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INSTRUMENTATION

SEISMIC INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.3 The seismic monitoring instrumentation shown in Table 3.3-7 shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

- a. With one or more seismic monitoring instruments inoperable for more than 30 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrument(s) to OPERABLE status.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.3.1 Each of the above seismic monitoring instruments shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-4.

4.3.3.3.2 Each of the above seismic monitoring instruments which is accessible during power operation and which is actuated during a seismic event (one or more basemat accelerations of 0.05 g or greater) shall be restored to OPERABLE status within 24 hours and a CHANNEL CALIBRATION performed within 5 days. Data shall be retrieved from the accessible actuated instruments and analyzed to determine the magnitude of the vibratory ground motion. A Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 10 days describing the magnitude, frequency spectrum, and resultant effect upon facility features important to safety. Each of the above seismic monitoring instruments which is actuated during a seismic event (one or more basemat accelerations of 0.05 g or greater) but is not accessible during power operation shall be restored to OPERABLE status and a CHANNEL CALIBRATION performed the next time the plant enters MODE 3 or below. A supplemental report shall then be prepared and submitted to the Commission within 10 days pursuant to Specification 6.9.2 describing the additional data from these instruments.

TABLE 3.3-7

SEISMIC MONITORING INSTRUMENTATION

<u>INSTRUMENTS AND SENSOR LOCATIONS</u>	<u>MEASUREMENT RANGE</u>	<u>MINIMUM INSTRUMENTS OPERABLE</u>
1. Triaxial Time-History Accelerograph System		
a. Accelerometer (YT-SM 6000) Adjacent to RB -35 ft MSL	0.02-1.0 g	1
b. Accelerometer (YT-SM 6001) RB +46 ft MSL	0.02-1.0 g	1
c. Accelerometer (YT-SM 6002) Free Field Yard Area	0.02-1.0 g	1
d. Starter Unit (YS-SM 6000) Adjacent to RB -35 ft MSL	0.01-0.02 g	1
e. Starter Unit (YS-SM 6001) RB +51 ft MSL	0.01-0.02 g	1
f. Recorder (YR-SM 6000) Control Room RAB +46 ft MSL	0.02-1.0 g	1
g. Control Unit (YZ-SM 6000) Control Room RAB +46 ft MSL	0.02-1.0 g	1*
h. Playback Unit (YR-SM 6001) Control Room RAB +46 ft MSL	0.02-1.0 g	1
2. Triaxial Peak Accelerographs		
a. YR-SM 6020 RB +56 ft MSL	0-2 g	1
b. YR-SM 6021 RB 23 ft MSL	0-2 g	1
c. YR-SM 6022 RAB +21 ft MSL	0-2 g	1
3. Triaxial Seismic Switches		
a. Seismic Switch (YS-SM 6060) RB -35 ft MSL	0.1-0.25 g	1
b. Control Unit (YZ-SM 6060) Control Room RAB +46 ft MSL	0.1-0.25 g	1*
4. Triaxial Response-Spectrum Recorders		
a. YR-SM 6040 RB +10 ft MSL	1-32 Hz, 0-2 g	1
b. YR-SM 6041 RAB -35 ft MSL	1-32 Hz, 0-2 g	1
c. YR-SM 6042 RAB +21 ft MSL	1-32 Hz, 0-2 g	1
d. Peak Shock Annunciator (YR-SM 6045) RB -35 ft MSL	1-32 Hz, 0-2 g	1
e. Peak Shock Annunciator Control Unit (YZ-SM 6045) Control Room RAB +46 ft MSL	1-32 Hz, 0-2 g	1

*With reactor control room annunciation.

TABLE 4.3-4
SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENTS AND SENSOR LOCATIONS</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>
1. Triaxial Time-History Accelerograph System			
a. Accelerometer (YT-SM 6000) Adjacent to RB -35 ft MSL	N.A.	R	SA
b. Accelerometer (YT-SM 6001) RB +46 ft MSL	N.A.	R	SA
c. Accelerometer (YT-SM 6002) Free Field Yard Area	N.A.	R	SA
d. Starter Unit (YS-SM 6000) Adjacent to RB -35 ft MSL	M	R	SA
e. Starter Unit (YS-SM 6001) RB +51 ft MSL	M	R	SA
f. Recorder (YR-SM 6000) Control Room RAB +46 ft MSL	M	R	SA
g. Control Unit (YZ-SM 6000) Control Room RAB +46 ft MSL	M	R	SA*
h. Playback Unit (YR-SM 6001) Control Room RAB +46 ft MSL	N.A.	R	SA
2. Triaxial Peak Accelerographs			
a. YR-SM 6020 RB +56 ft MSL	N.A.	R	N.A.
b. YR-SM 6021 RB 23 ft MSL	N.A.	R	N.A.
c. YR-SM 6022 RAB +21 ft MSL	N.A.	R	N.A.
3. Triaxial Seismic Switches			
a. Seismic Switch YS-SM 6060 RB -35 ft MSL	M	R	SA
b. Control Unit YZ-SM 6060 Control Room RAB +46 ft MSL	M	R	SA*
4. Triaxial Response-Spectrum Recorders			
a. YR-SM 6040 RB +10 ft MSL	N.A.	R	N.A.
b. YR-SM 6041 RAB -35 ft MSL	N.A.	R	N.A.
c. YR-SM 6042 RAB +21 ft MSL	N.A.	R	N.A.
d. Peak Shock Annunciator YR-SM 6045 RB -35 ft MSL	N.A.	R	N.A.
e. Peak Shock Annunciator Control Unit Y7-SM 6045 Control Room RAB +46 ft MSL	N.A.	R	SA

