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AUTH. NAME AUTHOR AFFILIATION
VAN BRUNT, E. E. Arizona Nuclear Power Project (formerly Arizona Public Serv
RECIP. NAME RECIPIENT AFFILIATION
MARTIN, J. B. Region 5, Ofc of the Director

SUBJECT: Forwards addl info re LERs 3-87-002-01, 3-87-003-00 & 1-87-018-00, per DF Kirsch 871028 request.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: Standardized plant. 05000528
Standardized plant. 05000529
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INTERNAL:	ACRS MICHELSON	1	1	ACRS MOELLER	2	2
	AEOD/DOA	1	1	AEOD/DSP/NAS	1	1
	AEOD/DSP/ROAB	2	2	AEOD/DSP/TPAB	1	1
	ARM/DCTS/DAB	1	1	DEDRO	1	1
	NRR/DEST/ADS	1	0	NRR/DEST/CEB	1	1
	NRR/DEST/ELB	1	1	NRR/DEST/ICSB	1	1
	NRR/DEST/MEB	1	1	NRR/DEST/MTB	1	1
	NRR/DEST/PSB	1	1	NRR/DEST/RSB	1	1
	NRR/DEST/SGB	1	1	NRR/DLPQ/HFB	1	1
	NRR/DLPQ/QAB	1	1	NRR/DOEA/EAB	1	1
	NRR/DREP/RAB	1	1	NRR/DREP/RPB	2	2
	NRR/DRIS/SIB	1	1	NRR/PMAS/ILRB	1	1
	REG FILE 02	1	1	RES DEPY GI	1	1
	RES TELFORD, J	1	1	RES/DE/EIB	1	1
	RGN5 FILE 01	1	1			
EXTERNAL:	EG&G GROH, M	5	5	FORD BLDG HOY, A	1	1
	H ST LOBBY WARD	1	1	LPDR	1	1
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Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

102-00547-EEVB/TDS
November 24, 1987

J. B. Martin
Regional Administrator
NRC Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Dear Sir:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Docket Nos. 50-528, 50-529, 50-530
Response to Request for Information Contained in License Event Reports
File: 87-056-026

Reference: Letter from D. F. Kirsch, NRC to E. E. Van Brunt, Jr., ANPP, dated October 28, 1987

As requested in the referenced letter, ANPP is providing the additional information for Licensee Event Reports (LER's) 3-87-002-01, 3-87-003-00 and 1-87-018-00 in accordance with 10CFR 50.73 paragraph (c).

Should you have any questions please contact me.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/TDS/kj

Attachment

cc: O. M. DeMichele (all w/a)
J. G. Haynes
D. F. Kirsch
R. P. Zimmerman
J. R. Ball
E. A. Licitra
A. C. Gehr

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1

ATTACHMENT 1

LER 3-87-002-01

COMMENT:

Page 3 of 3, the second paragraph. The LER identifies that the setpoints on the inverter static transfer switch were inadvertently calibrated at a high value. The LER does not discuss how this occurred, i.e., personnel error, procedural error, work order deficiency, etc.

RESPONSE:

The LER identifies that the setpoints on the static transfer switch were inadvertently calibrated at the high value during previous troubleshooting. At the time these settings were originally made, the faulty DC-to-DC converter board had not yet been identified as a contributing factor. The static transfer switch had originally been adjusted to provide the correct transfer time with the faulty DC-to-DC converter board in service. The DC-to-DC converter board's output was subsequently found to be varying intermittently. This fluctuation would, as a consequence, have caused the static transfer switch transfer time to vary. When the DC-to-DC converter board was replaced during troubleshooting for the subject event, the settings were found to be too high, relative to the new board, and the static transfer switch was therefore readjusted to provide the correct response time. No personnel error, procedural error, or work order deficiencies were involved in this sequence of events. Had there been, this would have been addressed in the subject LER in accordance with 10CFR 50.73.

COMMENT:

Page 3 of 3, the third paragraph. The LER identifies that a 300 ampere fuse was found blown. The LER does not indicate why the fuse blew or what purpose the fuse served. The LER does not indicate that a supplemental LER will be transmitted following troubleshooting of the inverter or identification of why the fuse blew.

Response:

The LER identifies that during troubleshooting a 300 amp fuse was found blown. This fuse protects inverter circuitry by insuring that faults will be isolated before inverter output voltage collapses. The fuse in question was blown as a result of the troubleshooting activities summarized below.

With the inverter carrying a 50 amp load, the AC output breaker was turned off to simulate fault conditions. The A2F1 300 amp fuse opened and tripped the undervoltage relay on the PNBD26 panel. Subsequent investigation found that the fast overvoltage adjustment (R111) on the static transfer switch logic board was set too high (after the new DC-to-DC converter was installed, as noted above) and that this caused the forward and reverse transfers to fire at the same time. The voltage for this adjustment (pin 12 of U116) was measured at 7.29 VDC. R111 was adjusted until this voltage was at 6.5 VDC. After this adjustment, the inverter no longer faulted or blew fuses when transferring to and from the regulator. Inasmuch as the fuse was not a contributing factor to the event, and required replacement only as a result of subsequent troubleshooting , no further discussion was deemed necessary.

