

April 23, 1986

ung-016

Docket No. 50-313

DISTRIBUTION

Docket File

Mr. John M. Griffin
Senior Vice President
of Energy Supply
Arkansas Power and Light Company
P. O. Box 551
Little Rock, Arkansas 72203

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OELD
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BGrimes
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FAllenspach
WRegan
DCrutchfield
DEisenhut
HDenton
VStello

Dear Mr. Griffin:

SUBJECT: Safety Significance of Reactor Coolant Pump Shaft Integrity Issue

You have recently received IE Information Notice 86-19, REACTOR COOLANT PUMP SHAFT FAILURE AT CRYSTAL RIVER, which was issued on March 21, 1986. The IE Information Notice provides notification of failure of a reactor coolant pump (RCP) shaft manufactured by Byron-Jackson Company. In summary, on January 1, 1986, Reactor Coolant Pump (RCP) "A" shaft at Crystal River, Unit 3 failed completely within the hydrostatic bearing. Subsequent inspections of the shafts of the other three RCPs revealed crack indications in all shafts. Also all eight cap bolts securing the impeller to the shaft on the "A" and "B" pumps were found to be cracked in multiple places (some were broken) and five of eight pins which take the torque between the impeller and the shaft on "A" and "B" pumps were cracked.

Crystal River 3 plant has a B&W NSSS. The RCPs are Byron-Jackson, type DFSS vertical centrifugal pumps. The shafts are ASTM A 461 Grade 660 Material, 65 3/4 inch long and 7 1/2 to 8 inch in diameter. Crystal River, Unit 3, was licensed on January 28, 1977.

On March 21, 1986, Toledo Edison Company reported that ultrasonic examination of the RCP shafts at Davis Besse 1, prompted by the experience of Florida Power Corporation at Crystal River, Unit 3, has revealed two of four RCP shafts have cracked with indications of cracks on the remaining two shafts. Toledo Edison is planning to replace all four pump shaft assemblies. Davis Besse 1 was licensed on April 22, 1977, and also has a B&W NSSS with Byron-Jackson RCPs similar to those at Crystal River, Unit 3.

We understand that Arkansas Nuclear One, Unit 1, (ANO-1), also a B&W NSSS, has Byron-Jackson RCPs similar to those at Crystal River, Unit 3, and Davis Besse 1. ANO-1 was licensed on May 21, 1974.

In view of the experience of Crystal River, Unit 3, and Davis Besse 1, we believe a significantly high probability exists for cracks in your RCP shafts, cap bolts and pins, which could propagate to failure (the cap bolts secure the impellers to the shafts and the pins transfer the torque from the shafts to the impellers).

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PDR ADOCK 05000313
Q PDR

Mr. John M. Griffin

-2-

Therefore, pursuant to 10 CFR 50.54(f) of the Commission's regulations, you are requested to submit written statements, signed under oath or affirmation, to enable the Commission to determine whether or not your license should be modified. Specifically, you are requested to submit to the NRC, within 20 days from the date of this letter, your plans and schedules for inspecting the RCP shafts and other structural components of your RCPs.

In addition you are requested to provide the following information regarding your justification for continued operation until you inspect your RCP shafts and other structural components of your RCPs:

1. A description of the design and operational history of the ANO-1 RCPs, which are different from the design and/or operation of the Crystal River, Unit 3, and Davis Besse 1 RCPs.
2. The results of any analyses performed subsequent to analyses done for the FSAR which would address the consequences of a locked rotor or broken shaft event during plant operation.
3. Considering the higher probability than previously envisioned of a postulated RCP shaft failure, describe any actions you have implemented or have planned such as operator review and associated training concerning the specific events at Crystal River, Unit 3, and Davis Besse 1 and monitoring plant parameters such as primary to secondary reactor coolant leakage.

The reporting and/or recordkeeping requirements of this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

"ORIGINAL SIGNED BY:"

Darrell G. Eisenhut, Acting Director
Office of Nuclear Reactor Regulation

cc: See next page

*See previous white for concurrences.

