

**Florida
Power**
CORPORATION

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Mr. John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
NUREG-0737, Item II.E.1.1
Crystal River Unit 3 Auxiliary (Emergency) Feedwater System
Reliability Assessment



Dear Mr. Stolz:

By letter dated April 1, 1982, your staff requested additional information on Florida Power Corporation's (FPC) Crystal River Unit 3 Auxiliary (Emergency) Feedwater System Reliability Assessment. FPC hereby provides written responses to your eleven questions as previously discussed with your staff.

Question 1. The results are not presented in a manner that lends itself to a "NUREG-0611-type" comparison. For example, unavailability given LOOP is not tabulated. LOOP appears as a basic event on the fault tree; was this entered as the probability of LOOP given LMFV? How was this handled?

Response 1. The results were not presented in a NUREG-0611 type format since the NUREG is not applicable to B&W plants and no advantage was seen in presenting our results in this manner. LOOP was entered as the probability of LOOP given LMFV.

Question 2. A narrative description of cut sets was provided, but no quantitative details were given. What were the contributions from the dominant cut sets?

Response 2. Cut sets information, including quantitative details, was informally transmitted to your office in March, 1982.

Question 3. Failure data were not given. What are they?

Response 3. Failure data was informally transmitted to your office in March, 1982.

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Question 4. What probabilities were assigned to failure events on the fault trees?

Response 4. Failure event probabilities were informally transmitted to your office in March, 1982.

Question 5. Regarding fault tree events EFV-3ZZLC and EFV-4ZZCL, which refer to valves left closed after maintenance:

- a) Are these the only valves which are closed for pump maintenance?
- b) Is the position of these valves indicated in the control room?
- c) Are these maintenance acts staggered?

Response 5. a) EFV-3ZZLC and EFV-4ZZLC are not the only valves closed for pump maintenance. The valve closures necessary for pump maintenance are given in the pump maintenance procedure.

- b) The positions of the valves are indicated in the control room.
- c) Maintenance acts are staggered.

Question 6. Regarding valves EFV33, EFV14, EFV32, EFV11:

The drawing indicates that these are normally open, but the fault tree (EFW INITIATE) contains events in which these "fail closed." Is this because the logic requires them to close and subsequently reopen? Or should the event be considered a plugging event? Is there ever a flow test to verify that they are open?

Response 6. Logic does not require valves EFV-11, EFV-14, EFV-32, and EFV-33 to close and then reopen, just fail closed. This event is not considered a plugging event. The valves are not flow tested to verify if they are open. Operator and surveillance procedures are used to verify valve position.

Question 7. Regarding stop check valves EFV-7 and EFV-8:

These valves have events "spuriously closes" on the fault tree. Is this the same as plugging, or does this refer to the valves being actively closed? If it is the latter, is this an operator or maintenance error?

Under what circumstances (especially testing or maintenance) are these valves supposed to be closed? Is there a flow test to verify that they are open? Is their status indicated in the control room?

Response 7. The event refers to valves being actively closed and is not a plugging event. The events are a result of either operator or maintenance errors (no determination made between operator and maintenance errors).

Stop check valves EFV-7 and EFV-8 are closed during testing and maintenance. There is no flow test to verify that they are open. Operator and surveillance procedures are used to verify valve position. Their status is indicated in the control room.

Question 8. Maintenance on valves does not appear on the fault tree. NUREG-0611 suggests that maintenance on valves should be assessed (Refer to Table III-2 of NUREG-0611). For example, is there a reason not to assess maintenance on the steam admission valve (ASV5) by analogy to that assessed in WASH-1400 (Table II 5-9 and page II-107)?

Response 8. Maintenance on valves was not considered. Valve maintenance was assumed to take place during pump maintenance.

Question 9. Previous NRC comment expressed concern over a single valve in the cooling water supply to EFP-1. Was this remedied? What are the contributors to the unavailability of cooling water to EFP-1?

Response 9. The installation of self-cooling modifications to EFP-1 has eliminated the need to supply cooling water to EFP-1 from the nuclear services closed cycle cooling system. Cooling water is now supplied to EFP-1 from its own discharge.

Question 10. Are there single failures in the vector logic that can isolate both discharge paths from a given pump? Example: Channel D logic can isolate both paths from EFP-1. Are there failures (E.G. power failures) in channel D that isolate both paths?

Response 10. There are no single failures in the vector logic (including Channel D) that can isolate both discharge paths from a given pump.

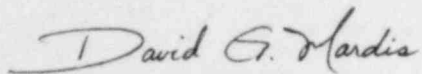
Question 11. Under what conditions do the EFWS pumps trip? (E.G. Loss of suction? High discharge pressure?) If recirculation is not available, are the pumps damaged, or do they trip?

Response 11. The emergency feedwater pumps do not trip under any conditions. The pumps will be destroyed if recirculation and discharge paths are lost. This is a very low probability event.

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If you have any further questions, please contact this office.

Very truly yours,

A handwritten signature in cursive script that reads "David G. Mardis". The signature is written in dark ink and is positioned above the typed name.

David G. Mardis
Acting Manager
Nuclear Licensing

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cc: Mr. J. P. O'Reilly, Regional Administrator
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