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May 2, 1984

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket Nos.: 50-352
50-353

Subject: Limerick Generating Station, Units 1&2
Information for Quality Assurance
Branch (QAB) Concerning SER Open Issue
#22 (Q-List)

Reference: Telecon between J. Spraul (NRC/QAB) and
J. Arhar (PECO) on 4/18/84.

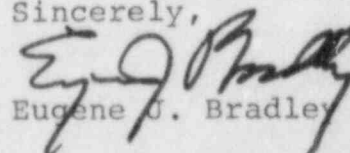
File: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

Attached are draft changes to responses to Questions 260.56 and 260.57 and to FSAR Table 3.2-1 which are being made as a result of the referenced telecon. We trust that this information will assist you in the closeout of SER Open Issue No. 22

The information contained on these draft FSAR changes will be incorporated into the FSAR, exactly as it appears on the attachments, in the revision scheduled for May 1984.

Sincerely,


Eugene J. Bradley

JHA/gra/0419841125

Attachment

cc: See Attached Service List

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RESPONSE

The Limerick Quality Control Program is described in Chapter 17. FSAR Table 3.2-1 (Limerick Design Criteria Summary) is intended, in part, to provide identification of safety-related structures, systems and components as required by Section 17.1.2.2 of the standard format (Regulatory Guide 1.70). Such items are identified in Table 3.2-1 as "Q-List." The Limerick Project Q-List is not part of the FSAR; it is a controlled QA Program document that serves to identify structures, systems and components requiring compliance with Appendix B to 10 CFR Part 50. The Limerick QA Manual and its implementing procedures prescribe the preparation and maintenance of the Project Q-List and define the quality assurance controls that are to be applied to items listed therein.

The information requested for each item identified in Question 260.56, as each applies to Limerick, is provided as follows:

- a.1 The reactor internal structures, other, is listed in Table 3.2-1, Item I.A.6. These ~~non-safety~~ structures include the steam dryer, shroud head and steam separator assembly, in-core guide tubes and in-core guide tube stabilizers, differential pressure and liquid control lines inside RPV, fuel orifices, and feedwater spargers. This is consistent among all BWR 4/5/6 designs. These structures ~~are not Q-listed because they~~ are neither required for safe shutdown of the plant nor will their failure jeopardize the safety function of other safety-related reactor internals. ~~Because the aforementioned components are not safety-related, they are not under 10CFR50 Appendix B.~~

INSERT

(A)

ARE NOT Q-LISTED, AND

INSERT (B)

During the operations phase, the same design and construction control practices will be applied as were used during the design and construction period. These controls will provide assurance that any changes to the reactor internals will be of the same high quality as the original work.

INSERT (C)

- a.2 The Scram Discharge volume of the CRD hydraulic system is listed in Table 3.2-1, Item I.C.3 and is Q-listed as indicated.

- a.3 The biological (primary) shield is Q-listed and is listed in Item XII.B.7 of Table 3.2-1.

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INSERTS TO PAGE 260.56-5

- ① THE DIFFERENTIAL PRESSURE AND LIQUID CONTROL LINES INSIDE THE RPV WHICH FORM PART OF THE REACTOR COOLANT PRESSURE BOUNDARY ARE Q-LISTED. WITH THE EXCEPTION OF THESE LINES, ...
- ② THE FOLLOWING CHANGES TO TABLE 3.2-1 HAVE BEEN MADE TO REFLECT THE ABOVE INFORMATION: THE Q-LIST STATUS OF REACTOR INTERNALS, OTHER, HAS BEEN CLARIFIED AND NOTE (G) HAS BEEN ADDED.
- ③ IN ADDITION, WITH THE EXCEPTION OF THE DIFFERENTIAL PRESSURE AND LIQUID CONTROL LINES INSIDE THE RPV WHICH ARE INACCESSIBLE, THE COMPONENTS WILL BE INSPECTED AS PART OF THE INSERVICE INSPECTION (ISI) PROGRAM. THE ISI PROGRAM IS INCLUDED IN THE OPERATIONS PHASE OF THE QUALITY ASSURANCE PLAN.

- b.2.II.B Table 3.2-1 has been changed to include the Q-listed drywell and suppression chamber spray nozzles.
- b.2.X.E.2 Conduit and cable trays and their supports containing Class 1E cables and those whose failure may damage other safety-related items are Q-listed as indicated in Table 3.2-1, Item X.E.2.
- b.2.X.E.3 Emergency lighting batteries are not Q-listed because they perform no safety function.
- b.2.X.E.4 Emergency lighting systems are not Q-listed because they perform no safety function. The safe shutdown of the plant does not depend on the functioning of the emergency lighting system. However, the control room emergency ac lighting is powered from a Class 1E source and the fixtures are seismically mounted. The raceways from the Class 1E source to the control room emergency ac lighting fixtures are routed in a seismic Category I structure and are seismically supported.

