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June 23, 1981

EF2 - 53867

Mr. L. L. Kintner
Division of Project Management
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Kintner:

Reference: Enrico Fermi Atomic Power Plant, Unit 2
NRC Docket No. 50-341

Subject: Additional Concerns Regarding Containment Isolation and Leak Testing

Statements from the Containment Systems Branch draft SER were given to us for resolution; they were labeled as CSB-1, -2, and -3. We discussed these statements with you and John Lane (NRC) via telephone on June 19, 1981. During the telecon, Mr. Lane brought out the concerns which were the bases for the draft-SER statements. The information attached responds to these concerns.

Sincerely,

W. F. Colbert

W. F. Colbert
Technical Director
Enrico Fermi 2

WFC/MLB/dk

Attachment

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I. Concerns on FSAR Statements Re Appendix J Testing

In response to the NRC's questions concerning compliance of the Containment Leakage Testing Program with the requirements of Appendix J to 10CFR Part 50, the following revisions will be made to the FSAR:

Page 6.2 - 56o, Section 6.2.4.4.1, seventh paragraph, Acceptance Criteria, will be revised to read:

"Lam shall be no greater than Ld (where Ld is the design leakage rate at pressure Pa, as specified in the technical specifications), which conforms to the requirement of Appendix J to 10CFR50 that Lam shall be less than 0.75 La (where La is the maximum allowable leakage at pressure Pa).

Note: See Table 6.2-1 for pressure and leakage values."

Page 6.2-71, Table 6.2-1, Part I, General Information, will be revised to read:

		"Drywell	Torus
A.	Design pressure, Pa, psig	56	56
B.	Maximum allowable pressure, psig	62	62
C.	Design temperature, °F	281	281
D.	Free Volume, cu ft	163,730	130,900
E.	Design leak rate, Ld, %/day	0.5	0.5
F.	Maximum allowable leak rate, La, %/day	1	NA"

Page 6.2-56p, Section 6.2.4.4.2, third paragraph, second sentence, will be revised to read:

"Air locks shall be tested at 6-month intervals. However, air locks which are opened during such intervals shall be tested after each opening."

Page 6.2-56p, Section 6.2.4.4.3, fourth paragraph, first sentence, will be revised to read:

"The tests shall be performed by local pressurization applied in the same direction that the valve would be required to perform its safety function, unless it has been determined that applying the pressure in the opposite direction will provide equal or more conservative results. (Manufacturer's test data verifying that the results will be equal or more conservative will be available at the Enrico Fermi 2 plant for review.)"

II. Additional Information for Bypass Leakage Paths Tested by Section XI

Valve	Actuator Type	Containment* Isolation Signal	Quality Group	Leakage Test Interval	Criteria
V17-2036	Solenoid	B, K	B	Refueling	1 gpm
V17-2037	Solenoid	B, K	B	Refueling	1 gpm
V17-2024	Solenoid	B, K	B	Refueling	1 gpm
V17-2025	Solenoid	B, K	B	Refueling	1 gpm
V8-2198	Motor	B, K	B	Refueling	1 gpm
V8-2200	Motor	B, K	B	Refueling	1 gpm
V8-2232	Motor	B	B	Refueling	1 gpm

*Signal B = vessel level 2

Signal K = high drywell pressure

All valves are operable from the control room and have position indication in the control room.

III. Justification for Classification of Drywell Atmosphere Sample Lines

O_2/H_2 analyzers are required and considered to be essential per II.F.1 of NUREG-0737; i.e. we cannot meet 1/2 hour requirement without operating the instruments continuously.

IV. Justification for Single Isolation Signal on RWCU Inlet

High drywell pressure is omitted as an isolation signal to avoid inadvertent isolation which may result in reactor coolant chemistry problems and RPV bottom head thermal problems during small leak or small break accidents.

The system isolates on:

1. Reactor Vessel Low Level 2
2. RWCU Space Temperature High
3. RWCU Inlet Line High Flow
4. RWCU Space High Differential Temperature

All these signals are Class 1E. The RWCU valves also close on initiation of SLCS.

