REFERENCE: SO123-VI-1.0.1

Submittal No. A9001PQN (If applicable)

EDITORIAL CORRECTION(S) (EC)

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9502000366

For CDM Use Only:

Issuance Date FEB 1 7 1995

EC No. 0-1

PERFORMED BY: T. Jones

DATE: FEB 1 7 1995

1. Document No. 1023-XX1 3.1.2

Revision No. 9

Document Title SIMULATOR PERFORMANCE TEST ~~SCHEDULE~~ SCHEDULING
fa 2-15-95

Document Author/Originator MICHAEL J KIRBY (PRINT OR TYPE NAME) 88409 (PAX) NTD (ORGANIZATION)

2. Check appropriate box: ☐ Entire document attached ☒ Affected page(s) attached

Superseded/Incorporated EC(s)/TCN(s) NONE (NUMBER (IF NONE, SO STATE)) *(Not applicable for single use TCNs)*

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TECHNICAL CHANGES ARE **NOT** ALLOWED (e.g., changes to numerical data, setpoints, or acceptance criteria, implementing NRC commitments, changing levels of approval). For technical changes (or a combination of technical changes and editorial corrections) use the revision (SO123-VI-1) or TCN (SO123-VI-1.0.1) process.

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3. Allowed types of Editorial Corrections are:

- Updating a specified tool to an equivalent or better substitute.
- Correcting obvious equipment identifier or location errors (e.g., correcting 2TSH-8960 to 2TSH-8961 when the procedure section was obviously written for 2TSH-8961; an approved document modifies annunciator window phrasing, etc.).
- Correcting misnumbered steps/sections (paragraph numbering) or step references (referencing one step to another step).
- Correcting spelling, punctuation, and typographical errors. (Do not change numerical data, setpoints, or acceptance criteria, use the revision [SO123-VI-1] or TCN [SO123-VI-1.0.1] process.)
- Dividing large multiple action steps into several smaller steps which accomplish the same goal.
- Updating names, phone numbers, document format, procedure numbers, distribution lists, or references.
- Updating personnel titles (without changing the level of approval).
- Clarifying wording in a step to enhance understanding (changing the meaning/result of the step is not allowed).
- Updating obsolete material codes (verified in an approved document or SOMMS).
- Reordering steps out of sequence. For example:

  6.1 Install cover.

  6.2 Use RTV to seal cover.

  Obviously the RTV should be applied to the cover before installing the cover.

4. PREPARED BY: [signature] (COGNIZANT INDIVIDUAL) DATE: 2-14-95

REVIEWED AND APPROVED BY: [signature] (COGNIZANT SUPERVISOR) DATE: 2/14/95

5. *(Optional)* The entire document was reviewed in conjunction with this EC and found to be acceptable as written. This constitutes an annual/biennial review disposition of Acceptable As Written-Extend (SO123-VI-1.0.2).

REVIEWED and APPROVED BY: N/A (COGNIZANT FUNCTIONAL DIVISION MANAGER OR DESIGNEE) DATE

6. *For NPG Use Only:* EC logged in computer system.

PERFORMED BY: [signature] (NUCLEAR PROCEDURES GROUP (NPG)) 2/16/95 NPG DATE

SOE PF(123) 111, Rev. 0 2/1/95

SIMULATOR PERFORMANCE TEST SCHEDULING

TABLE OF CONTENTS

SIMULATOR PERFORMANCE TEST SCHEDULING

1.0 OBJECTIVE

1.1 To provide a four year simulator testing schedule as required by Reference 2.1.1.

2.0 REFERENCES

2.1 Procedures

2.1.1 SO23-XXI-3.1.4, Maintenance of Simulator Certification Records

2.1.2 SO23-XXI-3.3.1, Real Time Simulation Test

2.1.3 SO23-XXI-3.3.2, Simulator Steady State Performance Testing

2.1.4 SO23-XXI-3.3.4, Simulator Surveillance Testing

2.1.5 SO23-XXI-3.3.5, Simulator Normal Operations Performance Testing

2.1.6 SO23-XXI-3.3.6, Simulator Transient Testing and Evaluation

2.1.7 SO23-XXI-3.3.7, Simulator Malfunction Testing

EC

3.0 PREREQUISITE

3.1 Prior to use of a user-controlled copy of this document, it is the user's responsibility to verify the revision and any TCNs are current by using one of the following methods:

3.1.1 Access the San Onofre Document Management System (SDMS) [San Onofre local area network (SLAN) or online system] (preferred methods).

