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**Date:** "JLC@NRC.GOV" <jlc@nrc.gov>  
Wed, Jun 30, 2004 10:45 AM

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*release*

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## Nuclear Management Company

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## E State Change History

Initiate ⊕	AR Pre-Screen 6/28/2004 14:23:24 Owner (None)	Submit to Screening Team ⊕	AR Screening Que 6/28/2004 18:46:41 Owner PBNP CAP Admin
by CHAPMAN, ROB		by SCHLEIF, JAMES	

## E Section 1

**Activity Request Id:** CAP057635

**Activity Type:** CAP      **Submit Date:** 6/28/2004 14:23:24

☞ **One Line Description:** AFW Recirculation AOVs not set up in conformance with Calculations

☞ **Detailed Description:** 6/28/2004 14:23:24 - CHAPMAN, ROB:  
During preparation of Revision 1 to Calculation 2002-0002 for the nitrogen backup system for the Motor-Driven AFW pump AOVs, it was discovered that the AFW recirculation AOVs are not set up in conformance with the calculation. This also applies to the AOVs for the Turbine-Driven AFW pump (and calculation 2001-0056). Both calculations require the AOVs to be set up such that there is a 1/4" gap between the actuator frame and the diaphragm housing when in the shut position. This serves to minimize the dead volume of the actuator. This dead volume is an input to the calculations, and the value used for this actuator (Copes Vulcan D-100-160) dead volume plus stroke volume of 291 cubic inches is contingent on the valve being set up in this manner.

A walkdown confirmed the following dimensions:

1AF-4002 1 7/8"  
AF-4007 1 1/8"  
AF-4014 7/8"  
2AF-4002 1 1/4"

The calculations contain a large amount of margin in that very conservative leakage is assumed, as well as conservatively large number of valve strokes. A review of the effects on the calculations (current revisions on record) using the worst case stroke volume (dead volume plus stroke volume) of 600 cubic inches follows:

Calculation 2001-0056 Rev 2 (TDAFP): If the worst case value of 600 cubic inches is used, it results in a required tank volume of approximately 211 gallons (the 1/2T-212 tanks are actually 150 gallons). If a realistic value of leakage is used (from recent performance of IT 8C), the required tank volume is 154 gallons. The net result of this condition is that less than 2 hours of backup air may be available, if the recirculation valves are stroked 10 times per hour.

Calculation 2002-0002 Rev 0 (MDAFP): If the worst case value of 600 cubic inches is used, it results in a bottle changeout pressure of approximately 1927 psig to ensure a minimum of 90 minutes of operation. Note that this review has also considered CAP057630 was issued earlier that has resulted in a required increase in the changeout pressure to 1950 psig.

6/29/2004 17:22:44 - CHAPMAN, ROB:  
See attached additional discussion for a more detailed evaluation of the effects on the calculations.

<b>Initiator:</b>	CHAPMAN, ROB ☐	<b>Initiator Department:</b>	EXD Engineering Safety & Design Review PB
<b>Date/Time of Discovery:</b>	6/28/2004 14:19:00	<b>Date/Time of Occurrence:</b>	6/28/2004 14:19:00
<b>Identified By:</b>	Site-Identified	<b>System:</b>	AF PB
<b>Equipment # (1st):</b>	(None)	<b>Equipment Name (1st):</b>	(None)
<b>Equipment # (2nd):</b>	(None)	<b>Equipment Name (2nd):</b>	(None)
<b>Equipment # (3rd):</b>	(None)	<b>Equipment Name (3rd):</b>	(None)
<b>Site/Unit:</b>	Point Beach - Common		
<b>Why did this occur?:</b>	6/28/2004 14:23:24 - CHAPMAN, ROB: Requirements from calculations were not transferred to the field for setup of the AOVs.		

<http://cnws02/tmtrack/tmtrack.dll?IssuePage&Template=viewbody&recordid=776999> 6/28/2004

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Immediate Action Taken: 6/28/2004 14:23:24 - CHAPMAN, ROB:

Reviewed calculations for the effects of this condition.

