

August 31, 1981  
EF2 - 54,384

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



Dear Mr. Kintner:

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

Subject: IE Bulletin 79-27 - Loss of Instrumentation  
and Control Power

This is in response to additional information you requested in a telephone conversation on August 3, 1981.

The scope of the review has been expanded to include a total of twenty-eight systems or subsystems. These systems or subsystems encompass equipment that could be used to achieve cold shutdown. Many of the listed systems are redundant to one another. A complete list of the reviewed systems is shown in Appendix A. The approach to the review of these systems is as follows:

- Each system was reviewed for redundant safety functions under Division I and Division II to determine electrical independence of the instrumentation distribution circuits to redundant devices.
- Each system was reviewed for effects of BOP loads which could possibly degrade both divisions of the Class 1E instrumentation power supplies.
- This approach, in effect, assures that any instrumentation power supply, or bus, can be lost at Fermi 2 without jeopardizing the ability to achieve cold shutdown, utilizing other instrumentation that either directly performs a redundant function to the instrumentation lost, or is associated with a redundant system.

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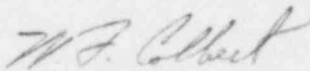
The results of this review have confirmed our earlier conclusions that loss of safety-related or non-safety-related instrumentation and control bus would not jeopardize the ability to safely achieve cold shutdown.

Additional information was requested regarding operating procedures. Loss of a safety or non-safety-related instrument bus is interpreted by the operator to be a loss of part or all of that system. This is addressed in the event-based Abnormal Operating Procedure specific to the particular component or system. In the event a safety-related instrument bus is lost, the procedure may instruct the operator to shut down, consistent with the requirements of the Technical Specifications. For loss of non-safety-related instrumentation, the procedures provide direction to the operator to re-establish system operation through the use of alternate available equipment or to reduce the plant load, as necessary, to compensate for the loss of the non-safety-related equipment. In the event the non-safety-related instrument bus losses are compounded through multiple failures, the symptom-based Emergency Operating Procedures would be utilized to mitigate the failure and assure a safe shutdown of the reactor. In all cases, direction is provided to the operator to mitigate the effects of instrument bus losses.

Also attached, as Appendix B, is the list of instrumentation presently fed by a combination of AC, and AC from an inverter, together with the size of the fuse feeding the inverter.

We trust that the above information, together with our previous responses, provides you with sufficient evidence of the adequacy of the Fermi 2 design such that this item can be closed.

Sincerely,



W. F. Colbert  
Technical Director  
Fermi 2 Project

WFC:jl  
Attachments

cc: Mr. B. Little

# APPENDIX A

## SYSTEMS REVIEWED FOR IE BULLETIN 79-27

<u>SYSTEM/SUBSYSTEM NUMBER</u>	<u>SYSTEM/SUBSYSTEM NAME</u>
B11-06	REACTOR INSTRUMENTATION
B21	NUCLEAR BOILER SYSTEM
B31	REACTOR RECIRCULATING SYSTEM
C11	CONTROL ROD DRIVE HYDRAULIC CONTROL SYSTEM
C41	STANDBY LIQUID CONTROL SYSTEM
C51	NEUTRON MONITORING SYSTEM
C71	REACTOR PROTECTION SYSTEM
D11	PROCESS RADIATION MONITOR SYSTEM
E11	RESIDUAL HEAT REMOVAL SYSTEM
E11-53	INSTRUMENTATION -- RHR SERVICE WATER SYSTEM
E21	CORE SPRAY SYSTEM
F41	HIGH PRESSURE COOLANT INJECTION SYSTEM
E51	REACTOR CORE ISOLATION COOLING SYSTEM
G11	RADWASTE SYSTEM
G33	REACTOR WATER CLEAN-UP SYSTEM
G51	TORUS WATER MANAGEMENT SYSTEM
P34	POST-ACCIDENT MONITORING SYSTEM
P44	EMERGENCY EQUIPMENT COOLING WATER
P45	EMERGENCY EQUIPMENT SERVICE WATER SYSTEM
P50	COMPRESSED AIR SYSTEMS
R30	STANDBY EMERGENCY POWER SYSTEM
T23	CONTAINMENT SYSTEM
T41	HEATING, VENTILATING, AND AIR CONDITIONING SYSTEM
T46	STANDBY GAS TREATMENT SYSTEM
T47	CONTAINMENT ATMOSPHERE COOLING SYSTEM
T48	CONTAINMENT ATMOSPHERE CONTROL SYSTEMS
T50	PRIMARY CONTAINMENT ATMOSPHERE MONITORING SYSTEM

# APPENDIX B

## INSTRUMENTATION FED FROM AUCTIONEERED POWER SUPPLIES (A.C. AND D.C. THROUGH AN INVERTER)

Four such supplies exist, labeled H21-P080, H21-P081, H21-P082, and H21-P083. Each inverter is protected with a 15-ampere fuse on the D.C. source. The list of instrumentation fed by these inverter/A.C. source combination is as follows:

