

A F W

Corrective

Actions

Book 4

A/18

**STATE CHANGE HISTORY**

<b>Initiate</b>  by STEPHEN NIKOLAI	<b>Assign Work</b> 1/18/2002 9:57:32 AM Owner: RICHARD FLESSNER	<b>Assign</b>  by RICHARD FLESSNER	<b>Conduct Work</b> 2/19/2002 4:33:48 PM Owner: RICHARD FLESSNER	<b>Work Complete</b>  by RICHARD FLESSNER	<b>Review &amp; Approval</b> 3/6/2002 9:14:28 AM Owner: RICHARD FLESSNER	<b>Approved</b>  by RICHARD FLESSNER	<b>Quality Check</b> 3/6/2002 9:15:29 AM Owner: PBNP CAP Admin
<b>Complete and Close</b>  by JULIE KREIL	<b>Done</b> 3/12/2002 10:09:10 AM Owner: (None)	<b>Update</b>  by MARYBETH ARNOLD	<b>Conduct Work</b> 4/27/2002 12:16:31 PM Owner: RICHARD FLESSNER	<b>Work Complete</b>  by RICHARD FLESSNER	<b>Review &amp; Approval</b> 6/17/2002 10:35:27 AM Owner: RICHARD FLESSNER	<b>Approved</b>  by RICHARD FLESSNER	<b>Quality Check</b> 6/17/2002 10:36:18 AM Owner: PBNP CAP Admin
<b>Complete and Close</b>  by JULIE KREIL	<b>Done</b> 6/20/2002 7:46:57 AM Owner: (None)						

**SECTION 1**

**Activity Request Id:** OTH003541  
**Activity Type:** Other      **Submit Date:** 1/18/2002 9:57:32 AM  
**Site/Unit:** Point Beach - Common  
**Activity Requested:** This item has been created to track the presentation to and acceptance by the CARB of ACE000314. Actually an RCE (formerly RCE 01-069/CR 01-3595)  
 This item is also tracking the approval of the revised RCE by CARB.  
**CATPR:** N      **Initiator:** MASTERLARK, JAMES  
**Initiator Department:** EPN Engineering Programs Nuclear Safety Analysis PB      **Responsible Group Code:** EXC Engineering Processes Continuous Improvement PB  
**Responsible Department:** Engineering      **Activity Supervisor:** RICHARD FLESSNER  
**Activity Performer:** RICHARD FLESSNER

**SECTION 2**

**Priority:** 4      **Due Date:** 6/30/2002  
**Mode Change Restraint:** (None)      **Management Exception From PI?:** N  
**QA/Nuclear Oversight?:** N      **Licensing Review?:** N  
**NRC Commitment?:** N      **NRC Commitment Date:**

**SECTION 3**



## Import Memo Field:

CAP Admin: PBNP CAP Admin Site: Point Beach  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

## ATTACHMENTS AND PARENT/CHILD LINKS

 [Linked From CAP001415](#)

 [ACE000314: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW](#)

## CHANGE HISTORY

**1/18/2002 9:57:35 AM by STEPHEN NIKOLAI**

Last Modified Date Changed From 1/18/2002 9:57:32 AM To 1/18/2002 9:57:35 AM

Attachment Added: Linked From CAP001415

**1/18/2002 9:58:00 AM by STEPHEN NIKOLAI**

Last Modified Date Changed From 1/18/2002 9:57:35 AM To 1/18/2002 9:58:00 AM

Attachment Added: ACE000314: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW

**2/19/2002 4:33:48 PM by RICHARD FLESSNER**

Priority Changed From (None) To 4

Due Date Changed From Unassigned To 3/15/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Assigned Date Changed From Unassigned To 2/19/2002

Last Modified Date Changed From 1/18/2002 9:58:00 AM To 2/19/2002 4:33:48 PM

Last Modifier Changed From STEPHEN NIKOLAI To RICHARD FLESSNER

Last State Change Date Changed From 1/18/2002 9:57:32 AM To 2/19/2002 4:33:48 PM

Last State Changer Changed From STEPHEN NIKOLAI To RICHARD FLESSNER

**3/6/2002 9:14:28 AM by RICHARD FLESSNER**

Activity Completed Changed From \* To '3/6/2002 9:14AM - RICHARD FLESSNER: This item was presented to CARB on 3/5/2002 and accepted.'

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Last Modified Date Changed From 2/19/2002 4:33:48 PM To 3/6/2002 9:14:28 AM

Last State Change Date Changed From 2/19/2002 4:33:48 PM To 3/6/2002 9:14:28 AM

**3/6/2002 9:15:29 AM by RICHARD FLESSNER**

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From RICHARD FLESSNER To PBNP CAP Admin

Last Modified Date Changed From 3/6/2002 9:14:28 AM To 3/6/2002 9:15:29 AM

Last State Change Date Changed From 3/6/2002 9:14:28 AM To 3/6/2002 9:15:29 AM

CAP Admin Changed From SCOTT PFAFF To PBNP CAP Admin

**3/12/2002 10:09:10 AM by JULIE KREIL**

Activity Completed Changed From [Original Text] To [Appended:] 3/12/2002 10:09AM - JULIE KREIL: CARB accepted the RCE at its meeting of 3/5/02 (see NPM 2002-0112) with 2 actions created. CA003982 was assigned to AP group to review SEN 174 response. CA003983 was created to track CATPR 1 and 2 (C[...])

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From PBNP CAP Admin To (None)

Last Modified Date Changed From 3/6/2002 9:15:29 AM To 3/12/2002 10:09:10 AM

Last Modifier Changed From RICHARD FLESSNER To JULIE KREIL

Last State Change Date Changed From 3/6/2002 9:15:29 AM To 3/12/2002 10:09:10 AM

Last State Changer Changed From RICHARD FLESSNER To JULIE KREIL

Close Date Changed From Unassigned To 3/12/2002 10:09:10 AM

References Changed From 'CR 01-2278 RCE 01-069 GOOD CATCH' To 'CR 01-2278 RCE 01-069 GOOD CATCH NPM 2002-0112'

**4/27/2002 12:16:31 PM by MARYBETH ARNOLD**

Activity Completed Changed From [Original Text] To [Appended:] 4/27/2002 12:16PM - MARYBETH ARNOLD: The RCE tracked in t-Track as ACE000314 requires revision; therefore, this item is being re-opened to track presentation of the revision to CARB.'

