

NUCLEAR GENERATION SITE  
UNITS 2 AND 3  
COMPLETE REVISION  
EFFECTIVE DATE AUG 20 1984

EMERGENCY OPERATING PROCEDURE S023-3-5.27  
REVISION 6 PAGE 1 OF 12

EARTHQUAKE

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**AUG 20 1984**

**CDM SITE**

QA PROGRAM AFFECTING

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## EARTHQUAKE

### 1.0 SYMPTOMS

#### 1.1 Alarms

- 1.1.1 Seismic Recording System Activation
- 1.1.2 Operating Basis Earthquake Acceleration

#### 1.2 Indications

- 1.2.1 Ground motion that is readily felt and may cause observable effects to plant processes, structures and operating equipment.

### 2.0 AUTOMATIC ACTIONS

- 2.1 Initiations of seismic recording and indicating instrumentation and seismic annunciators
- 2.2 Possible seismic reactor trip (0.48g ground motion)
- 2.3 Possible turbine trip due to high vibration
- 2.4 Possible storage tank Hi/Lo level alarm, feedwater heater Hi/Lo level alarms, or sump high level alarms

### 3.0 IMMEDIATE OPERATOR ACTIONS

- 3.1 If reactor trip has occurred, carry out all immediate operator actions per S023-3-5.1, "Emergency Plant Shutdown".
- 3.2 Use the public address system to notify onsite personnel concerning the nature of the emergency.

#### CAUTION

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Do not place system in "MANUAL" unless misoperation in "AUTOMATIC" is apparent. Systems placed in "MANUAL" must be checked frequently to ensure proper operation.

### 4.0 SUBSEQUENT OPERATOR ACTIONS

- 4.1 Verify all immediate operator actions have been initiated as follows:

4.0 SUBSEQUENT OPERATOR ACTIONS (Continued)

\*INITIALS

- |         |  |       |
|---------|--|-------|
| 4.1.1   | With a reactor trip verify all immediate and subsequent operator actions per S023-3-5.1, "Emergency Plant Shutdown", are being performed concurrently with the steps in this instruction.  | _____ |
| 4.1.2   | Notify onsite personnel, on the public address system, concerning the nature of this emergency.  | _____ |
| 4.1.3   | With valid initiation of the "Seismic Recording System Activation" alarm 61C21, as indicated by an illuminated amber alarm on the Seismic Instrumentation Panel, or if notified by Unit 1 that Seismic Instrumentation has been activated, complete Section 4.3. | _____ |
| 4.1.4   | With a valid "Operating Basis Earthquake Acceleration" (OBE) alarm, 61C22, or red alarm light on the Seismic Instrumentation Panel indicating a 0.33g ground motion, complete Section 4.4.   | _____ |
| 4.2     | The Shift Superintendent shall notify the Plant Superintendent or designee and Shift Technical Advisor and discuss the situation.  | _____ |
| 4.2.1   | Within 15 minutes an assessment of the plant status and safety shall be made and the event classified per S023-VIII-1, "Recognition and Classification of Emergency."  | _____ |
| 4.2.2   | If an emergency is declared (Unusual, Alert, Site Emergency or General Emergency), <u>then</u> use the Emergency Procedures to implement the SONGS 1, 2 and 3 Emergency Plan.  | _____ |
| 4.2.3   | Notify the NRC via the Red Phone within one hour, per S023-0-25, "Telephone Notification of NRC for Significant Events."   | _____ |
| 4.2.3.1 | If possible, discuss the contents of the notification with the Plant Superintendent or designee prior to the notification.   | _____ |

\* The initial column is an operator aid and is intended to be used as follows:

Initial each completed action. Do not write NA; leave blank items that are not applicable. Proceed through the instruction, performing all applicable steps, frequently rechecking those steps passed over to ensure action is taken when applicable.

4.0 SUBSEQUENT OPERATOR ACTION (Continued)

INITIALS

- 4.2.3.2 Record the names of the persons involved with the notification and time.

NRC

Bethesda Time

Region V/Time

Resident/Time

SCE

Shift Supt.

