

**Florida  
Power**  
CORPORATION

July 14, 1981  
File: 3-0-3-a-3  
#3-071-13

Mr. Darrell G. Eisenhut  
Director, Division of Licensing  
Office of Nuclear Reactor Regulation  
Washington, D.C. 20555

Subject: Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DPR-72  
Seismic Qualification of Auxiliary  
Feedwater Systems



Dear Mr. Eisenhut:

By letter dated October 21, 1980, you identified concerns regarding seismic qualification of the Auxiliary (Emergency) Feedwater (AFW or EFW) systems. As part of your continuing evaluation program, your letter of February 10, 1981, requested information to identify the extent to which EFW systems are seismically qualified and requested a walkdown of nonseismically qualified portions of the EFW systems. Pursuant to 10 CFR 50.54(f), Florida Power Corporation hereby provides the following information relative to the Crystal River Unit 3 (CR-3) EFW system.

The EFW piping and equipment including the condensate storage tank through the pumps to the steam generators are designed, procured, constructed, and maintained as Seismic Category I. Also, Table 1 identifies the seismic qualification status of the total EFW system.

The piping system is designed in accordance with the criteria established and discussed in Section 5.4.4 of the CR-3 Final Safety Analysis Report (FSAR). Section 5.4.5.2 of the FSAR briefly describes the method of analyses used for designated Seismic Category I piping systems. Valves installed in the system are procured under seismic design considerations. Table 5-5 of the FSAR lists the method of analyses utilized to qualify Seismic Category I structures, systems, and components. Basically, the analytical method applied in the seismic analysis was more conservative than present day requirements (i.e., one operating basis event times two without damping).

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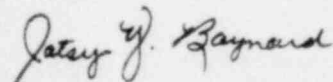
The power supplies for the motor-driven pump and motor-operated valves required for EFW operation are seismically qualified. The individual pump discharge valve, condensate storage tank suction, and Main Condenser suction valve are supplied from a turbine building motor control center which is not seismically qualified. However, these valves are prepositioned to not required actuation for EFW system operation and are only required for maintenance or transfer of suction supply from the condensate storage tank to the nonqualified backup condenser hotwell.

The automatic actuation and control system is not seismically qualified because its logic is supplied through nonqualified Non-Nuclear Instrumentation (NNI) and Integrated Control System (ICS) equipment. In addition, several manual control stations are located on a section of the Main Control Board (MCB) which was not seismically analyzed. However, qualified manual flow controls and circuits independent of the NNI and ICS are provided on a qualified section of the MCB.

Although beyond the scope of your request, a walkdown of the EFW system was performed. The walkdown team consisted of: a structural engineer, a mechanical engineer, an instrumentation and control engineer, and a piping/support engineer. The results of the walkdown indicated a qualified system to be installed with very few exceptions. The deviations are delineated in Attachment 1.

Consistent with our commitment to upgrade the CR-3 EFW system (see our December 15, 1980, letter, Baynard to Eisenhut; see our December 19, 1980, letter, Baynard to Reid; and see your January 28, 1981, letter, Reid to Hancock), Florida Power Corporation will resolve these minor discrepancies concurrent with the final EFW upgrade of the initiation and control system. This action will ensure that we have installed a fully qualified, safety grade system for removal of core heat.

Very truly yours,



Dr. P. Y. Baynard  
Manager  
Nuclear Support Services

Attachments

DGM:mm

STATE OF FLORIDA

COUNTY OF PINELLAS

P. Y. Baynard states that she is the Manager, Nuclear Support Services, of Florida Power Corporation; that she is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

*P. Y. Baynard*  
P. Y. Baynard

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 14th day of July, 1981.

*Margaret A. Chianiore*  
Notary Public

Notary Public, State of Florida at Large,

My Commission Expires: May 29, 1984

TABLE 1  
Seismic Qualification Status Summary

(1) Pumps/Motor	Yes
(2) Piping	Yes
(3) Valves/Actuators	Yes
(4) Power Supplies	Partially
(5) Primary Water and Supply Path	Yes
(6) Secondary Water and Supply Path	N/A
(7) Initiation and Control System	Partially
(8) Structures Supporting or Housing These AFW System Items	Yes