The Class 1E portion of the power source for the ac emergency lighting system was procured and installed to all of the pertinent requirements of 10CFR50, Appendix B. The failure of the remainder of the emergency lighting system is of no consequence because all actions required to attain safe shutdown for design basis events take place in the control room. NOTE 63 TO FSAR TABLE 3.2-1 HAS BEEN ADDED TO DESCRIBE THE APPLICABILITY OF 10CFR50, APPENDIX B TO THE CONTROL ROOM EMERGENCY LIGHTING. During the operations phase, the emergency lighting system will be maintained in good condition as required to perform its intended function. In the event that rework is required, the same design and construction controls will be applied as were used during the construction period. These controls will provide assurance that any change to the emergency lighting system will be of the same high quality as the original work.

④ FSAR SECTION 9.5.3.4 PROVIDES THE INSPECTION AND TESTING REQUIREMENTS FOR EMERGENCY LIGHTING SYSTEMS.

- b.2.X.E.7 Electrical inverters are not Q-listed because they do not supply power to safety-related loads. This is indicated in Table 3.2-1, Item X.E.7.

times. The lighting system provides lighting at all times in areas used during reactor shutdown or emergency.

During normal plant operation, all plant lighting systems are energized from the respective unit auxiliary buses and startup buses. In the event of ac power loss from both unit auxiliary and startup buses, the normal lighting system is inoperable. The emergency lighting system, however, remains operable, being energized from the safeguard buses. The emergency lighting system is provided with the capability for full functional tests to ensure the operability of the automatic switches and other components of the system. In the event of ac power loss from both unit auxiliary and startup buses, the standby diesel generators start and energize the respective Class 1E buses within 10 seconds. During the 10-second delay (diesel startup time) the dc emergency lighting system remains energized from the station 125V dc battery supplies. This system design ensures continuity of illumination in all indoor and essential operating areas including all emergency access and exit routes. All emergency ac lighting is automatically isolated from the Class 1E buses on receipt of a LOCA signal.

9.5.3.4 Inspection and Testing Requirements

The lighting systems are preoperationally tested. System operability is demonstrated by use during normal plant operation.

A routine test will be written to simulate loss of offsite ac power to the emergency ac-dc lighting automatic transfer switches. Visual inspection of the lighting system will indicate whether the transfer switches have operated properly. This routine test will be performed twice a year consistent with available manpower and plant conditions.

9.5.4 DIESEL GENERATOR FUEL OIL SYSTEM

The diesel generator fuel oil system provides onsite storage and delivery of fuel oil for at least seven days of continuous operation to all diesel generators with the diesels operating at their full rated load. The diesel generator fuel oil system is a safety-related system.

9.5.4.1 Design Bases

The diesel generator fuel oil system design bases are as follows:

- a. To provide onsite storage of fuel oil for the diesel generators for at least seven days of continuous operation and to allow for subsequent refilling

DRAFTQUESTION 260.57 (Section 3.2-1)

Section 3.2-1 of the Limerick FSAR states that items which extend beyond a seismic restraint "to the first point in the system which can be treated as an anchor to the plant structure ... are not included in the 'Q' List." Justify or eliminate this practice.

RESPONSE

Those structures, components, and systems necessary to ensure:

- a. the integrity of the reactor coolant pressure boundary (RCPB),
- b. the capability to shut down the reactor and maintain it in a safe shutdown condition,
- c. the capability to prevent, or mitigate the consequences of, accidents that could result in potential offsite exposures comparable to the guideline exposures of 10CFR100

are classified as Q-listed and are in accordance with the quality assurance requirements of 10CFR50, Appendix B. The Q-listed boundaries for piping systems terminate at the outermost containment or system isolation valve. The piping downstream of this boundary is not required to ensure items a, b, or c above and is therefore not required to be Q-listed. However, in order that failure of the non-Q-listed piping not affect the Q-listed piping or the isolation valves, the non-Q-listed piping is designed to seismic Category I requirements up to and including the first point in the system that can be treated as an anchor to the plant structure except as indicated in part c of the discussion on Regulatory Guide 1.29 in Section 3.2.1. Stress analysis, support design, and design control for this non-Q-listed piping, classified as seismic Category IIA, is carried out in the same manner as it is for Q-items.

The pertinent quality assurance requirements of 10CFR50, Appendix B, are considered to be adequately met for the seismic Category IIA piping as indicated in Section 3.2.1, part d.

