ATTACHMENT 2

LIMERICK GENERATING STATION

UNITS 1 AND 2

DOCKET NOS. 50-352
50-353

LICENSE NOS. NPF-39
NPF-85

TECHNICAL SPECIFICATIONS CHANGE REQUEST

NO. 93-16-0

AFFECTED PAGES

UNIT 1	UNIT 2
ix	ix
xix	xix
3/4 3-68	3/4 3-68
3/4 3-69 (Deleted)	3/4 3-69 (Deleted)
3/4 3-70 (Deleted)	3/4 3-70 (Deleted)
3/4 3-71 (Deleted)	3/4 3-71 (Deleted)
3/4 3-72 (Deleted)	3/4 3-72 (Deleted)
B 3/4 3-5	B 3/4 3-5

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

BASES

Section 3.3.7.2 (Deleted)

THE INFORMATION FROM THIS TECHNICAL SPECIFICATIONS SECTION HAS BEEN RELOCATED TO THE UFSAR. TECHNICAL SPECIFICATIONS PAGES 3/4 3-69 THROUGH 3/4 3-72 OF THIS SECTION HAVE BEEN INTENTIONALLY OMITTED.

3/4.3.7.2 (Deleted) - INFORMATION FROM THIS SECTION RELOCATED TO THE UFSAR.

3/4.3.7.3 (Deleted) - INFORMATION FROM THIS SECTION RELOCATED TO THE ODCM.

3/4.3.7.4 REMOTE SHUTDOWN SYSTEM INSTRUMENTATION AND CONTROLS

The OPERABILITY of the remote shutdown system instrumentation and controls ensures that sufficient capability is available to permit shutdown and maintenance of HOT SHUTDOWN of the unit 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, Appendix A.

3/4.3.7.5 ACCIDENT MONITORING INSTRUMENTATION

The OPERABILITY of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess important 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 Conditions During and Following an Accident," December 1975 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

3/4.3.7.6 SOURCE RANGE MONITORS

The source range monitors provide the operator with information of the status of the neutron level in the core at very low power levels during startup and shutdown. At these power levels, reactivity additions shall not be made without this flux level information available to the operator. When the intermediate range monitors are on scale, adequate information is available without the SRMs and they can be retracted.

3/4.3.7.7 TRAVERSING IN-CORE PROBE SYSTEM

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

The TIP system OPERABILITY is demonstrated by normalizing all probes (i.e., detectors) prior to performing an LPRM calibration function. Monitoring core thermal limits may involve utilizing individual detectors to monitor selected areas of the reactor core, thus all detectors may not be required to be OPERABLE. The OPERABILITY of individual detectors to be used for monitoring is demonstrated by comparing the detector(s) output in the resultant heat balance calculation (P-1) with data obtained during a previous heat balance calculation (P-1).

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

BASES

Section 3.3.7.2 (Deleted)

THE INFORMATION FROM THIS TECHNICAL SPECIFICATIONS SECTION HAS BEEN RELOCATED TO THE UFSAR. TECHNICAL SPECIFICATIONS PAGES 3/4 3-69 THROUGH 3/4 3-72 OF THIS SECTION HAVE BEEN INTENTIONALLY OMITTED.

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3/4.3.7.4 REMOTE SHUTDOWN SYSTEM INSTRUMENTATION AND CONTROLS

The OPERABILITY of the remote shutdown system instrumentation and controls ensures that sufficient capability is available to permit shutdown and maintenance of HOT SHUTDOWN of the unit 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, Appendix A. The Unit 1 RHR transfer switches are included only due to their potential impact on the RHRSW system, which is common to both units.

3/4.3.7.5 ACCIDENT MONITORING INSTRUMENTATION

The OPERABILITY of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess important 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 Conditions During and Following an Accident," December 1975 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

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ATTACHMENT 3

LIMERICK GENERATING STATION

UNITS 1 AND 2

DOCKET NOS. 50-352
50-353

LICENSE NOS. NPF-39
NPF-85

UPDATED FINAL SAFETY ANALYSIS REPORT
PROPOSED CHANGES ASSOCIATED WITH
TECHNICAL SPECIFICATIONS CHANGE
REQUEST NO. 93-16-0

FOR INFORMATION ONLY

3.7.3.14 Seismic Analysis for Reactor Internals (NSSS)

The modeling of RPV internals is discussed in Section 3.7.2.3.1.2. The damping values are given in Table 3.7-1.