State Changed From Done To Conduct Work Via Transition: Update

Active/Inactive Changed From Inactive To Active

Owner Changed From (None) To RICHARD FLESSNER

Last Modified Date Changed From 3/12/2002 10:09:10 AM To 4/27/2002 12:16:31 PM

Last Modifier Changed From JULIE KREIL To MARYBETH ARNOLD

Last State Change Date Changed From 3/12/2002 10:09:10 AM To 4/27/2002 12:16:31 PM

Last State Changer Changed From JULIE KREIL To MARYBETH ARNOLD

Close Date Changed From 3/12/2002 10:09:10 AM To Unassigned

**5/1/2002 3:05:10 PM by RICHARD FLESSNER**

Activity Requested Changed From 'This item has been created to track the presentation to and acceptance by the CARB of ACE000314. Actually an RCE (formerly RCE 01-069/CR 01-3595)' To 'This item has been created to track the presentation to and acceptance by the CARB of ACE000314. Actually an RCE (formerly RCE 01-069/CR 01-3595) This item is also tracking the approval of the revised RCE by CARB.'

Due Date Changed From 3/15/2002 To 6/30/2002

Activity Completed Changed From [Original Text] To [Appended:] 5/1/2002 3:05PM - RICHARD FLESSNER: RCE 01-069 (ACE000314) is being revised based on information gathered during preparation for the NRC regulatory conference on this issue. A revised RCE is being prepared and will go to CARB. RAF'

Last Modified Date Changed From 4/27/2002 12:16:31 PM To 5/1/2002 3:05:10 PM

Last Modifier Changed From MARYBETH ARNOLD To RICHARD FLESSNER

**6/17/2002 10:35:27 AM by RICHARD FLESSNER**

Activity Completed Changed From [Original Text] To [Appended:] Rev. 1 of RCE 01-069 was presented to CARB on 6/4/2002. This item is complete.'

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Last Modified Date Changed From 5/1/2002 3:05:10 PM To 6/17/2002 10:35:27 AM

Last State Change Date Changed From 4/27/2002 12:16:31 PM To 6/17/2002 10:35:27 AM

Last State Changer Changed From MARYBETH ARNOLD To RICHARD FLESSNER

**6/17/2002 10:36:18 AM by RICHARD FLESSNER**

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From RICHARD FLESSNER To PBNP CAP Admin

Last Modified Date Changed From 6/17/2002 10:35:27 AM To 6/17/2002 10:36:18 AM

Last State Change Date Changed From 6/17/2002 10:35:27 AM To 6/17/2002 10:36:18 AM

**6/20/2002 7:46:57 AM by JULIE KREIL**

Activity Requested Changed From 'This item has been created to track the presentation to and acceptance by the CARB of ACE000314. Actually an RCE (formerly RCE 01-069/CR 01-3595) This item is also tracking the approval of the revised RCE by CARB.' To 'This item has been created to track the presentation to and acceptance by the CARB of ACE000314. Actually an RCE (formerly RCE 01-069/CR 01-3595) This item is also tracking the approval of the revised RCE by CARB.'

Activity Completed Changed From [Original Text] To [Appended:] At 6/04/2002 CARB meeting, CARB accepted Revision 1 of this RCE with no further actions or editorial changes to be made (reference NPM 2002-0292). CLOSED OTH003541.'

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From PBNP CAP Admin To (None)

Last Modified Date Changed From 6/17/2002 10:36:18 AM To 6/20/2002 7:46:57 AM

Last Modifier Changed From RICHARD FLESSNER To JULIE KREIL

Last State Change Date Changed From 6/17/2002 10:36:18 AM To 6/20/2002 7:46:57 AM

Last State Changer Changed From RICHARD FLESSNER To JULIE KREIL

Close Date Changed From Unassigned To 6/20/2002 7:46:57 AM

References Changed From 'CR 01-2278 RCE 01-069 GOOD CATCH NPM 2002-0112' To 'CR 01-2278 RCE 01-069 GOOD CATCH NPM 2002-0112 NPM 2002-0292'



**INTERNAL  
CORRESPONDENCE**

NPM 2002-0292

To: CARB Members

From: S. J. Nikolai

Date: June 12, 2002

Subject: MINUTES FROM THE JUNE 4, 2002 CARB MEETING

Copy To: S. A. Pfaff                      R. Hopkins                      M. E. Warner                      M. E. Reddemann  
            J. M. Kreil                         M. B. Arnold                      J. R. Pulvermacher                P. Krohn  
            G. Krogh                             R. Flessner                        L. Peterson                         K. Bennett  
            File

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A CARB meeting was held on Tuesday, June 4, 2002 at 1200 in PB-ENG-120 at PBNP. CARB members in attendance were: Ken Peveler, Myra McCarthy, Rick Repshas, and Byron Day. Non-Voting members were Steve Nikolai, Roger Nicolai, Terry Van Valkenburg, and Dennis Hettick. Guests in attendance were Rich Flessner, Kevin Bennett, Gordie Krogh, and Larry Peterson.

1. PBNP RCE 01-069, Revision 1, (CR 01-3595), Increased CDF in AFW PRA Model Due to Procedural Inadequacies Related to Loss of Instrument Air, was presented. The purpose of this investigation was to determine the root and contributing causes of why the emergency operating procedural inadequacies existed that contributed to the increased core damage frequency for the Aux. Feed System during a loss of instrument air event, and why these inadequacies were not identified previously. (Note: This RCE required revision because additional information and insight were developed during preparations for the NRC regulatory conference held on this issue.) CARB member had a concern that the Extent of Condition did not contain enough specific content describing the actions taken. The consensus of CARB was that there was enough supporting documentation in the RCE to address the actions taken. The concern is being noted in these minutes. CARB accepts the revision of this RCE with no further actions or editorial changes to be made. This RCE has already been scored in revision 0 of the RCE.
  
2. PBNP RCE000046 (CAP002354), Failure to Implement the VTIP Program, was presented. The purpose of the root cause evaluation was to determine the reason the Vendor Technical Information Program (VTIP) has not been fully implemented at PBNP and to recommend corrective actions to fix the problems and prevent recurrence. The CARB members were concerned about the lack of knowledge that the station had on the VTIP process. CARB member also had the concern that a significant factor was missing in which the station is not as aware as it should be on the VTIP process and its importance. This concern needs to be addressed and captured in the RCE. CARB accepts the RCE the following actions:
  - A.) Develop intermediate actions, and review the NRC commitment.
  - B.) Communicate VTIP processing and it's importance to the station.