COMMENT:

Page 3 of 3, the fourth paragraph. The LER identifies that a "B" train Shutdown Cooling System isolation valve was found closed. While the LER does state that an Engineering Evaluation Request (EER) was issued to determine why the valve closed, the LER does not indicate the time by which ANPP estimates the EER will be addressed, nor does the LER indicate that a supplemental LER will follow after the cause is determined.

RESPONSE:

The LER identifies that a "B" train shutdown cooling system isolation valve was found closed, and that an Engineering Evaluation Request (EER) was written to determine why this valve closed. This item, while requiring corrective action, was nevertheless incidental to the event and constitutes a separate problem. NUREG 1022, item 13.2 states that the results of the study (e.g., the EER) should be reported in a revised LER only if it would significantly change the reader's perception of the course, significance, implications, or consequences of the event, or result in substantial changes in the corrective action planned by the licensee. None of these criteria was met. As a matter of interest however, a discussion of the results of the evaluation is provided below.

Testing was conducted in Units 2 and 3 and in the I&C Rework facility to determine why SIB-UV652 had failed closed. This testing subsequently determined that alarm cards (Foxboro)used with this valve will inadvertently alarm on a loss of power of sufficient duration. The root cause of inadvertent alarming is due to the output operational amplifier (LM301A) going into cutoff (alarm) when the supply voltage is out of manufacturer's specification ($\pm$12VDC). The inadvertent alarming may or may not be observed depending on function (alarm only and/or equipment interlock, relay response time and power requirements, etc).

The on-site testing showed worst case inadvertent alarming to occur approximately 40 to 50 msec after a Loss of Power (LOP) to the Foxboro power supply. This condition is a function of the rate of decay of voltages in the associated logic circuits and may cause the "(63x)" contact for the subject valve to energize, thereby closing the valve. All class 1E power to the Foxboro cabinets is uninterruptible and is supplied via static transfer switch. When the static transfer switch operates within the specified time (e.g., 8.3 msec), this type of inadvertent actuation does not occur. Troubleshooting conducted following this event revealed that the static transfer switch was taking up to 3 cycles voltage regulator after a manual or automatic (simulated fault) transfer was initiated. Once the DC-to-DC converter was replaced (see response above) and the static transfer switch adjusted to provide the correct response time, no further problems with inadvertent alarming/equipment actuations were noted.

LER 3-87-003-00

COMMENT:

Page 2 of 6, the second paragraph. The LER states that an evaluation of the loose bolting in June, 1987, determined that the cause may be attributed to system vibration. A cursory review by this office indicates this to be a poor evaluation. With bolts properly torqued and preloaded, system vibration should not result in any relaxation of the torque. The fact that the bolts were found loose would seem to immediately indicate that the bolts were either improperly torqued or that the design was improper. We request you further describe how this evaluation was conducted and what review was received.

RESPONSE:

A review of the evaluation was conducted by ANPP. The potential of system vibration causing the loosening of the bolts was provided as a likely reason by the vendor (Borg-Warner). ANPP agrees that with bolts properly torqued and preloaded, system vibration should not result in any relaxation of the torque. Since the bolts were found loose this, in fact, did indicate that the bolts were improperly torqued. This is why on page 2 of 6, the second paragraph, the sentence after "...system vibration", we stated that the bolts were retorqued. With regard to the design, the next sentence clearly states that Units 1 and 2 were evaluated and did not exhibit this problem. Since the valve design in Unit 3 is the same as Units 1 and 2, the design was not in question resulting in the logical action of retorquing the bolts.

As discussed in detail in the LER, the cause of the loose bolts was ultimately determined to be a bolting configuration discrepancy attributed to a vendor error; a cause neither ANPP nor the NRC suspected based on after-the-fact judgement of information available in June of 1987.

LER 1-87-018-00

COMMENTS:

Page 3 of 4, the third paragraph. The LER indicates that the Operations Support group, prior to the event, was still considering incorporating strategies to control ASI into plant procedures. Our onsite review indicates that the strategies had already been provided to the control room as technical specification interpretations. We request you clarify the status of the Operations Support group action prior to the event.

RESPONSE:

As your onsite review showed, a Technical Specification Interpretation (TSI) had been developed by Reactor Engineering and approved by PVNGS management regarding a method to control ASI at the end of core life.

A TSI is an information document which only shows management's interpretation of Technical Specifications. A TSI can not and will not be utilized to perform plant evolutions. Only approved plant procedures are allowed and verbatim compliance with those procedures is mandatory. The fact a TSI, or any other document which provides information, may be available to control room operators, or any person engaged in activities within the plant, does not supplant ANPP's requirement to follow procedure.

In this particular event, hindsight could indicate that the Operations Support group should have been more expeditious in incorporating the Reactor Engineering strategies for ASI control into plant procedures however, the control room staff clearly adhered to ANPP's policy of procedural compliance.