3.7.3.15 Analysis Procedures for Damping

3.7.3.15.1 Analysis Procedures for Damping (NSSS)

Analysis procedures for damping are discussed in Section 3.7.2.15.1.

3.7.3.15.2 Analysis Procedure for Damping (Non-NSSS)

If the equipment damping is unknown, the response spectrum curve for 0.5% damping is used to arrive at a conservative seismic loading. The damping values used for the OBE are increased for the SSE, where sufficient justification is established.

3.7.4 SEISMIC INSTRUMENTATION

3.7.4.1 Comparison with Regulatory Guide 1.12 (Rev 1)

The seismic instrumentation program complies with Regulatory Guide 1.12 (Rev 1), except for the items listed below:

ADD

Response spectrum recorders are not supplied as discrete instruments. A response spectrum analyzer, permanently installed in the control room, presents more complete information than that presented by response spectrum recorders. Recorded data from the triaxial time history accelerographs are fed into the response spectrum analyzer to produce earthquake spectra immediately following an earthquake. All locations where response spectrum recorders are required by the regulatory guide are monitored by time history accelerographs. This system achieves the intent of Regulatory Guide 1.12 (Rev 1).

INSERT A

3.7.4.2 Location and Description of Instrumentation

The following instrumentation is provided for Unit 1 only, as essentially the same response is expected at Unit 2.

a. Six triaxial time history accelerographs

b. Three triaxial peak recording accelerographs

c. One triaxial seismic switch

DELETE

CHANGE

d. One triaxial seismic trigger

b. e. One response spectrum analyzer

c. f. A system control panel which includes seismic event visual and audible annunciators

d. g. Digital CHANGE Cassette recorders and a playback unit

h. One uniaxial seismic trigger

All instrument characteristics meet the requirements of section 5 of ANSI N18.5 (1974).

INSERT D

3.7.4.2.3 Triaxial Time History Accelerographs

Triaxial time history accelerographs (T/A) produce a record of the time-varying acceleration at the sensor location. These data are used directly for analysis and comparison with reference information, and may be converted to response spectra form for spectral comparisons with design parameters.

Each T/A contains three accelerometers mounted in a mutually orthogonal array. All T/As have their principal axes oriented identically, with one horizontal axis parallel to the major horizontal axis assumed in the seismic analysis. T/As are located as follows: Shown in Table 3.7-28

CHANGE

a. Primary containment foundation

b. Containment structure (diaphragm slab) DELETE

c. Reactor enclosure foundation

d. Reactor piping support (in containment)

e. Outside containment on seismic Category I equipment (RHR heat exchanger in reactor enclosure)

DELETE

f. Foundation of an independent seismic Category I structure (spray pond pump structure)

A triaxial seismic trigger (S/T), sensitive in north, south, and vertical directions, is provided to start the T/A sensors recording system. The S/T is shared by items a. through f. above. A magnetic tape recording system located in the control room is provided for multiple channel recording of the signals from the T/As mounted on

A

ADD

CHANGE TO shown in Table 3.7-28, items a. through f.

DELETE

A uniaxial seismic trigger (S/TV), sensitive in the vertical direction only, is provided to start the T/A sensor recording system located in the pumphouse. This S/TV is provided for item g. only. A separate (locally mounted) recorder is provided for the T/A mounted on item g. A single playback unit is located in the control room for playback of the tapes from all of the recorders.

INSERT B

3.7.4.2.2 Triaxial Peak Recording Accelerographs (P/AS)

DELETED

Triaxial peak recording accelerograph (P/A) are provided to record the actual peak response. Each sensing device contains three accelerographs mounted in a mutually orthogonal array. Data from the peak recording accelerographs are manually retrieved following an earthquake. P/As are located as follows:

CHANGE TO

a. Primary containment - on reactor vessel equipment

b. Primary containment - on reactor piping

c. Outside of containment - on seismic Category I equipment (top of RNR heat exchanger piping in reactor enclosure)

3.7.4.2.3 Triaxial Seismic Switch

DELETED CHANGE TO

One triaxial seismic switch is installed on the primary containment foundation. It activates visual and audible annunciators in the control room if an OBE input acceleration level has been exceeded.

3.7.4.2.4 Response Spectrum Analyzer

The response spectrum analyzer is an electronic device which generates a peak acceleration versus frequency curve from a time-based complex waveform. The analyzer receives data from the T/A playback unit and computes the spectra. These can be compared with the spectra generated from the mathematical model and used to make timely operating decisions.