REGD JUN 20 2002

Page 2

CARB requested to review the RCE after changes were made.

CARB Score: 50%

Approved:   
D. A. Hettick

tlz



**INTERNAL  
CORRESPONDENCE**

NPM 2002-0112-A

**To:** CARB Members

**From:** S. J. Nikolai

**Date:** March 12, 2002

**Subject:** MINUTES FROM THE March 5, 2002 CARB MEETING

<b>Copy To:</b>	S. A. Pfaff	R. Hopkins	M. E. Warner	M. E. Reddemann
	J. M. Kreil	M. B. Arnold	J. R. Pulvermacher	P. Krohn
	K. Bennett	R. Flessner	L. Peterson	File

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A CARB meeting was held on Tuesday, March 5, 2002 at 1200 in PB-ENG-120 at PBNP. CARB members in attendance were, Rick Pulec, Rick Mende, Parks Walker, Ken Peveler, and Fred Cayia. Non-Voting Member was Dennis Hettick. Guests in attendance were Kevin Bennett, Rich Flessner, and Larry Peterson.

1. PBNP RCE 01-069, (CR 01-3595), Increased CDF in AFW Model Due to Procedural Inadequacies Related to Instrument Air, was presented. The purpose of this investigation was to determine the root and contributing causes of why the emergency operating procedural inadequacies existed that contributed to the increased core damage frequency (CDF) for the Auxiliary Feedwater system during a loss of instrument air event, and why these inadequacies were not identified previously. CARB accepts the RCE with the following actions:

- a.) Review SEN 174 response. This item is discussed on Page 26 of the RCE. Re-open the OE items if questions about the procedures for ensuring adequate pump flow is maintained; are not fully addressed, including pumps other than AFP's.
- b.) Bring back closure documentation for CATPR 1 and 2, and corrective action to restore #1 (PRA model analysis) to CARB for review after they all have been completed. Track this in TTRACK. Set exception for Performance Indicators to yes.

**CARB Score: 100%. (CARB felt that this was an excellent RCE).**

2. PBNP RCE 01-047 Rev.1 (CR 01-2385), Unit 1 Main Feed Pump Motor Inboard Bearing Failures, was presented. The purpose of this evaluation was to determine the cause of the inboard bearing failures for the 1P-28B-M that occurred in June and August of 2001, and make recommendations for correcting the problem and preventing recurrence. CARB accepted the RCE with no further actions.

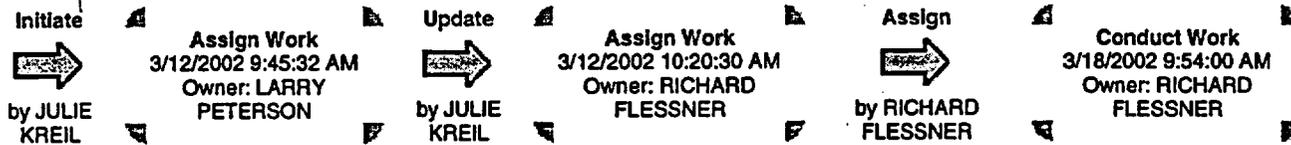
**CARB Score: 100%**

Approved: \_\_\_\_\_

D. A. Hettick

tlz

**STATE CHANGE HISTORY**



**SECTION 1**

Activity Request Id: CA003983  
 Activity Type: Corrective Action      Submit Date: 3/12/2002 9:45:32 AM  
 Site/Unit: Point Beach - Common  
 Activity Requested: Per CARB Meeting of 3/05/2002 (NPM 2002-0122), bring back closure documentation to be reviewed during a CARB meeting once CATPRs 1, 2 (CA003691 and CA003692), and CA003693 are completed.

☉ CATPR: N      Initiator: MASTERLARK, JAMES  
 Initiator Department: EPN Engineering Programs Nuclear Safety Analysis PB      Responsible Group Code: EXC Engineering Processes Continuous Improvement PB  
 Responsible Department: Engineering      Activity Supervisor: RICHARD FLESSNER  
 Activity Performer: RICHARD FLESSNER

**SECTION 2**

Priority: 4      Due Date: 10/15/2002  
 Mode Change Restraint: (None)      Management Exception From PI?: Y  
 ☉ QA/Nuclear Oversight?: N      ☉ Licensing Review?: N  
 NRC Commitment?: N      ☉ NRC Commitment Date:

**SECTION 3**

Activity Completed:

**SECTION 4**

QA Supervisor: (None)      Licensing Supervisor: (None)

**SECTION 5**

☉ Project: CAP Activities & Actions  
 ☉ State: Conduct Work      ☉ Active/Inactive: Active  
 ☉ Owner: RICHARD      AR Type: Parent

FLESSNER 

 **Submitter:** JULIE KREIL  **Assigned Date:** 3/18/2002  
 **Last Modified Date:** 3/18/2002 9:54:00 AM  **Last Modifier:** RICHARD FLESSNER   
 **Last State Change Date:** 3/18/2002 9:54:00 AM  **Last State Changer:** RICHARD FLESSNER 

 **Close Date:**

 **One Line Description:** Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW

**NUTRK ID:** CR 01-3595

**Child Number:** 0

**References:** CR 01-2278 ERCE 01-069 GOOD CATCH

**Update:** E\20011204 PB2171 JMK1) Operability Determination (OD) Part I, Revision 0, of CR 01-3595 was approved on 11/30/01. Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures ARE required. \Operability Determination (OD) Part I, Revision 1 of CR 01-3595 was approved on 12/01/01. Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures ARE required.

**Import Memo Field:**

**CAP Admin:** SCOTT PFAFF  **Site:** Point Beach

**OLD\_ACTION\_NUM:**

**Cartridge and Frame:**

**NOTES/COMMENTS**

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**Management Exception from performance indicator** by DENNIS HETTICK (3/14/2002 12:12:59 PM)  
Set the management exception from performance indicator to YES. This was approved by AJ Cayia at the CARB meeting of 3/05/2002.