6/28/2004 18:46:41 - SCHLEIF, JAMES:

The following work orders were written to correct the gap setup in the identified AOV's:

Tag 209095 - 1AF-04002

Tag 209097 - AF-04014

Tag 209098 - 2AF-04002

Tag 209096 - AF-04007

All work orders are Pri 3.

Recommendations: 6/28/2004 14:23:24 - CHAPMAN, ROB:

The recirculation AOVs should be set up such that the gap between the actuator frame and the diaphragm housing is less than 1/4". This will bring the actuators into conformance with the calculations.

SRO Review Required?: Y

Section 2

Operability Status: Operable but degraded  Compensatory Actions: N

Basis for Operability: 6/28/2004 18:46:41 - SCHLEIF, JAMES:  
The AFW system and backup pneumatic system for AOV operation are capable of functioning per design however are in a non conforming condition. The AFW system is compliant with all T.S. Surveillance testing and periodicity requirements. Therefore, there is reasonable assurance that for a prompt operability determination, that the AFW system is capable of performing the intended safety function. The issues identified in this CAP pertain to setup of the identified AOV's not in conformance with design specifications. The AFW system is therefore, Operable but Non Conforming. Further justification as follows.

This issue brings into question the duration of time availability of the backup pneumatic systems due to the setup of the AOV's. The AOV's per design were to be set with a 1/4 inch gap between the actuator frame and the diaphragm housing when the valve is full shut. The increased gap on valve setup increases the dead volume on the air operator and thereby increases overall air/gas usage.

The AFW system is capable of acutating and functioning per design. Conservatism in the pneumatic system usage calculations in conjunction with realistic leakage values from the most recent IT-8C indicate 1(2)T-212 may be sized 4 gal less than volume required for 200 minutes of backup operation. Current tank size is 150 gallons, calculated size for 200 minutes under realistic operation is 154 gallons. The increased leakage for the MDAFW pump AOV's requires a minimum nitrogen bottle pressure of 1927 psig. CAP057630 was issued earlier that has resulted in a required increase in the changeout pressure to 1950 psig. Therefore, 90 minutes of AOV operation for the MDAFW pumps will be achieved.

In an accident situation, EOP's, ECA's and CSP's address the monitoring and maintaining of AFW flow. AOP-5B, Loss of Instrument Air provides direction to manually gag recirc valves and motor driven discharge pressure control valves as necessary on a loss of operating air and backup air. Therefore, as a final backup, Operator monitoring and action will be taken to manually override AOV's as necessary.

6/29/2004 12:58:46 - SCHLEIF, JAMES:

Correction to original screening. In the original screening of CAP057635 I incorrectly stated that the design for the backup air system for the TDAFW Pump recirc AOV's was 200 minutes. The correct time is 120 minutes (2 hours).

The design duration for the AFW backup pneumatic systems are referenced in AOP-5B, Loss of Instrument Air. Air backup to the TDAFW Pump mini recirc valves [1(2)AF-4002] is designed for 2 hours. Nitrogen backup to the MDAFW Pump mini recirc valves (AF-4007 and AF-4014) is designed for 90 minutes. AOP-5B, Loss of Instrument Air provides guidance to gag open the mini recirc valves within these time frames upon a loss of instrument air. AOP-5B fold out page provides continuous guidance to either gag open the mini recirc valves or monitor and maintain minimum AFW discharge flow or stop the affected pump, anytime Instrument Air Pressure is less than 65 psig.

PBNP FSAR (06/03) Section 10.2, does not specify a required duration for air or nitrogen backup. The FSAR states that the backup supplies are sized to provide adequate time for operators to either maintain minimum flow through the running pump(s), to secure unneeded

pump(s) if necessary, to restore instrument air, or to use the manual gag on each valve to provide minimum recirculation flow.