3.7.4.2.5 System Control Panel

A panel located in the control room houses the recording, playback, and spectrum analysis units which are used in conjunction with the T/A sensors to produce a time history and frequency-amplitude record of the seismic event. The panel also contains signal conditioning and display equipment associated with the response spectrum analyzer, audible and visual annunciators associated with activation of the seismic switch, and the system power supply unit.

DELETE

Ground Motion greater than 0.005g — CHANGE TO

3.7.4.3 Control Room Operator Notification

Activation of the S/T (Section 3.7.4.2.1) causes an audible and visual annunciation in the control room to alert the plant operator that the T/A recording system has been activated. The setpoint of the trigger will be at horizontal or vertical acceleration levels slightly higher than the expected background level, including induced vibration from sources such as traffic, elevators, people, and machinery. These initial setpoints may be changed once significant plant operating data have been obtained which indicate that a different setpoint would provide better system operation.

DELETE

The seismic switch is connected to audible and visual annunciators in the control room and will indicate if the OBE acceleration has been exceeded.

Activation of the S/TV will initiate the → The — ADD pumphouse time history accelerograph to operate and latch its event indicator. However, it does not cause any audible or visual annunciation in the control room. The setpoint of the S/TV will be at a vertical acceleration level slightly higher than the expected background level.

will operate independently — ADD

The peak acceleration level experienced on the containment base slab is available immediately following a seismic event. The level is obtained by playing back the recorded T/A data from the base slab location and reading the peak value from a chart recorder or the spectrum analyzer.

Significant response spectra from the containment base slab are available in the control room immediately following a seismic event. These will be on readout equipment suitable for comparing the measured response spectra with the OBE and SSE response spectra.

3.7.4.4 Comparison of Measured and Predicted Responses

Initial determination of the seismic event level is performed immediately after the event by comparing the measured response spectra from the containment base slab with the calculated OBE and SSE response spectra for the corresponding location. An outline of the order of actions to be taken after a seismic event is provided in Figure 3.7-44.

INSERT C

3.7.5 REFERENCES

3.7-1 N.C. Tsai, "Spectrum Compatible Motions for Design Purposes", Journal of Engineering Mechanics Division, ASCE, Vol. 98, No. EM2, Proc. Paper 8807, pp. 345-356 (April 1972).

CHANGE TO

Ground motion at the containment foundation greater than 0.15g horizontal or 0.10g vertical will activate an audible and visible alarm in the control room.

INSERT A

Triaxial peak recording accelerographs are not supplied as discrete instruments. The purpose of these accelerographs is to give an indication of seismic accelerations experienced by the plant in the event of power failure in the recording system. The availability of uninterruptible power supplies (UPS), the limited information available from the peak accelerographs and the difficulty of retrieving data from the peak accelerographs (two were located in the primary containment) made the peak accelerographs unnecessary. The system with UPS will perform the same functions as the triaxial peak recording accelerographs.

INSERT B

A self contained T/A sensor recording system is located in the Spray Pond Pumphouse. This T/A is not connected to the Control Room equipment. A separate portable computer is available to retrieve recorded data and transport to the Control Room. A single playback unit is located in the Control Room for playback of any of the recorder data.

INSERT C

3.7.4.5 Controls

Applicability: The seismic monitoring instrumentation shall be operable at all times. This instrumentation is considered operable when it is capable of performing its specified functions and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its functions are also capable of performing their related support functions.

Actions

With one or more of the seismic monitoring instruments inoperable for more than 30 days, a Special Report shall be prepared and submitted to the Nuclear Regulatory Commission pursuant to Specification 6.9.2 of the Technical Specifications within the next ten days outlining the cause of the malfunction and the plans for restoring the instrument(s) to operable status.

The provisions of Specification 3.0.3 of Technical Specifications are not applicable.

3.7.4.6 Surveillance Requirements

Each of the seismic monitoring instruments shall be demonstrated operable by the performance of the channel check, channel functional test and channel calibration at the frequencies shown and defined in Table 3.7-29.