**ATTACHMENTS AND PARENT/CHILD LINKS**

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 [Linked From CAP001415](#)

[exception to performance indicator.pdf](#)

**CHANGE HISTORY**

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**3/12/2002 9:45:34 AM by JULIE KREIL**

Last Modified Date Changed From 3/12/2002 9:45:32 AM To 3/12/2002 9:45:34 AM

Attachment Added: Linked From CAP001415

**3/12/2002 10:20:30 AM by JULIE KREIL**

Responsible Group Code Changed From EX Engineering Processes PB To EXC Engineering Processes Continuous Improvement PB

Activity Supervisor Changed From LARRY PETERSON To RICHARD FLESSNER

Owner Changed From LARRY PETERSON To RICHARD FLESSNER

Last Modified Date Changed From 3/12/2002 9:45:34 AM To 3/12/2002 10:20:30 AM

**3/14/2002 12:12:59 PM by DENNIS HETTICK**

Last Modified Date Changed From 3/12/2002 10:20:30 AM To 3/14/2002 12:12:59 PM

Last Modifier Changed From JULIE KREIL To DENNIS HETTICK

Attachment Added: Management Exception from performance indicator

**3/14/2002 12:15:52 PM by DENNIS HETTICK**

Management Exception From PI? Changed From N To Y

Last Modified Date Changed From 3/12/2002 10:20:30 AM To 3/14/2002 12:15:52 PM

Last Modifier Changed From JULIE KREIL To DENNIS HETTICK

**3/14/2002 12:42:50 PM by TRACEY ZIFKO**

Last Modified Date Changed From 3/14/2002 12:15:52 PM To 3/14/2002 12:42:50 PM

Last Modifier Changed From DENNIS HETTICK To TRACEY ZIFKO

Attachment Added: exception to performance indicator.pdf

**3/18/2002 9:54:00 AM by RICHARD FLESSNER**

Priority Changed From (None) To 4

Due Date Changed From Unassigned To 10/15/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Assigned Date Changed From Unassigned To 3/18/2002

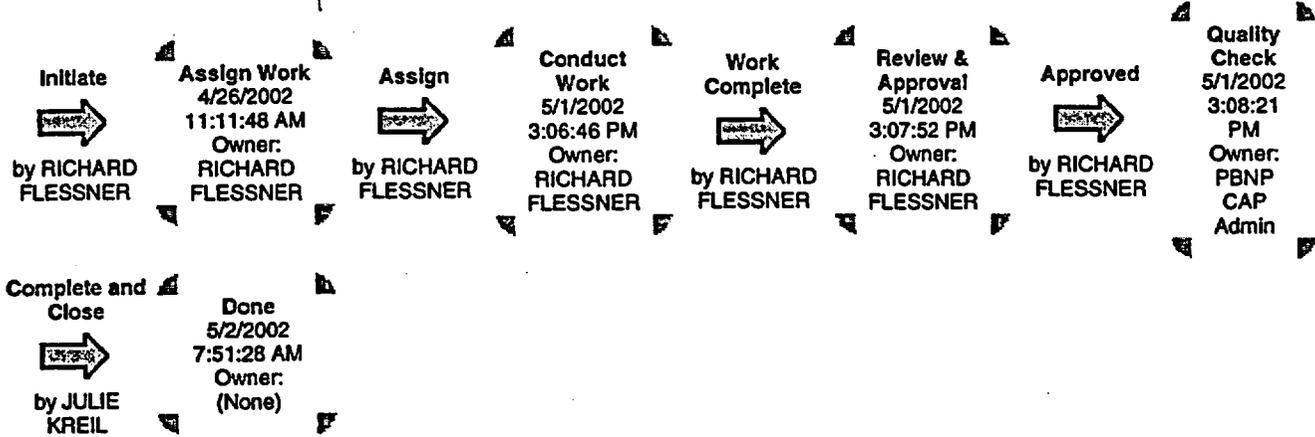
Last Modified Date Changed From 3/14/2002 12:42:50 PM To 3/18/2002 9:54:00 AM

Last Modifier Changed From TRACEY ZIFKO To RICHARD FLESSNER

Last State Change Date Changed From 3/12/2002 9:45:32 AM To 3/18/2002 9:54:00 AM

Last State Changer Changed From JULIE KREIL To RICHARD FLESSNER

**STATE CHANGE HISTORY**



**SECTION 1**

Activity Request Id: OTH004389  
 Activity Type: Other Submit Date: 4/26/2002 11:11:48 AM  
 Site/Unit: Point Beach - Common  
 Activity Requested: Revise RCE 01-069 (ACE000314) to reflect information gained during preparations for NRC regulatory conference.  
 CATPR: N Initiator: MASTERLARK, JAMES  
 Initiator Department: EPN Engineering Programs Nuclear Safety Analysis PB Responsible Group Code: EXC Engineering Processes Continuous Improvement PB  
 Responsible Department: Engineering Activity Supervisor: RICHARD FLESSNER  
 Activity Performer: RICHARD FLESSNER

**SECTION 2**

Priority: 2 Due Date: 5/27/2002  
 Mode Change Restraint: (None) Management Exception From PI?: N  
 QA/Nuclear Oversight?: N Licensing Review?: N  
 NRC Commitment?: N NRC Commitment Date:

**SECTION 3**

Activity Completed: 5/1/2002 3:07PM - RICHARD FLESSNER:  
 ACE000314 has been reopened to track this activity. This action item should be closed.  
 5/2/2002 7:51AM - JULIE KREIL:  
 This item is CLOSED. OTH003541 will track revision of RCE 01-069 (ACE000314) to CARB.  
 6/14/2002 8:11:26 AM - JULIE KREIL:  
 At CARB meeting of 6/04/2002, CARB accepted the revision of this RCE with no further actions or editorial changes to be made. (Reference NPM 2002-0292.)