*With reactor control room annunciation.

INSTRUMENTATION

METEOROLOGICAL INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.4 The meteorological monitoring instrumentation channels shown in Table 3.3-8 shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

- a. With one or more required meteorological monitoring channels inoperable for more than 7 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.4 Each of the above meteorological monitoring instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-5.

TABLE 3.3-8

METEOROLOGICAL MONITORING INSTRUMENTATION

<u>INSTRUMENT*</u>	<u>LOCATION</u> <u>(Nominal Elevation)</u>	<u>MINIMUM</u> <u>INSTRUMENTS</u> <u>OPERABLE</u>
1. WIND SPEED		
a. Primary	33 ft (10 m)	1-(a or b)
b. Secondary	33 ft (10 m)	
c. Primary	199 ft (60 m)	1
2. WIND DIRECTION (SIGMA THETA)**		
a. Primary	33 ft (10 m)	1-(a or b)
b. Secondary	33 ft (10 m)	
c. Primary	199 ft (60 m)	1
3. TEMPERATURE DIFFERENCE		
a. Primary	33 ft - 199 ft (10 m-60 m)	1-(a, b, or c)
b. Secondary	33 ft - 199 ft (10 m-60 m)	
c. Primary	33 ft - 199 ft (10 m-60 m)	

*Primary, Secondary - Refers to the tower on which instrument is located, see Specification 5.5.

**Derived from instantaneous wind direction measurements.

TABLE 4.3-5

METEOROLOGICAL MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT*</u>	<u>LOCATION</u> <u>(Nominal Elevation)</u>	<u>CHANNEL</u> <u>CHECK</u>	<u>CHANNEL</u> <u>CALIBRATION</u>
1. WIND SPEED			
a. Primary	33 ft (10 m)	D	SA
b. Secondary	33 ft (10 m)	D	SA
c. Primary	199 ft (60 m)	D	SA
2. WIND DIRECTION (SIGMA THETA)**			
a. Primary	33 ft (10 m)	D	SA
b. Secondary	33 ft (10 m)	D	SA
c. Primary	199 ft (60 m)	D	SA
3. TEMPERATURE DIFFERENCE			
a. Primary	33 ft - 199 ft (10 m-60 m)	D	SA
b. Secondary	33 ft - 199 ft (10 m-60 m)	D	SA
c. Primary	33 ft - 199 ft (10 m-60 m)	D	SA

*Primary, Secondary - Refers to the tower on which instrument is located, see Specification 5.5.

**Derived from instantaneous wind direction measurements.

INSTRUMENTATION

BASES

individual channels; (2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded; and (3) sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," December 1980 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

3/4.3.3.2 INCORE DETECTORS

The OPERABILITY of the incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core.

3/4.3.3.3 SEISMIC INSTRUMENTATION

The OPERABILITY of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility to determine if plant shutdown is required pursuant to Appendix "A" of 10 CFR Part 100. The instrumentation is consistent with the recommendations of Regulatory Guide 1.12, "Instrumentation for Earthquakes," April 1974.

3/4.3.3.4. METEOROLOGICAL INSTRUMENTATION

The OPERABILITY of the meteorological instrumentation ensures that sufficient meteorological data are available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public and is consistent with the recommendations of Regulatory Guide 1.23 "Onsite Meteorological Programs," February 1972.

3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criterion 19 of 10 CFR Part 50.