Attachment 1  
Emergency Feedwater System Deviations

1. In the area where the suction line is routed from the condensate storage tank, it was observed that one of two silencers components hung over the suction line. The silencers were attached to some piping that was traced backed and found to be connected to the leak rate test piping on elevation 119'-0". It appears that this piping is temporarily supported and would not withstand a seismic event. Potential damage could be inflicted on the suction line, since the silencers are of massive size compared to the pipe size of the emergency feedwater line. The silencers are located in the passageway on elevation 95'-0". An evaluation will be performed to determine if these silencers are a permanent or temporary installation. A more adequate support arrangement must be designed than presently exists, to ensure that these silencers do not collapse onto the suction line.
2. In examining the pipe routing on the motor-driven EFW pump, it was observed that the tubing run for pressure instrument EF-2-PI was missing a holddown clamp. The clamp acts as a support and restrains an instrument root valve. A structural unistrut member is in place where the clamp should be attached. We will resolve this finding by replacing the missing clamp.
3. The routing of the seal injection lines around the turbine motor-driven EFW pump appears to be new. One of the seal lines routed from the top of the pump casing to valve EFV-51 requires a lateral restraint in the north-south direction. This lateral restraint should be located on the vertical riser just above the flow restriction orifice. The lateral restraint should be designed as a removal support to allow disassembly in the event that maintenance is required on the pump internals.
4. The pump recirculation lines were inspected and determined that a portion of the lines will be evaluated to see if the present supports are adequate to support the weight of the valves and flanges in the line.
5. In the performance of this walkdown around the emergency feedwater pumps, it was noticed that a 4" stainless steel line penetrated down from elevation 119'-0", crossed over both pumps, and tied-in with a main steam line at valve MSV-440. It appears that the line is only supported for dead weight. One support is a guide at the floor penetration and another is close to the connection point to the main steam valve. The support close to the main steam valve was a trapeze rod type arrangement. It is noted that the pipe was not resting on the structural angle member. It was also noticed that holes have been provided to accommodate a U-bolt, which was missing. The line was traced back to its origin and identified to be part of the chemical cleaning system. As mentioned, only two supports have been provided for this line below elevation 119'-0", a guide at the floor sleeve and a single acting hanger near the main steam connection. This line will be reviewed to see if it is adequately supported and if additional hangers are required.

6. The turbine-driven pump steam exhaust line was also examined and appeared to be supported for dead weight only. In addition, the line is routed over emergency feedwater and main feedwater lines. A review will be performed to evaluate the design of the existing supports on this line for seismicity. If hangers fail, the line could inflict damage on either the main or emergency feedwater lines. In the inspection of this line, it was noticed that branching off this steam dump line was another line which did not appear on our drawings. This line was routed from the turbine exhaust dump line to what appeared to be a flash tank. The tank was located in a corner of the turbine-driven pump area where the suction line from the condensate hotwell entered the area. Also, this line is routed close to the emergency feedwater suction line from the condensate storage tank; there appears to be no clearance between the two lines.
7. In the walkdown of the condensate storage tank, it was noticed that some new piping has been connected to the tank. This piping will be reviewed and determined if it is seismically supported. Also, it was noticed the closeness of the neutralizing tank to the condensate storage tank. A review of this tank's foundation will be done to determine if this tank is seismically qualified. If the tank's foundation cannot be qualified, a barrier between the two tanks may have to be erected for protection of the condensate storage tank.
8. In the examination of the cable tray supports on elevation 95'-0" of the intermediate building, two diagonal steel angle braces will be added to the cable tray supports routed along the north wall near column line 307. The diagonal bracing may enhance the east-west stability for tray numbers 23 and 302. A steel strap or fastener will be utilized to anchor tray number 304 to a structural angle support located 15'-0" west of column line 305 near the reactor building.
9. On elevation 119'-0" the electrical tray supports were inspected and found that FWE-133 had a missing clamp on the second support braced. The missing clamp will be replaced. In addition, two horizontal steel angle struts will be furnished approximately 8'-0" long. These struts should be attached from the tray hanger angles to the concrete wall located in the area around column lines 304B and between G & H.
10. A walkdown of control complex electrical support systems was also examined on elevation 134'-0". In this part of the walkdown, it was noticed that:
  - a. Item EKK 28-1/2 was loose. Two clamps will be provided across tray number 120 in the vicinity of tray number 180.
  - b. Item CPK-1 was found loose. Clamps will be attached to a frame comprised of two vertical angles near tray number 195 at elevation 139'-0".



- c. Item TS8-1/2 was also found to be loose. A small angle member and clamp will be attached to a vertical structural frame near the north edge of the vent duct.
11. In the inspection of the cable tray supports in the cable spreading room, it was noticed on a 8" line running through the room that one of the hangers was found loose. The hanger assembly will be checked, and all loose items will be tightened.
12. In the examination of the EFW system, two items were identified as some minor concern which will be reviewed by the piping analytical group. The items are:
- a. A 6" line identified as sump discharge line from the nuclear service cooling water area sump to the atmospheric drain tank was routed above the EFW suction line from the condensate storage tank. This line is supported for dead weight by rod type hangers. We will review the adequacy of these supports to withstand a seismic event and the possibility of this pipe collapsing on the EFW line.
  - b. The second item concerns a 12" line which was identified to be a drain line routed over one of the main steam supply lines to the turbine-driven EFW pump. The supports for this line have been identified as rod type and support the line for deadweight.