3.1.2 Check it against a Corporate Documentation Management-SONGS (CDM-SONGS) controlled copy and any TCNs.

3.1.3 Contact CDM-SONGS by telephone or through counter inquiry.

3.1.4 Obtain a user-controlled copy of this procedure from CDM-SONGS or SDMS SLAN.

4.0 PRECAUTION(S)

4.1 None

5.0 CHECKLIST(S)

5.1 None

6.0 PROCEDURE

6.1 Simulator Operability Testing

6.1.1 Simulator operability testing shall be conducted annually. The intent of this testing is to:

.1 Verify overall simulator model completeness and integration.

.2 Verify simulator performance against steady state criteria.

.3 Verify simulator performance against transient criteria.

6.1.2 Operability testing shall be performed in accordance with References 2.1.2 through 2.1.7.

6.1.3 Attachment 1 of this procedure lists the testing required to be done annually.

6.2 Simulator Performance Testing

6.2.1 Simulator performance testing shall be performed on a four year schedule. Testing shall be performed in the following areas:

.1 Real Time Simulation test

.2 Normal Operations testing

.3 Surveillance testing

.4 Malfunction testing

6.2.2 Simulator performance testing shall be performed in accordance with References 2.1.2 through 2.1.7.

6.2.3 Approximately 25% of all required performance testing shall be performed each year.

6.2.4 Attachment 2 of this procedure list the required testing.

NOTE: The number in the year tested column indicates which year in the four year cycle a specific test will be performed.

7.0 RECORDS

7.1 Records shall be maintained in accordance with Reference 2.1.1.

SIMULATOR OPERABILITY TESTING SCHEDULE

The following tests are performed annually.

STEADY STATE PERFORMANCE

	TITLE	DESCRIPTION
1.	SS01 SIMULATOR STABILITY	60 MINUTE STEADY STATE RUN
2.	SS02 HEAT BALANCE @ 100%	RECORD STEADY STATE DATA
3.	SS03 HEAT BALANCE @ 80%	RECORD STEADY STATE DATA
4.	SS04 HEAT BALANCE @ 50%	RECORD STEADY STATE DATA

TRANSIENT PERFORMANCE

	TITLE	DESCRIPTION
1.	TT01 REACTOR TRIP	REACTOR TRIP FROM 100%.
2.	TT02 LOSS OF MFW PUMPS	SIMULTANEOUS TRIP OF ALL FEEDWATER PUMPS.
3.	TT03 CLOSURE MSIV's	SIMULTANEOUS CLOSURE OF ALL MAIN STEAM ISOLATION VALVES.
4.	TT04 TRIP ALL RCP's	SIMULTANEOUS TRIP OF ALL REACTOR COOLANT PUMPS. (LOSS OF OFF-SITE POWER)
5.	TT05 TRIP SINGLE RCP	TRIP OF A SINGLE REACTOR COOLANT PUMP.
6.	TT06 MAIN TURBINE TRIP	MAIN TURBINE TRIP AT MAX POWER THAT DOES NOT CAUSE RX TRIP.
7.	TT07 LOCA WITH LOSS OF PWR.	MAX SIZE REACTOR COOLANT SYSTEM RUPTURE COMBINED WITH LOSS OF ALL OFFSITE POWER.
8.	TT08 MAIN STM LINE BREAK	MAX SIZE UNISOLABLE STEAM LINE RUPTURE IN CONTAINMENT.
9.	TT09 STUCK OPEN SAFETY VLV.	LOW PRIMARY SYSTEM DEPRESSURIZATION TO SATURATED CONDITIONS USING PRESSURIZER SAFETY VALVE STUCK OPEN, HPSI INHIBITED.
10.	TT10 TURBINE LOAD REJECTION	30% LOAD REJECTION WITHOUT REACTOR TRIP.

SIMULATOR PERFORMANCE TESTING
FOUR-YEAR SCHEDULE

REAL TIME SIMULATION TEST

	TITLE/DESCRIPTION	YEAR OF TEST
1.	RTT01 COMPUTER REAL TIME TEST	1

NORMAL OPERATIONS

	TITLE/DESCRIPTION	YEAR OF TEST
1.	NOP01 COLD SHUTDOWN TO HOT STANDBY	1
2.	NOP02 HOT STANDBY TO RATED POWER	2
3.	NOP03 RATED POWER TO HOT STANDBY	2
4.	NOP04 HOT STANDBY TO COLD SHUTDOWN	3
5.	NOP05 REACTOR TRIP FOLLOWED BY RETURN TO RATED POWER	4