Plant Supt/Time

CC&C/Time

- 4.2.3.3 Notify the Systems Operating Supervisor concerning the nature of the emergency.
- 4.2.3.4 Notify Emergency Preparedness concerning the nature of the emergency.
- 4.2.3.5 Notify Station Engineering that an analysis of the seismic recording and indicating instrumentation is to be performed to determine exact magnitude of the earthquake.
- 4.2.3.6 The Emergency Coordinator (Shift Superintendent, until properly relieved by a designated alternate) should ensure the emergency classification is evaluated for revision as more definite information is obtained concerning the magnitude of the earthquake.

- 4.3 Following a seismic event greater than or equal to .05g perform the following:

- 4.3.1 Within 2 hours, per T.S. 4.3.3.7.4.a, each zone shown in Tech. Spec. Table 3.3-11 (Attachment 1) shall be inspected for fires. Log completion of inspection and results in Control Operator's and Shift Superintendent's log book.

NOTE: If the Seismic Event renders any portion of the fire detection inoperable, then a fire watch must be established within (1) one hour.

- 4.3.2 Within 72 hours, an engineering evaluation shall be performed to verify the OPERABILITY of the fire detection system in each zone in Tech. Spec. Table 3.3-11. (Attachment 1)
- 4.3.3 Perform S023-3-3.37, "RCS Water Inventory Balance."

4.0 SUBSEQUENT OPERATOR ACTION (Continued)

INITIALS

- |           |   |       |
|-----------|---|-------|
| 4.3.4     | Verify there is no increase in flow above normal into the containment sump.   | _____ |
| 4.3.5     | Exercise the control rods as outlined in S023-3-3.5, "CEA Operability".   | _____ |
| 4.3.6     | Perform a routine test of auxiliary feedwater pumps per S023-3-3.16, "Auxiliary Feedwater Pump 31 Day Operation Test".                      | _____ |
| 4.3.7     | Perform a routine monthly test of both Diesel Generators per S023-3-3.23, "Diesel Generator Monthly Test."                                  | _____ |
| 4.3.8     | Complete electrical supply breaker alignment and power availability Check-Off Sheet per S023-3-3.27.2, "Weekly Electrical Bus Surveillance" | _____ |
| 4.3.9     | A physical inspection shall be made of the plant paying particular attention to the following systems:                                      |       |
| 4.3.9.1   | Safety Injection System, including the RWST.  | _____ |
| 4.3.9.2   | Radwaste System, including the part of the CVCS that is located within the reactor auxiliary building.                                      | _____ |
| 4.3.9.3   | Inspect Fuel Handling Building for the following:   |       |
| 4.3.9.3.1 | Proper water level in the spent fuel pool.  | _____ |
| 4.3.9.3.2 | Leakage of the spent fuel pool liner.   | _____ |
| 4.3.9.3.3 | Leakage at the sumps of the spent fuel transfer tube.   | _____ |
| 4.3.9.4   | Component Cooling Water System for leakage.   | _____ |
| 4.3.9.5   | Boric acid storage tank and associated piping for leaks.  | _____ |
| 4.3.9.6   | Containment electrical and piping penetrations.   | _____ |
| 4.3.9.7   | Containment Spray System including the NaOH chemical additive tank.   | _____ |

4.0 SUBSEQUENT OPERATOR ACTION (Continued)

INITIALS

4.3.9.8 Atmospheric Steam Dump System  
air supply and back-up nitrogen  
supply to both atmospheric  
dump valves.

4.3.9.9 Station Fire Main and Fire Fighting  
systems

4.3.9.9.1 If fire system is ruptured,  
relocate Seismic Tankers to Seismic  
Stand pipes and connect to Fire Main  
per S023-XIII-60 "Post Earthquake  
Fire Water System Operation."

4.3.10 Have Instrumentation and Control reset the  
seismic recording and indicating  
instrumentation. Refer to Technical  
Specification 3-4.3.3, "Monitoring  
Instrumentation", Specification 3.3.3.3,  
"Seismic Instrumentation".