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ATTACHMENT B

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LIMITING CONDITION FOR OPERATION AND SURVEILLANCE REQUIREMENTS

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INSTRUMENTATION

SEISMIC INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

~~3.3.3.3 The seismic monitoring instrumentation shown in Table 3.3.7 shall be OPERABLE.~~

~~APPLICABILITY: At all times.~~

ACTION:

- ~~a. With one or more seismic monitoring instruments inoperable for more than 30 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrument(s) to OPERABLE status.~~
- ~~b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.~~

SURVEILLANCE REQUIREMENTS

~~4.3.3.3.1 Each of the above seismic monitoring instruments shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3.4.~~

~~4.3.3.3.2 Each of the above seismic monitoring instruments which is accessible during power operation and which is actuated during a seismic event (one or more basemat accelerations of 0.05 g or greater) shall be restored to OPERABLE status within 24 hours and a CHANNEL CALIBRATION performed within 5 days. Data shall be retrieved from the accessible actuated instruments and analyzed to determine the magnitude of the vibratory ground motion. A Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 10 days describing the magnitude, frequency spectrum, and resultant effect upon facility features important to safety. Each of the above seismic monitoring instruments which is actuated during a seismic event (one or more basemat accelerations of 0.05 g or greater) but is not accessible during power operation shall be restored to OPERABLE status and a CHANNEL CALIBRATION performed the next time the plant enters MODE 3 or below. A supplemental report shall then be prepared and submitted to the Commission within 10 days pursuant to Specification 6.9.2 describing the additional data from these instruments.~~

TABLE 3-3-7

SEISMIC MONITORING INSTRUMENTATION

<u>INSTRUMENTS AND SENSOR LOCATIONS</u>	<u>MEASUREMENT RANGE</u>	<u>MINIMUM INSTRUMENTS OPERABLE</u>
1- Triaxial Time History Accelerograph System		
a- Accelerometer (YT SM 6000) Adjacent to RB -35 ft MSL	0.02-1.0 g	1
b- Accelerometer (YT SM 6001) RB +46 ft MSL	0.02-1.0 g	1
c- Accelerometer (YT SM 6002) Free Field Yard Area	0.02-1.0 g	1
d- Starter Unit (YS SM 6000) Adjacent to RB -35 ft MSL	0.01-0.02 g	1
e- Starter Unit (YS SM 6001) RB +51 ft MSL	0.01-0.02 g	1
f- Recorder (YR SM 6000) Control Room RAB +46 ft MSL	0.02-1.0 g	1
g- Control Unit (YZ SM 6000) Control Room RAB +46 ft MSL	0.02-1.0 g	1*
h- Playback Unit (YR SM 6001) Control Room RAB +46 ft MSL	0.02-1.0 g	1
2- Triaxial Peak Accelerographs		
a- YR SM 6020 RB +56 ft MSL	0-2 g	1
b- YR SM 6021 RB 23 ft MSL	0-2 g	1
c- YR SM 6022 RAB +21 ft MSL	0-2 g	1
3- Triaxial Seismic Switches		
a- Seismic Switch (YS SM 6060) RB -35 ft MSL	0.1-0.25 g	1
b- Control Unit (YZ SM 6060) Control Room RAB +46 ft MSL	0.1-0.25 g	1*
4- Triaxial Response Spectrum Recorders		
a- YR SM 6040 RB +10 ft MSL	1-32 Hz, 0-2 g	1
b- YR SM 6041 RAB -35 ft MSL	1-32 Hz, 0-2 g	1
c- YR SM 6042 RAB +21 ft MSL	1-32 Hz, 0-2 g	1
d- Peak Shock Annunciator (YR SM 6045) RB -35 ft MSL	1-32 Hz, 0-2 g	1
e- Peak Shock Annunciator Control Unit (YZ SM 6045) Control Room RAB +46 ft MSL	1-32 Hz, 0-2 g	1

*With reactor control room annunciation.

TABLE 4-3-4
SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENTS AND SENSOR LOCATIONS</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>
1- Triaxial Time History Accelerograph System			
a- Accelerometer (YT SM 6000) Adjacent to RB -35 ft MSL	N.A.	R	SA
b- Accelerometer (YT SM 6001) RB +46 ft MSL	N.A.	R	SA
c- Accelerometer (YT SM 6002) Free Field Yard Area	N.A.	R	SA
d- Starter Unit (YS SM 6000) Adjacent to RB -35 ft MSL	M	R	SA
e- Starter Unit (YS SM 6001) RB +51 ft MSL	M	R	SA
f- Recorder (YR SM 6000) Control Room RAB +46 ft MSL	M	R	SA
g- Control Unit (YZ SM 6000) Control Room RAB +46 ft MSL	M	R	SA*
h- Playback Unit (YR SM 6001) Control Room RAB +46 ft MSL	N.A.	R	SA
2- Triaxial Peak Accelerographs			
a- YR SM 6020 RB +56 ft MSL	N.A.	R	N.A.
b- YR SM 6021 RB -23 ft MSL	N.A.	R	N.A.
c- YR SM 6022 RAB +21 ft MSL	N.A.	R	N.A.
3- Triaxial Seismic Switches			
a- Seismic Switch YS SM 6060 RB -35 ft MSL	M	R	SA
b- Control Unit YZ SM 6060 Control Room RAB +46 ft MSL	M	R	SA*
4- Triaxial Response Spectrum Recorders			
a- YR SM 6040 RB +10 ft MSL	N.A.	R	N.A.
b- YR SM 6041 RAB -35 ft MSL	N.A.	R	N.A.
c- YR SM 6042 RAB +21 ft MSL	N.A.	R	N.A.
d- Peak Shock Annunciator YR SM 6045 RB -35 ft MSL	N.A.	R	N.A.
e- Peak Shock Annunciator Control Unit YZ SM 6045 Control Room RAB +46 ft MSL	N.A.	R	SA