V. Verify Containment and Accident Isolation Signals on MSIVs are Safety Grade

	Signal	Safety Grade
B	Reactor Vessel Level 2	Yes
D	Main Stm Line Hi Rad	Yes
E	Main Stm Line Hi Flo	Yes
F	Main Stm Line Tunnel Hi Temp	Yes
F	Main Stm Line Tunnel Hi Temp	Yes
G	Main Stm Line Low Press	Yes
J	Low Condenser Vac	Yes
P	Turbine Bldg Hi Temp	Yes

G, J, and P sensors are located in non-seismic turbine building

VI. Classification of Five Valves in EF2-53694

Penetration	Line	Valve	Classification
X-29Bb	Drywell Pressure	V5 - 2546	Essential
X-29Bc	Drywell Pressure	V5 - 2547	Essential
X-47a	Drywell Pressure	V5 - 2548	Essential
X-47b	Drywell Pressure	V5 - 2549	Essential
X-47c	PCMS/Drywell Instrumentation	V5 - 2230	Essential

VII. Verification of Essential Classification on Certain Systems in Appendix H Table II.E.4.2-1

Penetrations X 22 and 36 are pneumatic supply lines which are not essential and are isolated by High Drywell Pressure and Low Level 2. In order to use the safety relief valves for long term shutdown cooling, we have provided a keylock switch for bypassing the isolation.

Penetrations 39 A&B are not essential lines and are isolated on High Drywell Pressure and Low Level 2. A keylock is provided to bypass the isolation signals to allow activation of the containment sprays.

VIII. Isolation Signals on Recirc Pump Seal Purge Lines

We agree that the EECW supply to recirc pump seals is sufficient to protect the seals and have initiated a design change to isolate the Seal Purge Lines on High Drywell Pressure or Low Level 2.

IX. Corrections to Table of Exceptions to Appendix J

Item 4 in our letter to the NRC, EF2-53498, June 9, 1981, was a Table of Exceptions to Appendix J. Mr. Lane noted some inaccuracies in this table and also in Table 6.2-2 in the FSAR. In response to these questions, the Table of Exceptions has been reviewed and revised. The revised table is attached.

Table 6.2-2, pages 4 and 5, penetrations X-13A, 13B, 16A, and 16B will be revised in the case of the inboard isolation valves by changing the Type C test column entry from "no" to "yes" and deleting "Note 27" from the Remarks column. (Penetration X-13A, 13B, 16A, and 16B should be deleted from the Table of Exceptions to 10CFR50, Appendix J, that was sent to the NRC on June 9, 1981.)

Table 6.2-2, page 34, will be revised by deleting "Note 27." (Notes 9 and 10 should be deleted from the Table of Exceptions to 10CFR50, Appendix J, that was sent to the NRC on June 9, 1981.)

Table 6.2-2, pages 11a and 12, penetrations X-39A and 39B will be revised in the case of the inboard isolation valves by adding "Note 3" to the Remarks column. ("Note 3" should be added to the Exception column and "Note 4" to the Justification column for penetrations X-39A and 39B in the Table of Exceptions to 10CFR50, Appendix J, that was sent to the NRC on June 9, 1981.)

X. Design of Piping and Valves Required for Isolation

We refer the NRC to FSAR Sections 6.2.4.2.1 and 7.3.2 for discussions of design requirements of components necessary for isolation.

Basically, all isolation valves are quality group A or B, the line between the isolation valves is quality group B or better, closed loops are quality group B, and all isolation valves with operators are controlled from the Control Room and have position indication of open and closed.

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-7A	Main Steam Line A	V17-2003	Note 1	Note 2
X-7B	Main Steam Line B	V17-2001	Note 1	Note 2
X-7C	Main Steam Line C	V17-2002	Note 1	Note 2
X-7D	Main Steam Line D	V17-2004	Note 1	Note 2
X-8	Main Steam Line Drains	V17-2009	Note 3	Note 4
X-10	Steam to RCIC Turbine	V17-2030	Note 3	Note 4
X-11	Steam to HPCI Turbine	V17-2020	Note 3	Note 4
X-15	Combustible Gas Control System Suction	V4-2144	Note 5	Note 4
X-17	RHR Discharge to Head Spray	V8-2172	Note 3	Note 4
X-22	Nitrogen to Drywell	V4-2080	Note 1	Note 2
X-23	Reactor Building Closed Cooling Water Supply	V8-2485	Note 3	Note 4