<u>XMTR. NO.</u>	<u>TRIP UNIT NO.</u>	<u>T/U RACK NO.</u>	<u>FUNCTION</u>
B21-N085A	B21-N685A	H21-P080	FUEL ZONE WATER LEVEL
B21-N085B	B21-N685B	H21-P081	FUEL ZONE WATER LEVEL
B21-N090A	B21-N690A	H21-P082	RPV PRESSURE
B21-N090B	B21-N690B	H21-P083	RPV PRESSURE
B21-N090C	B21-N690C	H21-P080	RPV PRESSURE
B21-N090D	B21-N690D	H21-P081	RPV PRESSURE
B21-N091A	B21-N691A	H21-P082	RPV WIDE RANGE WATER LEVEL
B21-N091A	B21-N692A	H21-P082	RPV WIDE RANGE WATER LEVEL
B21-N091A	B21-N693A	H21-P082	RPV WIDE RANGE WATER LEVEL
B21-N091B	B21-N691B	H21-P083	RPV WIDE RANGE WATER LEVEL
B21-N091B	B21-N692B	H21-P083	RPV WIDE RANGE WATER LEVEL
B21-N091B	B21-N693B	H21-P083	RPV WIDE RANGE WATER LEVEL
B21-N091C	B21-N691C	H21-P082	RPV WIDE RANGE WATER LEVEL
B21-N091C	B21-N692C	H21-P082	RPV WIDE RANGE WATER LEVEL
B21-N091C	B21-N693C	H21-P082	RPV WIDE RANGE WATER LEVEL
B21-N091D	B21-N691D	H21-P083	RPV WIDE RANGE WATER LEVEL
B21-N091D	B21-N692D	H21-P083	RPV WIDE RANGE WATER LEVEL
B21-N091D	B21-N693D	H21-P083	RPV WIDE RANGE WATER LEVEL
B21-N094A	B21-N694A	H21-P082	DRYWELL PRESSURE
B21-N094B	B21-N694B	H21-P083	DRYWELL PRESSURE
B21-N094C	B21-N694C	H21-P082	DRYWELL PRESSURE
B21-N094D	B21-N694D	H21-P083	DRYWELL PRESSURE
B21-N094E	B21-N694E	H21-P082	DRYWELL PRESSURE
B21-N094F	B21-N694F	H21-P083	DRYWELL PRESSURE

APPENDIX B (cont'd.)

<u>XMTR. NO.</u>	<u>TRIP UNIT NO.</u>	<u>T/U RACK NO.</u>	<u>FUNCTION</u>
B21-N094G	B21-N694G	H21-P082	DRYWELL PRESSURE
B21-N094H	B21-N694H	H21-P083	DRYWELL PRESSURE
B21-N095A	B21-N695A	H21-P082	RPV NARROW RANGE WATER LEVEL
B21-N095B	B21-N695B	H21-P083	RPV NARROW RANGE WATER LEVEL
B21-N110A	B21-N610A	H21-P082	RPV PRESSURE
B21-N110B	B21-N610B	H21-P083	RPV PRESSURE
B21-N110C	B21-N610C	H21-P082	RPV PRESSURE
B21-N110D	B21-N610D	H21-P083	RPV PRESSURE
B21-N111A	B21-N611A	H21-P082	RPV PRESSURE
B21-N111B	B21-N611B	H21-P083	RPV PRESSURE
B21-N111C	B21-N611C	H21-P082	RPV PRESSURE
B21-N111D	B21-N611D	H21-P083	RPV PRESSURE
B31-N110A	B31-N610A	H21-P080	RECIRCULATING LINE RISER $\Delta P$
B31-N110B	B31-N610B	H21-P081	RECIRCULATING LINE RISER $\Delta P$
B31-N110C	B31-N610C	H21-P080	RECIRCULATING LINE RISER $\Delta P$
B31-N110D	B31-N610D	H21-P081	RECIRCULATING LINE RISER $\Delta P$
B31-N111A	B31-N611A	H21-P080	RECIRCULATING LINE B SUCTION PRESSURE
B31-N111B	B31-N611B	H21-P081	RECIRCULATING LINE B SUCTION PRESSURE
B31-N112A	B31-N612A	H21-P080	RECIRCULATING PUMP $\Delta P$
B31-N112B	B31-N612B	H21-P081	RECIRCULATING PUMP $\Delta P$
B31-N113A	B31-N613A	H21-P080	RECIRCULATING PUMP $\Delta P$
B31-N113B	B31-N613B	H21-P081	RECIRCULATING PUMP $\Delta P$
B31-N114A	B31-N614A	H21-P081	RECIRCULATING PUMP $\Delta P$
B31-N114B	B31-N614B	H21-P080	RECIRCULATING PUMP $\Delta P$
B31-N115A	B31-N615A	H21-P081	RECIRCULATING PUMP $\Delta P$
B31-N115B	B31-N615B	H21-P080	RECIRCULATING PUMP $\Delta P$
E11-N055A	E11-N655A	H21-P080	RHR PUMP DISCHARGE PRESSURE
E11-N055B	E11-N655B	H21-P081	RHR PUMP DISCHARGE PRESSURE
E11-N055C	E11-N655C	H21-P080	RHR PUMP DISCHARGE PRESSURE
E11-N055D	E11-N655D	H21-P081	RHR PUMP DISCHARGE PRESSURE
E11-N056A	E11-N656A	H21-P080	RHR PUMP DISCHARGE PRESSURE