AD-PWR-B	D:PWR-B	DD:NEC	EDO	EDO
DCrutchfield*	FMiraglia*	DEisenhut	DEnton	VStallo
3/31/86	4/19/86	4/23/86	4/23/86	4/ /86

PBD-6	PBD-6	PBD-6	PBD#6	FALLenspach	FOR-PWR-B
Ricram	GVissing;cf*	CMcCracken*	JStolz*	WRegan	
4/ /86	4/16/86	3/31/86	3/31/86	3/31/86	3/31/86

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3. Considering the higher probability than previously envisioned of a postulated RCP shaft failure, describe any actions you have implemented or have planned such as operator review and associated training concerning the specific events at Crystal River, Unit 3, and Davis Besse 1 and monitoring plant parameters such as primary to secondary reactor coolant leakage.

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Sincerely,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

cc: See next page

*See previous white for concurrences.

AD-PWR-B	D: PWR-B	DD: NRR	D: NRR	EDO
DCrutchfield	FM: [unclear]	DEisenhut	HDenton	VStallo
3/ /86	2/ /86	4/ /86	4/ /86	4/ /86

RBD-6	PBD-6	PBD-6	PBD#6	FAllenspach	FOB-PWR-B
RIngram	W issing;cf*	CMcCracken*	JStolz*		WRegan
4/ /86	4/16/86	3/31/86	3/31/86	3/31/86	3/31/86

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1. A description of the design and operational history of the ANO-1 RCPs, which are different from the design and/or operation of the Crystal River, Unit 3, and Davis Besse 1 RCPs.
2. The results of your analyses performed subsequent to analyses done for the FSAR which would show the consequences of a locked rotor or broken shaft event during plant operation including the potential consequences from the loss of other operating RCPs considering a loss of offsite power.
3. Considering the higher probability than previously envisioned of a postulated RCP shaft failure, describe any actions you have implemented or have planned such as operator review and associated training concerning the specific events at Crystal River, Unit 3, and Davis Besse 1 and monitoring plant parameters such as primary to secondary reactor coolant leakage.

The staff has prepared reasons for this information request to assure that the burden to be imposed on you is justified in view of the potential safety significance of the issue to be addressed in the requested information. The evaluation of these justifications has been performed by the staff and approved by the Executive Director for Operations or his designee.

The reporting and/or recordkeeping requirements of this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

cc: See next page

<i>ODP</i> AD-PWR-8	<i>BA</i> B-PWR-8	DD:NRR	D:NRR	EDO
DCrutchfield	Fraglia	DEisenhut	HDenton	VStello
3/31/86	4/ /86	4/ /86	4/ /86	4/ /86

*See previous white for concurrences.

PBD-6 RIngram	PBD-6 GVissing;cf*	PBD-6 CMcCracken*	PBD#6 JStolz*	<i>FA</i> FAllenspach	F-PWR-8 WRegan
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1. A description of the design and operational history of the ANO-1 RCPs, which are different from the design and/or operation of the Crystal River, Unit 3, and Davis Besse 1 RCPs.
2. The results of your analyses performed subsequent to analyses done for the FSAR which would show the consequences of a locked rotor or broken shaft event at plant operation at less than full power including the potential consequences from the loss of other operating RCPs considering a loss of offsite power.
3. Considering the higher probability than previously envisioned of a postulated RCP shaft failure, describe any actions you have implemented or have planned such as operator review and associated training concerning the specific events at Crystal River, Unit 3, and Davis Besse 1 and monitoring plant parameters such as primary to secondary reactor coolant leakage.

The staff has prepared reasons for this information request to assure that the burden to be imposed on you is justified in view of the potential safety significance of the issue to be addressed in the requested information. The evaluation of these justifications has been performed by the staff and approved by the Executive Director for Operation or his designee.

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Harold R. Denton, Director
Office of Nuclear Reactor Regulation

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DCrutchfield	FMiraglia	DEisenhut	HDenton	VStello
4/ /86	4/ /86	4/ /86	4/ /86	4/ /86

PBD-6
RIgram
4/ /86

[Signature]
PBD-6
GVissing;cf
4/31/86

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PBD-6
McCracken
3/31/86

[Signature]
PBD#6
Stolz
3/31/86

[Signature]
Fallenspach
4/31/86

FOB-PWR-B
WRagan
4/ /86

Mr. J. M. Griffin
Arkansas Power & Light Company

Arkansas Nuclear One, Unit 1

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