QA Supervisor: (None)

Licensing Supervisor: (None)

SECTION 5

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**Project:** CAP Activities & Actions  
  
**State:** Done **Active/Inactive:** Inactive  
**Owner:** (None) **AR Type:** Parent  
**Submitter:** RICHARD FLESSNER **Assigned Date:** 5/1/2002  
  
**Last Modified Date:** 6/14/2002 8:11:26 AM **Last Modifier:** JULIE KREIL   
**Last State Change Date:** 5/2/2002 7:51:28 AM **Last State Changer:** JULIE KREIL   
**Close Date:** 5/2/2002 7:51:28 AM  
**One Line Description:** Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW  
**NUTRK ID:** CR 01-3595  
**Child Number:** 0  
**References:** NPM 2002-0292  
**Update:**  
**Import Memo Field:**  
**CAP Admin:** PBNP CAP Admin **Site:** Point Beach  
**OLD\_ACTION\_NUM:**  
**Cartridge and Frame:**

ATTACHMENTS AND PARENT/CHILD LINKS

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   [ACE000314: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW](#)

   [Linked From CAP001415](#)

CHANGE HISTORY

---

4/26/2002 11:11:16 AM by RICHARD FLESSNER

Attachment Added: ACE000314: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW

4/26/2002 11:11:53 AM by RICHARD FLESSNER

Last Modified Date Changed From 4/26/2002 11:11:48 AM To 4/26/2002 11:11:53 AM

Attachment Added: Linked From CAP001415

5/1/2002 3:06:46 PM by RICHARD FLESSNER

Activity Performer Changed From (None) To RICHARD FLESSNER

Priority Changed From (None) To 2

Due Date Changed From Unassigned To 5/27/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Assigned Date Changed From Unassigned To 5/1/2002

Last Modified Date Changed From 4/26/2002 11:11:53 AM To 5/1/2002 3:06:46 PM

Last State Change Date Changed From 4/26/2002 11:11:48 AM To 5/1/2002 3:06:46 PM

5/1/2002 3:07:52 PM by RICHARD FLESSNER

Activity Completed Changed From \* To '5/1/2002 3:07PM - RICHARD FLESSNER: ACE000314 has been reopened to track this activity.

This action item should be closed.'

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Last Modified Date Changed From 5/1/2002 3:06:46 PM To 5/1/2002 3:07:52 PM

Last State Change Date Changed From 5/1/2002 3:06:46 PM To 5/1/2002 3:07:52 PM

**5/1/2002 3:08:21 PM by RICHARD FLESSNER**

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From RICHARD FLESSNER To PBNP CAP Admin

Last Modified Date Changed From 5/1/2002 3:07:52 PM To 5/1/2002 3:08:21 PM

Last State Change Date Changed From 5/1/2002 3:07:52 PM To 5/1/2002 3:08:21 PM

CAP Admin Changed From SCOTT PFAFF To PBNP CAP Admin

**5/2/2002 7:51:28 AM by JULIE KREIL**

Activity Completed Changed From '5/1/2002 3:07PM - RICHARD FLESSNER: ACE000314 has been reopened to track this activity. This action item should be closed.' To '5/1/2002 3:07PM - RICHARD FLESSNER: ACE000314 has been reopened to track this activity. This action item should be closed. 5/2/2002 7:51AM - JULIE KREIL: This item is CLOSED. OTH003541 will track revision of RCE 01-069 (ACE000314) to CARB.'

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From PBNP CAP Admin To (None)

Last Modified Date Changed From 5/1/2002 3:08:21 PM To 5/2/2002 7:51:28 AM

Last Modifier Changed From RICHARD FLESSNER To JULIE KREIL

Last State Change Date Changed From 5/1/2002 3:08:21 PM To 5/2/2002 7:51:28 AM

Last State Changer Changed From RICHARD FLESSNER To JULIE KREIL

Close Date Changed From Unassigned To 5/2/2002 7:51:28 AM

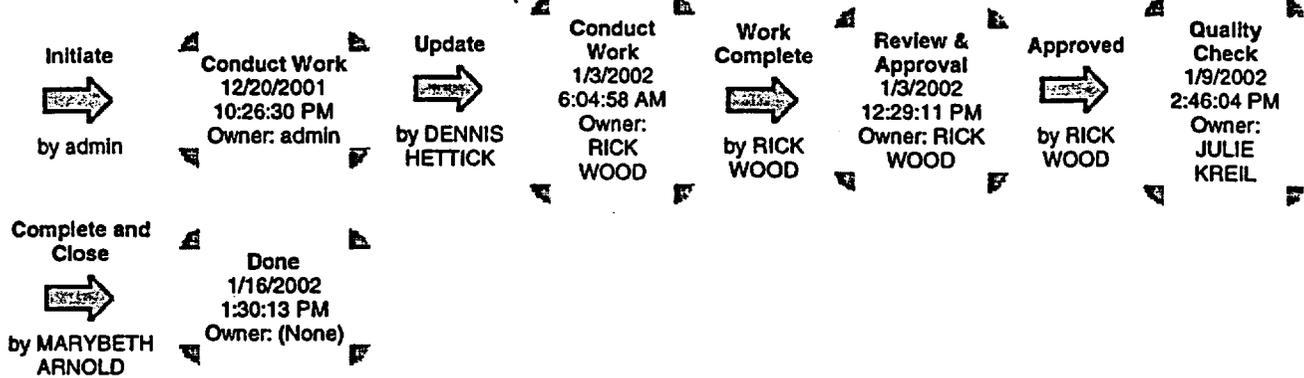
**6/14/2002 8:11:26 AM by JULIE KREIL**

Activity Completed Changed From '[Original Text]' To '[Appended:] At CARB meeting of 6/04/2002, CARB accepted the revision of this RCE with no further actions or editorial changes to be made. (Reference NPM 2002-0292.)'

Last Modified Date Changed From 5/2/2002 7:51:28 AM To 6/14/2002 8:11:26 AM

References Changed From " To 'NPM 2002-0292'

**STATE CHANGE HISTORY**



**SECTION 1**

Activity Request Id: CA002592  
 Activity Type: Corrective Action      Submit Date: 12/4/2001 1:00:00 AM  
 Site/Unit: Point Beach - Common