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-24	Reactor Building Closed Cooling Water	V8-3890 & V8-2486	Note 3	Note 4
X-25	Drywell Exhaust and Air Purge	VR3-3024	Note 5	Note 4
X-26	Drywell Air Purge Inlet	VR3-3011	Note 5	Note 4
X-27a	Containment Atmosphere Sample	V5-2159	Note 6	Note 4
X-27b	Containment Atmosphere Sample	V5-2160	Note 6	Note 4
X-27c	Containment Atmosphere Sample	V5-2161	Note 6	Note 4
X-27d	Containment Atmosphere Sample	V5-2162	Note 6	Note 4
X-27e	Containment Atmosphere Sample	V5-2163	Note 6	Note 4
X-27f	Containment Atmosphere Sample	V5-2164	Note 6	Note 4
X-29Aa	Reactor Water Sample	V17-2077	Note 1	Note 2
X-29Be	Drywell Instrumentation	V5-2231	Note 6	Note 4
X-31B	Drywell On-Line Pressure Control	VR3-2825	Note 1	Note 2
X-34A	Reactor Building Closed Cooling Water Supply	V8-2484	Note 3	Note 4

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-34B	Reactor Building Closed Cooling Water Return	V8-3889 & V8-2483	Note 3	Note 4
X-36	Nitrogen to Drywell	V4-2188	Note 1	Note 2
X-39A	RHR to Containment Spray Header	V8-2169	1. Note 3 2. Note 11	1. Note 4 2. Note 12
X-39B	RHR to Containment Spray Header	V8-2170	1. Note 3 2. Note 11	1. Note 4 2. Note 12
X-44	Combustible Gas Control System Suction	V4-2143	Note 5	Note 4
X-47e	Drywell Pressure	V5-2230	Note 6	Note 4
X-48a	Containment Atmosphere Sample	V5-2151	Note 6	Note 4
X-48b	Containment Atmosphere Sample	V5-2152	Note 6	Note 4
X-48c	Containment Atmosphere Sample	V5-2153	Note 6	Note 4
X-48d	Containment Atmosphere Sample	V5-2154	Note 6	Note 4
X-48e	Containment Atmosphere Sample	V5-2155	Note 6	Note 4
X-48f	Containment Atmosphere Sample	V5-2156	Note 6	Note 4
X-49a	Recirc Pump Seal Purge	V8-3767 & V8-3710	Note 3	Note 4

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-51a	Recirc Pump Seal Purge	V8-3768 & V8-3590	Note 3	Note 4
X-204A	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2036	Note 1	Note 2
X-204B	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2065	Note 1	Note 2
X-204C	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2075	Note 1	Note 2
X-204D	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2077	Note 1	Note 2
X-204E	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2082	Note 1	Note 2
X-204F	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2084	Note 1	Note 2
X-204G	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2086	Note 1	Note 2
X-204H	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2088	Note 1	Note 2
X-204J	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2090	Note 1	Note 2
X-204K	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2092	Note 1	Note 2
X-204L	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2094	Note 1	Note 2

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-204M	Drywell to Torus Vacuum Breaker Nitrogen Supply	V4-2096	Note 1	Note 2
X-205A	Torus to Secondary Containment Vacuum Breaker	V21-2015	Note 5	Note 4
X-205B	Torus to Secondary Containment Vacuum Breaker	V21-2016	Note 5	Note 4
X-205C	Torus to Secondary Containment Vacuum Breaker	VR3-3013	Note 5	Note 4
X-205D	Torus to Secondary Containment Vacuum Breaker	VR3-3015	Note 5	Note 4
X-206A	Torus Pressure and Liquid Level Instrumentation	V5-2552	Note 3	Note 4
X-206B	Torus Pressure and Liquid Level Instrumentation	V5-2553	1. Note 13 2. Note 3	1. Note 14 2. Note 4
X-206C	Torus Pressure and Liquid Level Instrumentation	V5-2550	Note 3	Note 4
X-206D	Torus Pressure and Liquid Level Instrumentation	V5-2551	1. Note 13 2. Note 3	1. Note 14 2. Note 4
X-206E	Torus Pressure and Liquid Level Instrumentation	V5-2555	1. Note 13 2. Note 3	1. Note 14 2. Note 4
X-206F	Torus Pressure and Liquid Level Instrumentation	V5-2556	1. Note 13 2. Note 3	1. Note 14 2. Note 4

