A	B		
Press	↘	↘	↘	Perform on SDC, Monitor 1	Thermocouples For Decay Heat Flow to RCS
Level	↘	↘	↘		
Flow	↘	↘	↘		
Th	↘	↘	↘		
Tc	↘	↘	↘		
Tavg	↘	↘	↘		
Rp/Rwr	↘	↘	↘		
LO Flow	↘	↘	↘		
Chg Flow	↘	↘	↘		
VCT Lvl	↘	↘	↘		
VCT Press	↘	↘	↘		
SIT Level	↘	↘	↘		
SIT Press	↘	↘	↘		
QT Level	↘	↘	↘		
QT Temp	↘	↘	↘		
QT Press	↘	↘	↘		
ESFAS ACTUATION					
CONTAINMENT					
Press	↘	↘	↘		RESULTS
Temp	↘	↘	↘		
Humidity	↘	↘	↘		
Sump Lvl	↘	↘	↘		
RADIATION MONITORING					
MS Line	↘	↘	↘		No Unexpected Results, Decay heat load sufficient to cause heat up as indicated by the thermo couples, TH and TC Indications. Press decreased initially from loss of the LRSI pump and increased slowly due to the expansion of the RCS from the heat up.
SG Sample	↘	↘	↘		
Vacuum Pmp	↘	↘	↘		
Cont Area	↘	↘	↘		
CAMS	↘	↘	↘		

APPROVED: J. J. Johnson

ACCEPTED: J. J. Johnson

MAJUNCTION TITLE: Condensate Pump Trip (1) DATE PERFORMED: 11/6-87 PERFORMED BY: M. Sealor

OTHER UNIQUE PARAMETERS/TRENDS

Trip of H Condensate Pump at 100% flow

SECONDARY

	A	B
MS FLOW	→	→
MFW FLOW	→	→
SG PRESS	→	→
SG LEVEL	→	→
GRW MW	→	→
HDR FLOW	→	→
COND FLOW	→	→
COLSS FWR	→	→
MFP SPEED	→	→

CONTAINMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS Line	→
SG Sample	→
Vacuum Pmp	→
CONT Press	→
CAMS	→

Reactor Coolant System

Press	→
Level	→
Flow	→
TH	→
TC	→
Tavg	→
Bx Pwr	→
LD Flow	→
Chg Flow	→
VCT LVL	→
VCT Press	→
SIT Level	→
SIT Press	→
QT LEVEL	→
QT TEMP	→
QT. Press	→

ESFAS ACTUATION

RESULTS

No unexpected results. Caused an Auto-Start of the Stand By Condensate Pump.

MAJORITY TITLE: Gland Seal Failure DATE PERFORMED: 10/28/87 PERFORMED BY: M. Decker

OTHER UNIQUE PARAMETERS/TRENDS

Manifactor performed while starting down
 IF adjustment at High Press is performed will
 provide sufficient gland seal steam for initial
 the startup better should be secured to see that
 gland seal steam is taken care of. The expected amount
 after the injection of the maintenance is the loss
 of Condenser Vacuum (bearing) is looking on the
 SDCS bypass values at 61 by this.

SECONDARY

	A	B
MS FLOW	→	→
MFW FLOW	→	→
SG PRESS	→	→
SG LEVEL	→	→
GEN MW	→	→
HDP FLOW	→	→
COND FLOW	→	→
COLSS FWR	→	→
MFP SPEED	→	→

CONTAINMENT

PRESS	→
TEMP	→
HUMIDITY	→
SUMP LVL	→

RADIATION MONITORING

MS LINE	→
SG Sample	→
Vacuum Pmp	→
CONT AREA	→
CAMS	→

Residual Coolant System

Press	→
Level	→
Flow	→
TH	→
TC	→
Tang	→
Ex Pwr	→
LQ Flow	→
Chy Flow	→
VCT LVL	→
VCT Press	→
SIT Level	→
SIT Press	→
QT Level	→
QT Temp	→
QT Press	→

ESFAS ACTUATION

RESULTS

NO unexpected results. Loss of Gland Sealing
 Steam resulted in a decrease of Condense
 Vacuum and an Auto Start of The SDBY
 Vacuum Pump. The low vacuum lockout of the
 SDCS Bypass valves occurred at 61 PSI-T

APPROVED: + M. Decker

in lvl

ACCEPTED:

M. Decker

ANTICIPATED PLANT RESPONSE

MAJORITY TITLE: Loss of Ch Flow to RCP state performed: *1/1/17* PERFORMED BY: *Alford* 59

Reactor Coolant System		SECONDARY	
		A	B
Press	→	→	→
Level	→	→	→
Flow	→	→	→
Th	→	→	→
Tc	→	→	→
Tavg	→	→	→
Rx Pwr	→	→	→
LQ Flow	→	→	→
Ch Flow	→	→	→
VCT Lvl	→	→	→
VCT Press	→	→	→
CONTAINMENT			
SIT Level	→	→	→
SIT Press	→	→	→
QT Level	→	→	→
QT Temp	→	→	→
QT Press	→	→	→
RADIATION MONITORING			
MS Line	→	→	→
SG Sample	→	→	→
Vacuum Pmp	→	→	→
Cont Press	→	→	→
CAMS	→	→	→

OTHER UNIQUE PARAMETERS/TRENDS

Initiate Malfunction from the I.A console.
 Monitor RCP Parameters (LO Temp, Big Temp)
 LO Temp, Seal water Temperatures should increase and a High Big. oil Temp alarm should be received on each pump.

RESULTS

APPROVED: *[Signature]*

DATE: *1/1/17*

ACCEPTED: *[Signature]*

DATE: *1/1/17*

MAJUNCTION TITLE: Uncontrolled Rod Withdrawal DATE PERFORMED: 11/15/87 PERFORMED BY: J. Weber

OTHER UNIQUE PARAMETERS/TRENDS

UNCONTROLLED ROD WITHDRAWAL MAY BE TERMINATED BY SELECTING C.F. ON THE CEMCS SELECTOR SWITCH. WITHDRAWAL WOULD BE TERMINATED PRIOR TO REACTOR REACHING POINT OF ADDING HEAT. PROPER SIMULATOR RESPONSE WOULD BE INDICATED BY VERIFYING OUTWARD ROD MOTION CONTINUES AFTER SHIM SWITCH IS RELEASED.

RESULTS

PRIMARY		SECONDARY	
A	B	A	B
MS FLOW	NA	NA	NA
MFW FLOW	/	/	/
SG PRESS	/	/	/
SG LEVEL	/	/	/
GRW MW	/	/	/
HDR FLOW	/	/	/
COND FLOW	/	/	/
COLSS PWR	/	/	/
MFP SPEED	/	/	/
CONTAINMENT			
PRESS	NA	/	/
TEMP	/	/	/
HUMIDITY	/	/	/
SUMP LVL	/	/	/
RADIATION MONITORING			
MS LINE	NA	/	/
SG SAMPLE	/	/	/
VACUUM PMP	/	/	/
CONT AREA	/	/	/
CAMS	/	/	/

ESFAS ACTUATION

APPROVED: J. Weber

ACCEPTED: M. J. Crossed

ATTACHMENT 2
ANO TRAINING ADMINISTRATIVE GUIDELINE
SIMULATOR FIDELITY TESTING