4.3.11 With each seismic event, complete S023-0-20,  
"Cumulative Equipment Inoperability and  
Design Cycles".

4.4 For "Operating Basis Earthquake", (greater than 0.33g ground  
motion) perform the following:

4.4.1 If in Modes 1 or 2, commence a unit shutdown to  
cold shutdown conditions per S023-5-1.4, "Plant  
Shutdown from Minimum Load to Hot Standby" performing  
applicable steps concurrently with the steps in  
this instruction.

4.4.2 If in Modes 3 or 4, commence cooldown to Cold shut-  
down conditions per S023-5-1.5, "Plant Shutdown - Hot  
Standby to Cold Shutdown" performing applicable steps  
concurrently with the steps in this instruction.

4.4.3 Perform the inspections in steps 4.3.1 through  
4.3.11.

4.4.4 The unit shall not be returned to service  
following an "OBE" until an evaluation has been  
made by the On-Site Review Committee.

4.4.5 Any observed damage to the plant shall be  
documented in the Control Operator's and Shift  
Superintendent's Log Books so that it can be  
related to the intensity of the earthquake.

4.0 SUBSEQUENT OPERATOR ACTION (Continued)

INITIALS

- 4.4.6 Have Engineering conduct a piping penetration leak rate test on all penetrations except those that are required to place the plant in cold shutdown. \_\_\_\_\_
- 4.4.7 Have Instrumentation and Control perform Station Procedure SO23-II-1.1, "Reactor Protection System Testing - 31 day Interval", ESFAS Section. \_\_\_\_\_
- 4.4.8 Have Instrumentation and Control perform SO23-II-5, "Nuclear Instrumentation Calibration Wide Range Log Linear Power Safety Channels". \_\_\_\_\_
- 4.4.9 Make a thorough inspection of the RCS, including the control rod housings, the steam generators, the RCP's, the pressurizer, and all associated piping. \_\_\_\_\_
- 4.4.10 Perform SO23-3-3.8, "Safety Injection Monthly Tests". \_\_\_\_\_
- 4.4.11 Perform SO23-3-3.11, "Containment Spray Monthly and Refueling Tests". \_\_\_\_\_
- 4.4.12 Obtain a RCS sample and analyze for total activity. \_\_\_\_\_
- 4.4.13 Obtain an incore thermocouple map and have Engineering evaluate. \_\_\_\_\_
- 4.4.14 Obtain an incore flux map and have Engineering evaluate. \_\_\_\_\_
- 4.4.15 Have Instrumentation and Control reset the seismic recording and indicating instrumentation. Refer to Technical Specification 3.3.3.3, "Seismic Instrumentation". \_\_\_\_\_
- 4.4.16 Record date and time this procedure was terminated and unit affected. \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ Unit \_\_\_\_\_

5.0 ATTACHMENT

5.1 Attachment 1, "Fire Zone Check Sheet" (Tech. Spec. Table 3.3-11)

6.0 REFERENCE(S)

6.1 None

7.0 RECORDS REQUIRED

7.1 File per SO23-0-11, "Trip/Transient Review."

FIRE ZONE CHECK SHEET  
(Tech Spec Table 3.3-11)

TIME OF SEISMIC EVENT: \_\_\_\_\_

TIME CHECK SHEET COMPLETED: \_\_\_\_\_

COMPLETION VERIFIED BY: \_\_\_\_\_  
(S.R.O.)

ZONE	INSTRUMENT LOCATION	CHECKED BY:
1	<u>Containment</u> Cable Tray Areas Elev. 63'3" Cable Tray Areas Elev. 45' Cable Tray Areas Elev. 30'  Combustible Oil Area Two steam generator rooms  Charcoal Filter Area, Elev 45'	_____ _____ _____  _____ _____  _____
2	<u>Penetration</u> Elev. 63'6"	_____
4	<u>New Fuel Storage Area and Spent Fuel Pool Areas</u> Spent Fuel Pool New Fuel Pool	_____ _____
5	<u>Control Building Elev 70'</u> Cable Riser Gallery Rm 423 Cable Riser Gallery Rm 449	_____ _____
6	<u>Control Building Elev 70'</u> Radiation Chemical Lab Rm 421 Radiation Chemical Lab Rm 420	_____ _____
7	<u>Radwaste Elev 63'6"</u> Chemical Storage Area Rm 503 Radwaste Control Panel Rm 513 Storage Area Rm 523 Hot Machine Shop	_____ _____ _____ _____