SURVEILLANCE TESTING

	TITLE/DESCRIPTION		YEAR OF TEST
1.	SST01	EXCORE IN CALIBRATION	3
2.	SST02	RCS FLOWRATE DETERMINATION	3
3.	SST03	CEA MONTHLY OPERABILITY TEST	3
4.	SST04	COLSS OUT OF SERVICE SURVEILLANCE	3
5.	SST05	AUXILIARY FEEDWATER FLOW TEST	2
6.	SST06	4KV EMERGENCY BUS TRANSFER TEST	1
7.	SST07	DIESEL GENERATOR MONTHLY TEST	1
8.	SST08	ONCE-A-SHIFT SURVEILLANCE	2
9.	SST09	ONCE-A-DAY SURVEILLANCE	2
10.	SST10	ONCE-A-WEEK SURVEILLANCE	2

SIMULATOR PERFORMANCE TESTING
FOUR-YEAR SCHEDULE
(Continued)

SURVEILLANCE TESTING (Continued)

	TITLE/DESCRIPTION		YEAR OF TEST
11.	SST11	REMOTE SHUTDOWN PANEL INSTR. CHECKS	3
12.	SST12	DETERMINATION OF RX. SHUTDOWN MARGIN	1
13.	SST13	INSERVICE VALVE TESTING QUARTERLY	4
14.	SST14	CONTAINMENT PURGE ISO. SYS. TEST	1
15.	SST15	TURB. OVERSPEED PROTECTION VALVE OPERABILITY TESTS	4
16.	SST16	RCS WATER INVENTORY BALANCE	4
17.	SST17	REACTOR POWER CALCULATION	4

MALFUNCTION TESTING

	TITLE/DESCRIPTION	YEAR OF TEST
1.	CC02 LOSS OF CCW TO RCP SEAL WATER COOLER	4
2.	CC03 RUPTURE OF CCW LINE	1
3.	CC06 LOSS OF CCW PUMP	1
4.	CV05 LEAK IN LETDOWN LINE I.C. ISOLATABLE	2
5.	CV06 LEAK IN LETDOWN LINE OUTSIDE CONTAINMENT	3
6.	CV09 LOSS OF REACTOR MAKEUP	3
7.	CV10 FALSE LETDOWN LINE HIGH TEMPERATURE	3
8.	CV11 RISE IN MAKEUP BORON CONCENTRATION	3
9.	CV12 INADVERTENT BORON DILUTION	2
10.	CV16 VOLUME CONTROL TANK LVL TRANS FAIL	2
11.	CV20 VCT OUTLET ISOLATION VALVE FAILS CLOSED	2
12.	EC01 SHUTDOWN COOLING RELIEF VALVE FAIL	1
13.	EC04 LOW PRESS SAFETY INJ SUCT LINE RUPT	1

SIMULATOR PERFORMANCE TESTING
FOUR-YEAR SCHEDULE
(Continued)

MALFUNCTION TESTING (Continued)

	TITLE/DESCRIPTION	YEAR OF TEST
14.	EC08 LOSS OF SI PUMP	1
15.	ED01 LOSS OF ALL OFFSITE POWER	4
16.	ED02 LOSS OF RESERVE TRANSFORMER	2
17.	ED03 LOSS OF 4160 EMERGENCY BUS	3
18.	ED04 LOSS OF 4160 NON VITAL BUS	2
19.	ED05 LOSS OF 125V DC BUS (IE AND NON IE)	4
20.	ED06 GROUND ON 480V EMERG BUS	4
21.	ED07 LOSS OF EACH INVERTOR	4
22.	ED08 LOSS OF INST BUS SUPPLIES	4
23.	EG01 MAIN GENERATOR INTERNAL FAULT	1
24.	EG02 MAIN GENERATOR TRIP	1
25.	EG05 DG OUTPUT BREAKER FAILURE TO CLOSE	1
26.	EG06 LOSS OF MAIN GENERATOR EXCITER	4
27.	EG08 FAILURE OF DIESEL GENERATOR	1
28.	FW02 SHAFT SEIZURE OF MOTOR-DRIVEN AUX. FEED	1
29.	FW03 FW PIPING BRK (INSD CONT UPSTRM OF CHK VLV)	3
30.	FW04 FW PIPING BRK (OTSD CONT DNSTRM OF CHK VLV)	2
31.	FW05 FW PIPING BRK (OTSD CONT BTWN MFIV AND CHK VLV)	4
32.	FW06 FW BRK (OTSD CONT BTWN MFRV AND MFIV)	4
33.	FW08 LOSS OF MAIN FW PMP TURB HYDRLC OIL	4
34.	FW09 HIGH VIB IN MAIN FW PUMP TURBINE	1
35.	FW16 HOTWELL OVERBOARD VALVE LV-3211 FAILURE	1

SIMULATOR PERFORMANCE TESTING
FOUR-YEAR SCHEDULE
(Continued)