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-210A&B	RHR	All penetration isolation valves	1. Note 13 2. All valves tested in reverse direction	1. Note 14 2. Note 4 or the results are conservative since test pressure tends to unseat the valve disk
X-211A	RHR to Suppression Pool Spray	V8-2158	Note 1	Note 2
X-211B	RHR to Suppression Pool Spray	V8-2157	Note 1	Note 2
X-212, 214,& 220	RCIC Turbine Exhaust Line HPCI Turbine Exhaust Line RCIC Vacuum Breaker Line HPCI Vacuum Breaker Line	V11-2002 V11-2006 V11-2026 V11-2019	Note 1 Note 1 Note 3 Note 3	Note 2 Note 2 Note 4 Note 4
X-213A&B	Torus Water Management Suction	All penetration isolation valves	1. Note 13 2. All valves tested in reverse direction	1. Note 14 2. Note 4 or the results are conservative since test pressure tends to unseat the valve disk
X-215	Combustible Gas Control System	V4-2142	Note 5	Note 4
X-215	Combustible Gas Control System	V5-2158	Note 6	Note 4

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-218	Combustible Gas Control System	V4-2140	Note 5	Note 4
X-218	Combustible Gas Control System	V4-2139	Note 5	Note 4
X-219	Combustible Gas Control System	V4-2141	Note 5	Note 4
X-219	Combustible Gas Control System	V4-2166	Note 6	Note 4
X-221	HPCI Turbine Exhaust Drain	V11-2008	Note 1	Note 2
X-222	RCIC Vacuum Pump Discharge	V8-2235	Note 1	Note 2
X-223A through D	RHR Pump Suction	All penetration isolation valves	1. Note 13 2. All valves tested in reverse direction	1. Note 14 2. Note 4 or the results are conservative since test pressure tends to unseat the relief valve
X-224A&B	Core Spray Pump Suction	All penetration isolation valves	1. Note 13 2. Note 3	1. Note 14 2. Note 4
X-225	HPCI Pump Suction	All penetration isolation valves	1. Note 13 2. Note 3	1. Note 14 2. Note 4
X-226	RCIC Pump Suction	All penetration isolation valves	1. Note 13 2. Note 3	1. Note 14 2. Note 4

TABLE - EXCEPTIONS TO 10CFR50 APPENDIX J

Penetration Number	System Title	Valve Number	Exception	Justification
X-227A&B	Core Spray, Torus Water Management, HPCI, & RCIC	All penetration isolation valves	1. Note 13 2. All valves tested in reverse direction	1. Note 14 2. Note 4 or the results are conservative since test pressure tends to unseat the relief valve
X-230	PCMS and Postaccident Atmosphere Sample Suctions	V5-2157	Note 6	Note 4
X-231	PCMS and Postaccident Atmosphere Sample Suctions	V5-2165	Note 6	Note 4

Notes:

1. Globe valve tested in the reverse direction.

2. The results obtained in this test configuration are conservative since test pressure tends to unseat the valve disk.

3. Wedge-disk gate valve tested in the reverse direction.

4. The results obtained in this test configuration are equivalent to testing in the accident direction, since valves of this type have the same sealing characteristics in either direction.

5. Butterfly valve tested in the reverse direction.

6. Ball valve tested in the reverse direction.

11. Due to system configuration the test pressure is not in the same direction as the pressure existing when the valve is required to perform its containment isolation function.

12. The valve will be tested in the correct direction during the Type A tests.

13. This valve will be Type C seat leak tested using water as the test medium.

14. The flow path associated with this penetration inside containment terminates below the low water level in the suppression pool. A water seal is assured during normal plant operation and for more than 30 days following an accident requiring containment isolation. It is not credible that these isolation valves will be exposed to the containment atmosphere at any time following the accident.