FIRE ZONE CHECK SHEET  
(Tech Spec Table 3.3-11)  
INSTRUMENT LOCATION

ZONE		CHECKED BY:
8	<u>Radwaste Elev 63'6"</u> Waste Decay Tank Rms 511A	<hr/> <hr/>
9	<u>Fuel Handling Building Elev 45'</u> Emgy. A.C. Unit Rm 309-Train A Emgy. A.C. Unit Rm 301-Train B	<hr/> <hr/>
10	<u>Penetration</u> Elev. 45'	<hr/>
11	<u>S.E.B. Roof and Main Steam Relief Valves</u>	<hr/>
12	<u>Control Building Elev 50'</u> Cable Riser Gallery Rm 305 Cable Riser Gallery Rm 315	<hr/> <hr/>
13A	<u>Control Building Elev 30'</u> Emgy. HVAC Unit Rm 309A	<hr/>
13B	<u>Control Building Elev 50'</u> Emgy. HVAC Unit Rm 309B	<hr/>
14	<u>Radwaste Elev 24'</u> Boric Acid Makeup Tank Rm 204B Boric Acid Makeup Tank Rm 204A	<hr/> <hr/>
15	<u>Control Building Elev 50'</u> ESF Switchgear Rm 308A ESF Switchgear Rm 308B	<hr/> <hr/>
16	<u>Radwaste Elev 37' &amp; 50'</u> Ion Exchangers	<hr/>
17	<u>Diesel Generator Building</u> Train A Train B	<hr/> <hr/>
18	<u>Diesel Fuel Oil Storage Tank Underground Vaults</u>	<hr/>
20	<u>Condensate Storage Tank T-121</u>	<hr/>
21	<u>Nuclear Storage Tank T-104</u>	<hr/>
22	<u>Auxiliary Feedwater Pump Room</u>	<hr/>
23	<u>Fuel Handling Bldg Elev 30'</u> Spent Fuel Pools Heat Exchange Room 209	<hr/>
28	<u>Penetration Elev. 30'</u>	<hr/>

FIRE ZONE CHECK SHEET  
(Tech Spec Table 3.3-11)  
INSTRUMENT LOCATION

ZONE		CHECKED BY:
29	<u>Control Building Elev. 30'</u> Cable Riser Gallery Rm 236 Cable Riser Gallery Rm 224	<hr/> <hr/>
30	<u>Electrical Tunnel Elev. 30'6"</u>	<hr/>
31	<u>Control Building Elev. 30'</u>	<hr/>
32A	<u>Control Building Elev. 30'</u> Fan Room 219 & Corridor 221	<hr/>
32B	<u>Control Building Elev. 30'</u> Fan Room Rm 233 and Corridor Rm 234	<hr/> <hr/>
34	<u>Radwaste Elev. 9' and 24'</u> Secondary Radwaste Tank Rms 126A,B, and 127 A & B	<hr/> <hr/>
35	<u>Radwaste Elev. 9' and 24'</u> Spent Resin Tank Rms 125A, B	<hr/>
36	<u>Fuel Handling Building Elev. 17'6"</u> Spent Fuel Pool Pump Rm 107	<hr/>
37	<u>Radwaste Elev. 24'</u> Letdown Heat Exchanger Rms 209A,B	<hr/>
38	<u>Radwaste Elev. 24'</u> Letdown Control Valve Rms 218A,B	<hr/>
39	<u>Radwaste Elev. 24'</u> Filter Crvd Tank Rm 216	<hr/>
40	<u>Radwaste Elev. 9' and 24'</u> Primary Radwaste Tank Rms 211A,D	<hr/>
41	<u>Control Building Elev. 9'</u> Cable Spreading Rm 111A Cable Spreading Rm 111B	<hr/> <hr/>
42	<u>Control Building Elev. 9'</u> Cable Riser Gallery Rm 110 Cable Riser Gallery Rm 112	<hr/> <hr/>
43	<u>Control Building Elev. 9'</u> Emgy. Chiller Rm 115 Emgy. Chiller Rm 117	<hr/> <hr/>