MALFUNCTION TESTING (Continued)

	TITLE/DESCRIPTION	YEAR OF TEST
36.	FW21 MAIN FEEDPUMP DISCHARGE VALVE CLOSES	1
37.	FW23 CONDENSER AIR LEAKAGE	1
38.	FW25 STEAM-DRIVEN AUX FW PMP STM INLET FAIL	2
39.	IA01 LOCALIZED IA FAILURE	3
40.	IA02 LOSS OF INSTRUMENT AIR	3
41.	MS01 MAIN STEAM SAFETY VALVE FAILURE	4
42.	MS03 MS LINE BRK (INSD CONT)	4
43.	MS04 MS LINE BRK (OTSD CONT)	3
44.	MS05 MS LINE BRK (OTSD CONT)	3
45.	MS06 MAIN STEAM ISOLATION VALVE FAILS	1
46.	MS09 LEAKAGE OF ATMOS STEAM RELIEF VALVE	4
47.	NI01 START UP RANGE MONITOR FAILURE	2
48.	NI02 SAFETY RANGE MONT POWER SPLY FAIL	2
49.	NI03 SAFETY CHANNEL FAILURE (LOG)	2
50.	NI08 LINEAR AMPLIFIER FAILURE	2
51.	RC01 RCS COLD LEG DOUBLE ENDED BREAK	1
52.	RC02 RCS HOT LEG DOUBLE ENDED BREAK	2
53.	RC03 RCS LEAK INTO CONTAINMENT	2
54.	RC05 RCP SHAFT SHEARED	2
55.	RC07 RCP P003 SHAFT SEIZURE	2
56.	RC17 PRESSURIZER PRESS TRANS FAILURE	2
57.	RC18 PZR SAFETY VALVE LEAK	4

SIMULATOR PERFORMANCE TESTING
FOUR-YEAR SCHEDULE
(Continued)

MALFUNCTION TESTING (Continued)

	TITLE/DESCRIPTION	YEAR OF TEST
58.	RC19 FUEL LEAK	4
59.	RC20 PRESSURIZER PRESS TRANS FAILURE	1
60.	RC22 RCS COLD LEG TEMP TRANS FAIL (PROT)	1
61.	RD01 EJECTED ROD	1
62.	RD02 UNTRIPPABLE STUCK ROD	1
63.	RD03 DROPPED CEA	1
64.	RD04 DROPPED ROD WITH NO INDICATION	1
65.	RD05 MISALIGNMENT OF ROD TRIPPABLE	1
66.	RD08 FAILURE OF ROD TO MOVE IN MANUAL & AUTO	1
67.	RP03 RP SYS FAILS TO TRIP FOR ALL TRIP	2
68.	RP15 AUTOMATIC REACTOR TRIP FAILURE	2
69.	RX04 PRESSURIZER PROPORTIONAL HEATERS FAIL	4
70.	RX05 PZR LEVEL SETPOINT RRS1 FAILURE	3
71.	RX08 STEAM BYPASS CONTROL SYSTEM FAILURE	3
72.	RX09 INPUT TO FW REGULATING VLV FAILS	3
73.	SC01 FAILURE OF SALT WATER COOLING PUMP	3
74.	SC03 FAILURE OF SALTWATER COOLING PUMP	3
75.	SG02 STEAM GENERATOR TUBE RUPTURE	4
76.	SG03 PRESS TRANS FAIL (PROT)	3
77.	SG04 SG LEVEL TRANS FAIL (CONTROL)	3
78.	TU01 TURBINE BEARING OIL LOW PRESSURE	3
79.	TU05 THRUST BEARING WEAR	3

SIMULATOR PERFORMANCE TESTING
FOUR-YEAR SCHEDULE
(Continued)

MALFUNCTION TESTING (Continued)

	TITLE/DESCRIPTION	YEAR OF TEST
80.	TU08 TURBINE TRIP DUE TO ELECTRIC GOVERNOR	3
81.	TU14 TURBINE EXTRACTION VALVES CLOSE	3
82.	WD01 INADV RADIOACTIVE LIQ REL	4
83.	WD02 RUPTURE WASTE GAS DECAY TANK	4

DEVELOPMENT RESOURCES

1. Title 10, Chapter 1, Code of Federal Regulations, Part 55

2. Regulatory Guide 1.149, Nuclear Power Plant Simulation Facilities for use in Operator License Examinations

3. Simulator Verification Program

4. NUREG-1258, Evaluation Procedure for Simulation Facilities Certified under 10CFR 55

5. ANSI/ANS-3.5-1985, American National Standard, Nuclear Power Plant Simulators for Use in Operator Training