Activity Requested: **REQUIRED ACTION: Implement Recommendation #2. \DESCRIPTION: While performing an update to the Auxiliary Feed Water (AFW) System model\in the PRA, a procedural shortcoming was identified in AOP 5B with regards to the availability of the minimum recirculation valve with the loss of instrument air. This issue was documented in CR 01-2278 with a recommendation to upgrade the procedure. Upon further review of this issue with PRA engineers, Operations, and Design Engineering, it was discovered that this issue has further reaching affects as documented below.\Instrument air (IA) can be lost primarily by two failure mechanisms. The first, and most likely, is a loss of off-site power where the IA and Service Air (SA) compressors are stripped from the bus and not automatically re-loaded. The second less likely scenario is a random loss of the instrument air system due to equipment failure without potential for short term recovery. When IA is lost, the minimum flow recirculation valves for AFW fail closed.\During these two transients, the AFW pumps will start injecting into the steam generators. Early in the EOPs, the operator is directed to control flow to the steam generators to maintain desired level. This may include shutting off flow to one or both steam generators if level is above the desired band. If flow from any auxiliary feed pump is reduced too low (as would occur if the auxiliary feed regulating valves are closed) without functional recirculation valves, the pump will fail in a very short period of time. This common mode of failure (common loss of instrument air and common response to high steam generator level) could result in simultaneous failure of all AFW pumps.\PRA has estimated the risk associated with this issue. The total risk increase due to both the loss of off-site power and loss of instrument air contribution is approximately a factor of 4 times higher than our assumed base risk with an overall increase in the area of 2E-4 CDF per year (base risk is around 5E-5 CDF per year).\WHY DID EVENT/ISSUE OCCUR? Current design of plant - deficiency not previously recognized.\RECOMMENDATIONS: 1) Engineering needs to further evaluate and determine long term corrective action.\2) PRA needs to evaluate and provide guidance for short term Maintenance Rule risk monitoring until new model is implemented.**

© CATPR: N      Initiator: (None)  
 Initiator Department: (None)      Responsible Group Code: EPP Engineering Programs PRA PB  
 Responsible Department: Engineering      Activity Supervisor: RICK WOOD  
 Activity Performer: RICK WOOD

**SECTION 2**

Priority: 3      Due Date: 12/28/2001

Mode Change Restraint: (None) Management Exception From PI?: N  
 QA/Nuclear Oversight?: N Licensing Review?: N  
 NRC Commitment?: N NRC Commitment Date:

SECTION 3

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**Activity Completed:** 1/3/2002 11:29AM - RICK WOOD:  
 The attached Email from PNK describes the resolution of this corrective action. It states that the current version of Safety Monitor is appropriate for assessing maintenance work as required by 10CFR50.65 a(4).  
 1/3/2002 11:35AM - RICK WOOD:  
 An Email was sent to PN Knoespel to review this closeout.  
 1/9/2002 1:46PM - RICK WOOD:  
 PNK reviewed the closeout and concurred. The item may be closed.  
 1/16/2002 1:30PM - MARYBETH ARNOLD:  
 CLOSED per the actions taken as documented here and by the attached e-mail.

SECTION 4

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QA Supervisor: (None) Licensing Supervisor: (None)

SECTION 5

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Project: CAP Activities & Actions  
 State: Done Active/Inactive: Inactive  
 Owner: (None) AR Type: Daughter  
 Submitter: admin Assigned Date:  
 Last Modified Date: 1/16/2002 1:30:13 PM Last Modifier: MARYBETH ARNOLD  
 Last State Change Date: 1/16/2002 1:30:13 PM Last State Changer: MARYBETH ARNOLD  
 Close Date: 1/16/2002 1:30:13 PM  
 One Line Description: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW  
 NUTRK ID: CR 01-3595  
 Child Number: 2  
 References: CR 01-2278 ERCE 01-069 EGOOD CATCH  
 Update: (12/07/01 RPW) Received Action into Group: NSA/Responsible Person: RPW:RICK WOOD Due Date: 12/28/2001 (20011207 PB3114 RPW) Set Work Priority to 3. Corrective action for a significant issue. (12/07/01 RPW) The PRA group will continue to evaluate the significance of scheduled work activities based on the risk increase from the issue.  
 Import Memo Field: XU0384:Activity Performer//XU0384:Initiator//  
 CAP Admin: JULIE KREIL Site: Point Beach  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

## ATTACHMENTS AND PARENT/CHILD LINKS

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 [Linked From Parent 'CAP001415'](#)

[Email from PNKnoespel](#)

## CHANGE HISTORY

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**12/20/2001 10:26:31 PM by admin**

Submit Date Changed From 12/20/2001 10:26:30 PM To 12/4/2001 1:00:00 AM

**12/20/2001 10:26:33 PM by admin**

Last Modified Date Changed From 12/20/2001 10:26:30 PM To 12/20/2001 10:26:33 PM

Attachment Added: [Linked From Parent 'CAP001415'](#)

**12/27/2001 10:51:42 AM by RICK WOOD**

Last Modified Date Changed From 12/20/2001 10:26:33 PM To 12/27/2001 10:51:42 AM

Last Modifier Changed From admin To RICK WOOD

Attachment Added: [Email from PNKnoespel](#)

**1/2/2002 2:20:58 PM by JULIE KREIL**

Activity Supervisor Changed From JULIE KREIL To RICK WOOD

Last Modified Date Changed From 12/27/2001 10:51:42 AM To 1/2/2002 2:20:58 PM

Last Modifier Changed From RICK WOOD To JULIE KREIL

**1/3/2002 6:04:58 AM by DENNIS HETTICK**

Responsible Group Code Changed From EPN Engineering Programs Nuclear Safety Analysis PB To EPP Engineering Programs PRA PB

Responsible Department Changed From (None) To Engineering

Activity Performer Changed From admin To RICK WOOD

Owner Changed From admin To RICK WOOD

Last Modified Date Changed From 1/2/2002 2:20:58 PM To 1/3/2002 6:04:58 AM

Last Modifier Changed From JULIE KREIL To DENNIS HETTICK

**1/3/2002 12:29:11 PM by RICK WOOD**

Activity Completed Changed From " To '1/3/2002 11:29AM - RICK WOOD: The attached Email from PNK describes the resolution of this corrective action. It states that the current version of Safety Monitor is appropriate for assessing maintenance work as required by 10CFR50.65 a(4).'

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Last Modified Date Changed From 1/3/2002 6:04:58 AM To 1/3/2002 12:29:11 PM

Last Modifier Changed From DENNIS HETTICK To RICK WOOD

Last State Change Date Changed From 12/20/2001 10:26:30 PM To 1/3/2002 12:29:11 PM

Last State Changer Changed From admin To RICK WOOD

**1/3/2002 12:35:51 PM by RICK WOOD**

Activity Completed Changed From '[Original Text]' To '[Appended:] 1/3/2002 11:35AM - RICK WOOD: An Email was sent to PN Knoespel to review this closeout.'

Last Modified Date Changed From 1/3/2002 12:29:11 PM To 1/3/2002 12:35:51 PM

**1/9/2002 2:46:04 PM by RICK WOOD**

Activity Completed Changed From '[Original Text]' To '[Appended:] 1/9/2002 1:46PM - RICK WOOD: PNK reviewed the closeout and concurred. The item may be closed.'