Each of the seismic monitoring instruments which is accessible during power operation and which is actuated during a seismic event greater than or equal to 0.01g, and which does not self-reset, shall be restored to operable status within 24 hours and a channel calibration performed

reset, shall be restored to operable status within 24 hours and a channel calibration performed within 5 days following the seismic event. Data shall be retrieved from the actuated instruments and analyzed to determine the magnitude of the vibratory ground motion. A Special Report shall be prepared and submitted to the Nuclear Regulatory Commission pursuant to Specification 6.9.2 of the Technical Specifications within ten days describing the magnitude, frequency spectrum and resultant effect upon unit features important to safety.

INSERT D

The operability of the seismic monitoring 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 unit.

TABLE 3.7-28

SEISMIC MONITORING INSTRUMENTATION

INSTRUMENTS AND SENSOR LOCATIONS	MEASUREMENT RANGE	MINIMUM INSTRUMENTS OPERABLE
1. Triaxial Time-History Accelerographs (T/A's)		
a. Sensors		
1) XE-VA-102 Primary Containment Foundation (Loc. 109-R15-177)	0 to 1 g	1
2) XE-VA-103 Containment Structure (Diaphragm Slab)	0 to 1 g	1
3) XE-VA-104 Reactor Enclosure Foundation (Loc. 111-R11-177)	0 to 1 g	1
4) XE-VA-105 Reactor Piping Support (Mn. Stm. Line 'D', El 313', in containment)	0 to 1 g	1
5) XE-VA-106 Outside Containment on Seismic Category I Equipment (RHR Heat Exchanger, Loc. 102-R15-177)	0 to 1 g	1
6) XRSH-VA-107* Foundation of an Independent Seismic Category I Structure (Spray Pond Pump House, El 237')	0 to 1 g	1
b. Recorders (Panel 00C693)		
1) XR-VA-102 for XE-VA-102	N.A.	1
2) XR-VA-103 for XE-VA-103	N.A.	1
3) XR-VA-104 for XE-VA-104	N.A.	1
4) XR-VA-105 for XE-VA-105	N.A.	1
5) XR-VA-106 for XE-VA-106	N.A.	1
2. Triaxial Response Spectrum Analyzer (RSA); (Loc. Control Room)	1-33.5 Hz	1 **

*Includes sensor, trigger, recorder, and backup power supply.

**With reactor control room indication and annunciation.

Receives signal from playback unit fed with data from the Triaxial Accelerographs

TABLE 3.7-29

SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENTS AND SENSOR LOCATIONS	CHANNEL CHECK**	CHANNEL FUNCTIONAL TEST**	CHANNEL CALIBRATION***
1. Triaxial Time-History Accelerographs (T/A's)			
a. Sensors			
1) XE-VA-102 Primary Containment Foundation (Loc. 109-R15-177)	N.A.	SA	R
2) XE-VA-103 Containment Structure (Diaphragm Slab)	N.A.	SA	R
3) XE-VA-104 Reactor Enclosure Foundation (Loc. 111-R11-177)	N.A.	SA	R
4) XE-VA-105 Reactor Piping Support (Mn. Stm. Line 'D,' El 313', in containment)	N.A.	SA	R
5) XE-VA-106 Outside Containment on Seismic Category I Equipment, (RHR Heat Exchanger, Loc. 102-R15-177)	N.A.	SA	R
6) XRSH-VA-107* Foundation of an Independent Seismic Category I Structure (Spray Pond Pump House, El 237')	N.A.	SA	R
b. Recorders (Panel 00C693)			
1) XR-VA-102 for XE-VA-102	N.A.	SA	R
2) XR-VA-103 for XE-VA-103	N.A.	SA	R
3) XR-VA-104 for XE-VA-104	N.A.	SA	R
4) XR-VA-105 for XE-VA-105	N.A.	SA	R
5) XR-VA-106 for XE-VA-106	N.A.	SA	R
4. Triaxial Response Spectrum Analyzer (RSA)	N.A.	SA	R

*Includes sensor, trigger, recorder, and backup power supply.

INSERT E

INSERT E

**channel check - the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

***channel functional test - shall be:

a) analog channels - the injection of a simulated signal into the channel as close to the sensor as practical to verify operability including alarm and/or trip functions and channel failure trips.

b) bistable channels - the injection of a simulated signal into the sensor to verify operability including alarm and/or trip functions.

The channel functional test may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is tested.

****channel calibration - the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The channel calibration shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the channel functional test. The channel calibration may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

Surveillance Frequency Notation

Notation	Frequency
N.A.	Not applicable
SA	At least once per 184 days
R	At least once per 18 months (550 days)