The design control and construction control practices that were used during the design and construction phase will also be applied during the operations phase to ensure that the same stringent requirements are maintained for any changes to seismic Category IIA piping. IN ADDITION, SEISMIC CATEGORY IIA PIPING AND SUPPORTS WILL BE INSPECTED AS PART OF THE INSERVICE INSPECTION (ISI) PROGRAM. THE ISI PROGRAM IS INCLUDED IN THE OPERATIONS PHASE OF THE QUALITY ASSURANCE PLAN.

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LGS FSAP

TABLE 3.2-1

(Page 1 of 36)

LGS DESIGN CRITERIA SUMMARY

SYSTEM/COMPONENT (40)	FSAP SECTION	SOURCE OF SUPPLY [1]*	LOCA- TION [2]*	QUALITY GROUP CLASSI- FICATION [3]*	PRINCIPAL CODES AND STANDARDS [4]*	SEISMIC CATEGORY [5]*	Q- LIST [6]*	COMMENTS
I NSSS								
A. Reactor System	4,5							
1. Reactor vessel	GE	C	A	III-1	I	Y	[7]	
2. Reactor vessel support skirt	GE	C	-	III-1	I	Y	[49]	
3. Reactor vessel appurtenances, pressure retaining portions	GE	C	A	III-1	I	Y		
4. CRD (control rod drive) housing supports	GE	C	-	MF STD	I	Y	[50]	
5. Reactor internals, engineered safety features	GE	C	-	MF STD	I	Y		
6. Reactor internals, other	GE	C	-	MF STD	II	Y/N	[8],[62]	
7. Control rods	GE	C	-	MF STD	I	Y		
8. Core support structure	GE	C	-	MF STD	I	Y		
9. Power range detector hardware	GE	C	B	III-2	I	Y		
10. Fuel assemblies	GE	C	-	MF STD	I	Y		
B. Nuclear Boiler System	4,5							
1. Vessels, level instrumentation condensing chambers	GE	C	A	III-1	I	Y	[9]	
2. Vessels, air accumulators	P	C	C	III-3	I	Y		
3. Piping, relief valve discharge	P	C	C	III-3	I	Y	[48]	
4. Piping and valves, reactor coolant pressure boundary (RCPB)	GE/P	C,R	A	III-1	I	Y	[7][9][48]	
5. Mechanical components, instrumentation with safety function	GE	C	B	MF STD	I	Y	[11]	
6. Electrical modules, with safety function	GE	C,R,CS	-	IEEE-323, 344	I	Y	[11],[12]	
7. Quenchers and quencher supports	P	C	C	III-3	I	Y		
C. CRD Hydraulic System	4.6.1							
1. Control rod drives	GE	C	-	III-1	I	Y	Class 1	
2. Hydraulic control unit including scram accumulators	GE	R	-	MF STD	I	Y	Appurtenance [18]	

* Refer to Notes at the end of this table.

Rev. 20/05/83

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LGS FSAR

TABLE 3.2-1 (Cont'd)

(Page 19 of 38)

SYSTEM/COMPONENT [40]	FSAR SECTION	SOURCE OF SUPPLY [1]*	LOCA- TION [2]*	QUALITY GROUP CLASSI- FICATION [3]*	PRINCIPAL CODES AND STANDARDS [4]*	SEISMIC CATEGORY [5]*	Q- LIST [6]*	COMMENTS
					323, 344			
B. <u>Engineered Safety Features DC Equipment</u>	8.3							
1. 125 V and 125 V/250 V station batteries and racks, battery chargers	P	CS	-	IEEE-308, 323, 344	I	Y	[45]	
2. Motor control center and distribution panels, including protective relays	P	CS, R, G	-	IEEE-308, 323, 344	I	Y	[43] [45]	
C. <u>120 V Vital AC System Equipment</u>	8.3							
1. 120 V distribution panels	P	CS	-	IEEE-308, 323, 344	I	Y	[43] [45]	
D. <u>Electric Cables for Safety-related Equipment</u>	8.3							
1. 5 kV power cables	P	ALL	-	IEEE-279, 308, 323, 383	-	Y	[12] [45]	
2. 600 V power cables, including all dc power cables	P	ALL	-	IEEE-279, 308, 323, 383	-	Y	[12] [45]	
3. Control and instrumentation cables	P/GE	ALL	-	IEEE-279, 308, 323, 383	-	Y	[12] [45]	
E. <u>Miscellaneous Electrical</u>	8.3.9.5 - 8.3 AND 9.5							
1. Primary containment enclosure electrical penetration assemblies	P	C	-	IEEE-317, 344, 383/III-MC	I	Y	[45]	
2. Raceway systems, safety-related	P	ALL	-	IEEE-344	I	Y	[41] [45]	
3. Emergency lighting batteries	P	ALL	-	MF STD	II	N		
4. Emergency lighting systems	P	ALL	-	MF STD	II	N	[63]	
5. Emergency communications systems	P	ALL	-	MF STD	II	N		
6. Motors, non-safety related	P	ALL	-	NEMA-MG-I	II	N		
7. Inverters	P	ALL	-	MF STD	II	N	[42]	
8. Valve operators	-	-	-	-	-	-	[40]	
F. <u>Offsite Power Systems</u>	8.1	P	-	-	MF STD	II	N	