Technical Specification Basis, Section B.3.7.5 states that for an AFW Pump System to be considered operable, the minimum recirculation path must be available and the backup pneumatic supply for the minimum recirculation AOV must be operable. There is no time duration specified.

This additional information supports the original screening of Operable but Non Conforming.

Unplanned TSAC Entry: N  External Notification: N

Section 3

Screened?: N  Significance Level: (None)

INPO OE Req'd?: N Potential MRFF?: N

QA/Nuclear Oversight?: N  Licensing Review?: N

Good Catch/Well Doc'd?: NA

Section 4

Inappropriate Action:

Process: (None) Activity: (None)

Human Error Type: (None) Human Perf Fail Mode: (None)

Equip Failure Mode: (None) Process Fail Mode: (None)

Org/Mgt Failure Mode: (None)  Group Causing Prob: (None)

Hot Buttons: (None)

Attachments and Parent/Child Links

[Additional Discussion for CAP057635.doc](#) (28160 bytes) by CHAPMAN, ROB (6/29/2004 17:22:06) 

Change History

6/28/2004 18:46:41 by SCHLEIF, JAMES  
Last State Change Date Changed From \*\*\*\*\* To \*\*\*\*\*  
Last State Changer Changed From \*\*\*\*\* To \*\*\*\*\*

6/29/2004 12:58:46 by SCHLEIF, JAMES  
Basis for Operability Changed From [Original Text] To [Appended:] Correction to original screening. In the original screening of CAP057635 I incorrectly stated that the design for the backup air system for the TDAFW Pump recirc AOV's was 200 minutes. The correct time is 120 minutes (2 hours). The d[...]  
Last Modified Date Changed From \*\*\*\*\* To \*\*\*\*\*

6/29/2004 17:22:10 by CHAPMAN, ROB  
Last Modified Date Changed From \*\*\*\*\* To \*\*\*\*\*  
Last Modifier Changed From \*\*\*\*\* To \*\*\*\*\*  
Attachment Added: Additional Discussion for CAP057635.doc

6/29/2004 17:22:44 by CHAPMAN, ROB  
Detailed Description Changed From [Original Text] To [Appended:] See attached additional discussion for a more detailed evaluation of the effects on the calculations.  
Last Modified Date Changed From \*\*\*\*\* To \*\*\*\*\*  
Last Modifier Changed From \*\*\*\*\* To \*\*\*\*\*