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From RICK WOOD To JULIE KREIL

Last Modified Date Changed From 1/3/2002 12:35:51 PM To 1/9/2002 2:46:04 PM

Last State Change Date Changed From 1/3/2002 12:29:11 PM To 1/9/2002 2:46:04 PM

CAP Admin Changed From (None) To JULIE KREIL

**1/16/2002 1:30:13 PM by MARYBETH ARNOLD**

Due Date Changed From 12/28/2001 To 12/28/2001

Activity Completed Changed From '[Original Text]' To '[Appended:] 1/16/2002 1:30PM - MARYBETH ARNOLD: CLOSED per the actions taken as documented here and by the attached e-mail.'

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From JULIE KREIL To (None)

Last Modified Date Changed From 1/9/2002 2:46:04 PM To 1/16/2002 1:30:13 PM

Last Modifier Changed From RICK WOOD To MARYBETH ARNOLD

Last State Change Date Changed From 1/9/2002 2:46:04 PM To 1/16/2002 1:30:13 PM

Last State Changer Changed From RICK WOOD To MARYBETH ARNOLD

Close Date Changed From Unassigned To 1/16/2002 1:30:13 PM

## **Flessner, Richard**

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**From:** Knoespel.Paul  
**Sent:** Friday, December 14, 2001 11:32 AM  
**To:** NP-PBNP-STA; Varga.Richard; Krukowski.Robert; Geier.Rob; Reeves.Daniel  
**Cc:** Wood.Rick; Masterlark.James; Tugel.Max; Schroeder.Dave  
**Subject:** Accuracy of Safety Monitor Given the AFW Mini-Recirc Issue

Since the issue with the AFW mini-recirc valve was identified two weeks ago, one question we left open was the accuracy of the current PRA model in Safety Monitor. We just finished doing a comparison of results from the current Safety Monitor and the new PRA model that correctly accounts for the additional operator action to verify min-flow for the AFW pumps when throttling back flow to the steam generators. None of our test cases showed a YELLOW risk level with the new model where Safety Monitor predicted a GREEN risk level. These test cases were run both for individual components and for those same components in combination with G02 being unavailable.

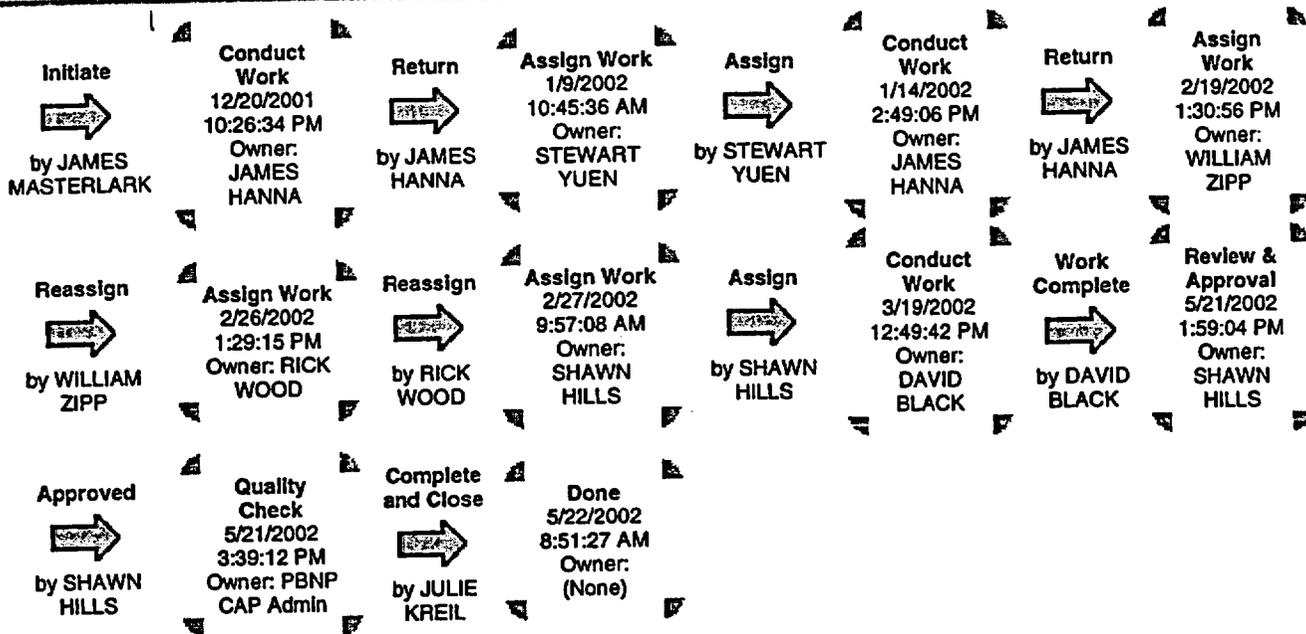
We therefore concluded that the current Safety Monitor model still provides reasonably accurate results and can be used as-is in the interim until the new model is finalized and loaded into the new Safety Monitor version.

As always, if you have any questions on risk evaluations or the results you are seeing from Safety Monitor, please call or page one of us.

Paul Knoespel, x7508, pgr #6027  
Jim Masterlark, x7591, pgr #5387  
Rick Wood (PRA Group Supervisor), x7434

P.S. - Max Tugel will be leaving our group at the end of next week (12/21), so he won't be available to assist with risk questions after that date.

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CA002593  
 Activity Type: Corrective Action Submit Date: 12/4/2001 1:00:00 AM