*With reactor control room annunciation.

INSTRUMENTATION

METEOROLOGICAL INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

~~3.3.3.4 The meteorological monitoring instrumentation channels shown in Table 3.3.8 shall be OPERABLE.~~

~~APPLICABILITY: At all times.~~

ACTION:

- ~~a. With one or more required meteorological monitoring channels inoperable for more than 7 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status.~~
- ~~b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.~~

SURVEILLANCE REQUIREMENTS

~~4.3.3.4 Each of the above meteorological monitoring instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.5.~~

TABLE 3-3-8

METEOROLOGICAL MONITORING INSTRUMENTATION

<u>INSTRUMENT*</u>	<u>LOCATION</u> <u>(Nominal Elevation)</u>	<u>MINIMUM</u> <u>INSTRUMENTS</u> <u>OPERABLE</u>
1- WIND SPEED		
a- Primary	33 ft (10 m)	1 (a or b)
b- Secondary	33 ft (10 m)	
c- Primary	199 ft (60 m)	1
2- WIND DIRECTION (SIGMA THETA)**		
a- Primary	33 ft (10 m)	1 (a or b)
b- Secondary	33 ft (10 m)	
c- Primary	199 ft (60 m)	1
3- TEMPERATURE DIFFERENCE		
a- Primary	33 ft — 199 ft (10 m — 60 m)	1 (a, b, or c)
b- Secondary	33 ft — 199 ft (10 m — 60 m)	
c- Primary	33 ft — 199 ft (10 m — 60 m)	

~~*Primary, Secondary — Refers to the tower on which instrument is located. see Specification 5.5.~~

~~**Derived from instantaneous wind direction measurements.~~

TABLE 4.3.5

METEOROLOGICAL MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT*</u>	<u>LOCATION</u> <u>(Nominal Elevation)</u>	<u>CHANNEL</u> <u>CHECK</u>	<u>CHANNEL</u> <u>CALIBRATION</u>
1- WIND SPEED			
a- Primary	33 ft (10 m)	D	SA
b- Secondary	33 ft (10 m)	D	SA
c- Primary	199 ft (60 m)	D	SA
2- WIND DIRECTION (SIGMA THETA)**			
a- Primary	33 ft (10 m)	D	SA
b- Secondary	33 ft (10 m)	D	SA
c- Primary	199 ft (60 m)	D	SA
3- TEMPERATURE DIFFERENCE			
a- Primary	33 ft — 199 ft (10 m — 60 m)	D	SA
b- Secondary	33 ft — 199 ft (10 m — 60 m)	D	SA
c- Primary	33 ft — 199 ft (10 m — 60 m)	D	SA

~~*Primary, Secondary — Refers to the tower on which instrument is located, see Specification 5.5.~~

~~**Derived from instantaneous wind direction measurements.~~

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THROUGH
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NOT USED

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INSTRUMENTATION

BASES

areas served by the individual channels; (2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded; and (3) sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," December 1980 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

3/4.3.3.2 INCORE DETECTORS

The OPERABILITY of the incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core.

3/4.3.3.3 SEISMIC INSTRUMENTATION THIS SECTION HAS BEEN DELETED

~~The OPERABILITY of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility to determine if plant shutdown is required pursuant to Appendix "A" of 10 CFR Part 100. The instrumentation is consistent with the recommendations of Regulatory Guide 1.12, "Instrumentation for Earthquakes," April 1974.~~

3/4.3.3.4 METEOROLOGICAL INSTRUMENTATION THIS SECTION HAS BEEN DELETED

~~The OPERABILITY of the meteorological instrumentation ensures that sufficient meteorological data are available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public and is consistent with the recommendations of Regulatory Guide 1.23 "Onsite Meteorological Programs," February 1972.~~

3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criterion 19 of 10 CFR Part 50.