Entry Date/Time	Entry Type	Entry Text
06/29/2004 12:33		Unit 2 Containment entry showed air sample results of 20.6% Oxygen & 2% LEL. Results are SAT for entry. Done per 0-SOP-CONT-1. [Kupsch, Loren - Unit 2 CO - Station Log - Day Shift]
06/29/2004 12:36	DSS Midnight Entry	Late Entry: Correction to information in original screening of CAP057635. Reference SOMS log entry of 1848 on 6/28/2004.  In the original screening of CAP057635 I incorrectly stated that the design for the backup air system for the TDAFW Pump recirc AOV's was 200 minutes. The correct time is 120 minutes (2 hours).  The design duration for the AFW backup pneumatic systems are referenced in AOP-5B, Loss of Instrument Air. Air backup to the TDAFW Pump mini recirc valves [1(2)AF-4002] is designed for 2 hours. Nitrogen backup to the MDAFW Pump mini recirc valves (AF-4007 and AF-4014) is designed for 90 minutes. AOP-5B, Loss of Instrument Air provides guidance to gag open the mini recirc valves within these time frames upon a loss of Instrument air. AOP-5B fold out page provides continuous guidance to either gag open the mini recirc valves or monitor and maintain minimum AFW discharge flow or stop the affected pump, anytime Instrument Air Pressure is less than 65 psig.  PBNP FSAR (06/03) Section 10.2, does not specify a required duration for air or nitrogen backup. The FSAR states that the backup supplies are sized to provide adequate time for operators to either maintain minimum flow through the running pump(s), to secure unneeded pump(s) if necessary, to restore Instrument air, or to use the manual gag on each valve to provide minimum recirculation flow.  Technical Specification Basis, Section B.3.7.5 states that for an AFW Pump System to be considered operable, the minimum recirculation path must be available and the backup pneumatic supply for the minimum recirculation AOV must be operable. There is no time duration specified.  This additional information supports the original screening of Operable but Non Conforming. [Schleif, James - DSS - Station Log - Day Shift]
06/29/2004 12:39		Started transfer of "B" HUT to "A" BAST per 0-SOP-BS-008. "A" BAST OOS and requires BAST sample for return to service due to transfer of B HUT water per 0-SOP-BS-08. ("A" BAST level is at 54.7%). [Meaney, Doug - 3rd License - Station Log - Day Shift]
06/29/2004 12:45		Unit 2 - Adjusted Unit 2 "A" RCP lower oil cooler CCW flow to 7.5 gpm to attain normal spec. flow. [Kupsch, Loren - Unit 2 CO - Station Log - Day Shift]
06/29/2004 13:00		Unit 2 - Unexpected alarm on Unit 2 Hydrogen Panel. It was Hi Hydrogen Temp. All actions of the ARB were taken. Current Cold Gas Temperature is 41C (the alarm is 46C). Other Generator temperatures are also the same as they were on rounds. The Hydrogen Cooler TCW was at 40% (also unchanged from rounds). The Hydrogen Gas Controller showed 41C (normal is 40C-46C). WO tag# 209071 written for suspected temperature module failure. [Kupsch, Loren - Unit 2 CO - Station Log - Day Shift]
06/29/2004 13:22		Per 2ICP 13.004B, L-495 and L-497 are returned to service. Exiting TSAC 3.3.3.A. LCO 3.3.3 (PAM) is now met for Unit 2. [Post, Bob - 4th License - Station Log - Day Shift]
06/29/2004 13:30		Unit 2: Flow restored to U-2 SG Feed Pump Suction sample line post FIN tag-out for PCV replacement [Schepman, Karianne - MISC - Station Log - Day Shift]
06/29/2004 13:54		Started Unit 1 Containment Force Vent per OP-9C using permit # 04-00065G. [Meaney, Doug - 3rd License - Station Log - Day Shift]
06/29/2004 13:59		Troubleshooting efforts continue to recover the blowdown evaporator bottoms loop. WCC has lead. Plan is to decon area around BE-150 to allow evaluation for a temporary patch. The bottoms loop plug, located between BE-151 and 152, will be evaluated by engineering (Mike Miller, Dennis Eavaers, and Jason Roth) to determine a recovery action. Note, we are unable to use a welder to "thaw" the line due to procedure conflicts. Efforts will resume Wednesday morning. [DeBauche, Steve - OS (Fire Brigade) - Station Log - Day Shift]
06/29/2004 14:07		U-2 Initial Conditions are completed for SMP 1194, MAINTENANCE FOR 2CV-285 USING A FREEZE SEAL. [DeBauche, Steve - OS (Fire Brigade) - Station Log - Day Shift]
06/29/2004 14:10		U-1 stopped local, twice/shift monitoring of hotwell level because level has been stable. Local level monitoring was initiated on swing shift 6/28/04 due to level control problems (ref 2020 hrs entry). [DeBauche, Steve - OS (Fire Brigade) - Station Log - Day Shift]
06/29/2004 14:14		Completed transfer of "B" HUT to "A" BAST per 0-SOP-BS-008, ("A" BAST level is at 89.0%). "A" BAST remains OOS and requires BAST sample for return to service. Started transfer of "B" HUT water to "C" BAST per 0-SOP-BS-08. ("C" BAST level is at 72.1%). "C" BAST is OOS and requires BAST sample for return to service. [Meaney, Doug - 3rd License - Station Log - Day Shift]