FIRE ZONE CHECK SHEET  
(Tech Spec Table 3.3-11)  
INSTRUMENT LOCATION

ZONE		CHECKED BY:
44	<u>Intake Structure</u> Pump Rm. T2-106 Pump Rm. T3-106	<hr/> <hr/>
45	<u>Penetration Area Elev. 9' &amp; 15'</u> Piping Penetration Area 15'	<hr/>
48	<u>Safety Equipment Building Elev. 9'</u> CCW HX and Piping Rm 022-025	<hr/>
50	<u>Radwaste Elev. 9'</u> Charging Pump Rms 106A-F	<hr/>
51	<u>Radwaste Elev. 9'</u> Boric Acid Makeup Tank Rms 105A-D	<hr/>
53	<u>Electrical Tunnel Elev. 9'6", 11'6". (-) 2'6"</u>	<hr/>
54	<u>Safety Equipment Bldg Elev. 15'6" and 8'</u> Shutdown HX Rms 003, 004, 016, 018	<hr/>
55	<u>Safety Equipment Bldg Elev. 8'</u> Chemical Storage Tank Rm 019	<hr/>
56	<u>Safety Equipment Bldg Elev. 8'</u> Component Cooling Water Surge Tank Rms 020, 021	<hr/>
57	<u>Safety Equipment Bldg Elev. 15'6"</u> Pump Rm 005	<hr/>
58	<u>Radwaste Elev. 37'</u> Reactor Trip System Rms 308A-D, 309-A-C	<hr/>
59	<u>Safety Equipment Bldg Elev. 15'6"</u> Pump Rm 001	<hr/>
60	<u>Safety Equipment Bldg Elev. 15'6"</u> Pump Rm 015	<hr/>
61	<u>Safety Equipment Bldg Elev. 15'6"</u> Component Cooling Water Pump Rms 006, 007, 008	<hr/>
62	<u>Radwaste Elev. 50'</u> Volume Control Valve Rooms	<hr/>
63	<u>Control Building Elev. 50'</u> Corridor	<hr/>
64	<u>Control Building Elev. 50'</u> Vital Power Distribution Rms 310A-H	<hr/>

FIRE ZONE CHECK SHEET  
(Tech Spec Table 3.3-11)  
INSTRUMENT LOCATION

ZONE

CHECKED BY:

65	<u>Control Building Elev. 50'</u> <u>Battery Rms 306B-J</u>	_____
66	<u>Control Building Elev. 50'</u> <u>Evacuation Rm 311</u>	_____
67	<u>Radwaste Elev. 63'6"</u> <u>Cable Riser Gallery Rm 506A</u> <u>Cable Riser Gallery Rm 506B</u>	_____ _____
68	<u>Penetration 9' - 63'6"</u> <u>Cable Riser Shaft</u>	_____
69	<u>Safety Equipment Bldg Elev. 5'3"</u> <u>Salt Water Cooling Piping Rm 010</u>	_____
70	<u>Radwaste Elev. 24'</u> <u>Duct Shaft Rms 222A,B</u>	_____
72	<u>Control Building Elev. 70'</u> <u>Corridor 442</u>	_____
75	<u>Refueling Water Storage Tank T-005</u>	_____
76	<u>Refueling Water Storage Tank T-006</u>	_____
78	<u>Control Building Elev. 9'</u> <u>Corridor Rm 105</u>	_____
79	<u>Control Building Elev. 50'</u> <u>ESF Switchgear Rm 302A</u> <u>ESF Switchgear Rm 302B</u>	_____ _____
80	<u>Radwaste Elev. 37' and 50'</u> <u>Duct Shaft Rms</u>	_____
81	<u>Radwaste Elev. 63'6"</u> <u>Duct Shaft Rms 527A,B</u>	_____
83	<u>Salt Water Cooling Tunnel</u>	_____
84	<u>Safety Equipment Bldg Elev. 8'</u> <u>HVAC Rm 017</u>	_____

Date \_\_\_\_\_ Time \_\_\_\_\_ Unit \_\_\_\_\_