Rev. 15, 12/82

- (51) Equipment is qualified in accordance with the conformance statements made in Section 7.6.
- (52) The original design and installation was to ASME Section III, Class 3.
- (53) The basis for classification of non-ASME Section III equipment as Quality Group C is given in Section 3.2.2.e.
- (54) The basis for classification of non-ASME Section III equipment as Quality Group C is given in Section 3.2.2.h.
- (55) Short welded sections of ANSI B31.1 piping in the turbine stop valve seat drains, stop valve leakoffs, governing valve leakoffs, casing drains, ring drains, chest drains, and turbine shaft seal leakoffs that cannot be hydrotested will be in-service tested to ANSI B31.1 requirements and the welds will be surface examined.
- (56) The basis for classification of non-ASME Section III equipment as Quality Group C is provided in Section 3.2.2.i.
- (57) The basis for classification of non-ASME Section III equipment as Quality Group C is provided in Section 3.2.2.j.
- (58) This piping was purchased and constructed to Quality Group C requirements and was subsequently upgraded to Quality Group B by volumetrically examining all circumferential welds over two inches using radiography. Visual examination will be performed in-service in accordance with the In-service Inspection Program.
- (59) The containment spray nozzles are fabricated to manufacturer's standards. In-service inspection requirements will be consistent with Quality Group B requirements.
- (60) Spray pond nozzles and junction boxes were designed and built to ASME III, Class 3 requirements, except that they were not N-stamped by the manufacturer. No manufacturer had an N-stamp at that time.
- (61) Engineered safety features (ESF) also include those systems in Chapter 6 and Table 6.1-1. Although RCIC is not an ESF, it is listed in this subsection because, although not required to mitigate the consequences of an accident, it may be used.

(62) }
(63) } ADD INSERTS

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INSERT TO P.38 OF TABLE 3.2-1

(62) THE REACTOR INTERNAL STRUCTURES, OTHER, INCLUDE THE STEAM DRYER, SHROUD HEAD AND STEAM SEPARATOR ASSEMBLY, IN-CORE GUIDE TUBES AND IN-CORE GUIDE TUBE STABILIZERS, DIFFERENTIAL PRESSURE AND LIQUID CONTROL LINES INSIDE THE RPV, FUEL ORIFICES, AND FEEDWATER SPARGERS. THESE STRUCTURES ARE NEITHER REQUIRED FOR SAFE SHUTDOWN OF THE PLANT NOR WILL THEIR FAILURE JEOPARDIZE THE SAFETY FUNCTION OF OTHER SAFETY-RELATED REACTOR INTERNALS. DIFFERENTIAL PRESSURE AND LIQUID CONTROL LINES INSIDE THE RPV WHICH FORM PART OF THE REACTOR COOLANT PRESSURE BOUNDARY ARE Q-LISTED. WITH THE EXCEPTION OF THESE LINES, THE AFOREMENTIONED COMPONENTS ARE NOT SAFETY-RELATED, ARE NOT Q-LISTED, AND ARE NOT UNDER 10CFR50 APPENDIX B. HOWEVER, THEY ARE INSPECTED AS PART OF THE INSERVICE INSPECTION PROGRAM WHICH IS INCLUDED IN THE OPERATIONS PHASE OF THE QUALITY ASSURANCE PLAN.

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INSERT TO PAGE 38 OF TABLE 3.2-1

- (63) THE 1L9 EMERGENCY LIGHTING CIRCUIT IN THE CONTROL ROOM HAS BEEN INSTALLED TO SEISMIC CATEGORY 1 REQUIREMENTS. THE INSTALLATION OF THIS CIRCUIT WAS PERFORMED IN ACCORDANCE WITH THE SAME REQUIREMENTS OF 10CFR 50, APPENDIX B THAT WERE IMPOSED ON OTHER SEISMIC CLASS 1 SUBSYSTEMS. ANY FUTURE MODIFICATIONS TO THIS CIRCUIT ARE TO BE PERFORMED UNDER THE SAME REQUIREMENTS. FSAR SECTION 9.5.3.4 PROVIDES THE INSPECTION AND TESTING REQUIREMENTS FOR EMERGENCY LIGHTING SYSTEMS.