APPENDIX B (cont'd.)

<u>XMTR. NO.</u>	<u>TRIP UNIT NO.</u>	<u>T/U RACK NO.</u>	<u>FUNCTION</u>
E11-N056B	E11-N656B	H21-P081	RHR PUMP DISCHARGE PRESSURE
E11-N056C	E11-N656C	H21-P080	RHR PUMP DISCHARGE PRESSURE
E11-N056D	E11-N656D	H21-P081	RHR PUMP DISCHARGE PRESSURE
E21-N055A	E21-N655A	H21-P080	CORE SPRAY PUMP DISCHARGE PRESSURE
E21-N055B	E21-N655B	H21-P081	CORE SPRAY PUMP DISCHARGE PRESSURE
E21-N062A	E21-N662A	H21-P080	CORE SPRAY PUMP DISCHARGE PRESSURE
E21-N062B	E21-N662B	H21-P081	CORE SPRAY PUMP DISCHARGE PRESSURE
E41-N055A	E41-N655A	H21-P080	HPCI TURBINE EXHAUST DIAPHRAGM PRESSURE
E41-N055B	E41-N655B	H21-P081	HPCI TURBINE EXHAUST DIAPHRAGM PRESSURE
E41-N055C	E41-N655C	H21-P080	HPCI TURBINE EXHAUST DIAPHRAGM PRESSURE
E41-N055D	E41-N655D	H21-P081	HPCI TURBINE EXHAUST DIAPHRAGM PRESSURE
E41-N057A	E41-N657A	H21-P080	HPCI STEAM $\Delta P$
E41-N057A	E41-N660A	H21-P080	HPCI STEAM $\Delta P$
E41-N057B	E41-N657B	H21-P081	HPCI STEAM $\Delta P$
E41-N057B	E41-N660B	H21-P081	HPCI STEAM $\Delta P$
E41-N058A	E41-N658A	H21-P080	HPCI STEAM PRESSURE
E41-N058B	E41-N658B	H21-P081	HPCI STEAM PRESSURE
E41-N058C	E41-N658C	H21-P080	HPCI STEAM PRESSURE
E41-N058D	E41-N658D	H21-P081	HPCI STEAM PRESSURE
E41-N061B	E41-N661B	H21-P081	CONDENSATE STORAGE TANK LEVEL
E41-N061D	E41-N661D	H21-P081	CONDENSATE STORAGE TANK LEVEL
E41-N062B	E41-N662B	H21-P081	SUPPLEMENTAL POOL LEVEL
E41-N062D	E41-N662D	H21-P081	SUPPLEMENTAL POOL LEVEL
E51-N055A	E51-N655A	H21-P080	RCIC TURBINE EXHAUST DIAPH. PRESSURE
E51-N055B	E51-N655B	H21-P081	RCIC TURBINE EXHAUST DIAPH. PRESSURE
E51-N055C	E51-N655C	H21-P080	RCIC TURBINE EXHAUST DIAPH. PRESSURE
E51-N055D	E51-N655D	H21-P081	RCIC TURBINE EXHAUST DIAPH. PRESSURE
E51-N057A	E51-N657A	H21-P080	RCIC STEAM $\Delta P$
E51-N057A	E51-N660A	H21-P080	RCIC STEAM $\Delta P$
E51-N057B	E51-N657B	H21-P081	RCIC STEAM $\Delta P$



APPENDIX B (cont'd.)

<u>XMIT. NO.</u>	<u>TRIP UNIT NO.</u>	<u>T/U RACK NO.</u>	<u>FUNCTION</u>
E51-N057B	E51-N660B	H21-P081	RCIC STEAM $\Delta P$
E51-N058A	E51-N658A	H21-P080	RCIC STEAM PRESSURE
E51-N058B	E51-N658B	H21-P081	RCIC STEAM PRESSURE
E51-N058C	E51-N658C	H21-P080	RCIC STEAM PRESSURE
E51-N058D	E51-N658D	H21-P081	RCIC STEAM PRESSURE