Site/Unit: Point Beach - Common

Activity Requested: REQUIRED ACTION: Perform OD CR 01-3595, Part II (12/31/01 due date). \DESCRIPTION: While performing an update to the Auxiliary Feed Water (AFW) System mode\N in the PRA, a procedural shortcoming was identified in AOP 5B with regards to the availability of the minimum recirculation valve with the loss of instrument air. This issue was documented in CR 01-2278 with a recommendation to upgrade the procedure. Upon further review of this issue with PRA engineers, Operations, and Design Engineering, it was discovered that this issue has further reaching affects as documented below.\Instrument air (IA) can be lost primarily by two failure mechanisms. The first, and most likely, is a loss of off-site power where the IA and Service Air (SA) compressors are stripped from the bus and not automatically re-loaded. The second less likely scenario is a random loss of the instrument air system due to equipment failure without potential for short term recovery. When IA is lost, the minimum flow recirculation valves for AFW fail closed.\During these two transients, the AFW pumps will start injecting into the steam generators. Early in the EOPs, the operator is directed to control flow to the steam generators to maintain desired level. This may include shutting off flow to one or both steam generators if level is above the desired band. If flow from any auxiliary feed pump is reduced too low (as would occur if the auxiliary feed regulating valves are closed) without functional recirculation valves, the pump will fail in a very short period of time. This common mode of failure (common loss of instrument air and common response to high steam generator level) could result in simultaneous failure of all AFW pumps.\PRA has estimated the risk associated with this issue. The total risk increase due to both the loss of off-site power and loss of instrument air contribution is approximately a factor of 4 times higher than our assumed base risk with an overall increase in the area of 2E-4 CDF per year (base risk is around 5E-5 CDF per year).\WHY DID EVENT/ISSUE OCCUR? Current design of plant - deficiency not previously recognized.\RECOMMENDATIONS: 1) Engineering needs to further evaluate and determine long term corrective action.\2) PRA needs to evaluate and provide guidance for short term Maintenance Rule risk monitoring until new model is implemented.

CATPR:

N

Initiator:

YUEN,  
STEWART

Initiator Department: EEV Engineering  
Equipment Valve  
Performance PB 

Responsible Group Code: (None)

Responsible Department: Engineering

Activity Supervisor: SHAWN HILLS  


Activity Performer: DAVID BLACK 

SECTION 2

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Priority:	2	Due Date:	4/10/2002
Mode Change Restraint:	(None)	Management Exception From PI?:	N
<input checked="" type="checkbox"/> QA/Nuclear Oversight?:	N	<input checked="" type="checkbox"/> Licensing Review?:	N
NRC Commitment?:	N	<input checked="" type="checkbox"/> NRC Commitment Date:	

SECTION 3

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**Activity Completed:** 2/19/2002 1:29PM - JAMES HANNA:  
Revision to OD and White paper supporting PBNP position regarding Auxiliary Feed System operability has been completed (January) and is with engineering management (Armstrong) awaiting approval. Current action to allow revision of OD to fully operable is review and approval of 50.59 evaluation for operations procedure changes (Black). Please transfer this item to Dave Black with the same due date. Specific action should be to inform engineering management that revision to OD may proceed.

3/19/2002 12:49PM - SHAWN HILLS:  
Extended due date to 4/10/2002.

5/21/2002 1:59:04 PM - DAVID BLACK:  
A 50.59 evaluation (EVAL 2002-005) has been completed, reviewed by MSS at Meeting Number 2002-026, and approved by the plant manager on 4/27/2002. This evaluation addressed EOP procedure changes which directs operators to maintain AFW flow through the pumps above minimum flow value(s) or secure pumps, in the event of a loss of instrument air or if AFW mini-recirc valves fail closed. Based on the approved 50.59 evaluation, the AFW pumps were declared full operable. The fully operable determination is documented in Operability Determination (OD) 01-3595 Revision 2. This OD revision was completed on 4/27/2002 and approved by the Engineering Manager and Operations Shift Manager on 4/27/2002. Since the AFW pumps have been declared fully operable, no additional action is required, and therefore no Part II of the OD form PBF-1553 needs to be completed. This corrective action may be closed.

5/22/2002 8:51:27 AM - JULIE KREIL:  
Since the AFW pumps have been declared fully operable, no additional action is required, and therefore no Part II of the OD form PBF-1553 needs to be completed. CLOSED CA002593 to actions taken and documented in above update of 5/21/2002.

SECTION 4

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QA Supervisor:	(None)	Licensing Supervisor:	(None)
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SECTION 5

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<input checked="" type="checkbox"/> Project:	CAP Activities & Actions 		
<input checked="" type="checkbox"/> State:	Done	<input checked="" type="checkbox"/> Active/Inactive:	Inactive
<input checked="" type="checkbox"/> Owner:	(None)	AR Type:	Daughter

Ⓢ Submitter: JAMES MASTERLARK Assigned Date: 3/19/2002  
 Ⓢ Last Modified Date: 5/22/2002 8:51:27 AM Ⓢ Last Modifier: JULIE KREIL  
 Ⓢ Last State Change Date: 5/22/2002 8:51:27 AM Ⓢ Last State Changer: JULIE KREIL  
 Ⓢ Close Date: 5/22/2002 8:51:27 AM  
 Ⓢ One Line Description: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW  
 NUTRK ID: CR 01-3595  
 Child Number: 3  
 References: CR 01-2278  
 RCE 01-069  
 GOOD CATCH  
 EVAL 2002-005  
 MSS MEETING 2002-026  
 OD CR 01-3595 REV 2

Update: (12/10/01 TCK) Issued to Group: SEP\The issue identified required an 8 hour notification under 10 CFR 50.72. Immediate corrective actions involved Operator shift briefings, changes to EOPs, etc. On the day following the CR initiation, Operations requested an Operability Determination be provided. The CR identified the condition as Operable (based on implemented corrective actions) but non-conforming to the FSAR description of the valves' function.\Pursuant to the notification, an NRC inspection team was dispatched to the site and a special inspection of the issue conducted during the week of 12/3/01. The exit for the inspection will be held on 12/13/01.\Management has directed a root cause investigation be performed, with R. Flessner designated as the team lead. This action item is being transferred to SEP for the root cause evaluation. Note that an emergent modification has been requested and is in development to provide safety related nitrogen or other motive force to the subject AOVs. It is anticipated that this modification will have been issued and possibly installed by the time the root cause investigation has been completed. This will permit for proper close-out of the issue.\(12/10/01 TCK) Issued to Group: NMS\The OD has been revised, and a final closure as "fully operable" is expected shortly. J. Hanna will be issuing the revision. Upon closure of the OD as fully operable, this action item may be closed with no additional action required. Item is being transferred to the group responsible for issuance of the pending revision.\(12/13/01 SJY) Received Action into Group: NMS\Responsible Person: JHH:JAMES HANNA Due Date: 12/31/2001\ (20011213 WE7222 SJY) Set Work Priority to 2.

Import Memo Field:

CAP Admin: PBNP CAP Admin Site: Point Beach

OLD\_ACTION\_NUM:

Cartridge and Frame:

NOTES/COMMENTS

**Request for extension** by JAMES HANNA (12/31/2001 9:01:04 AM)  
 12/17/01 a request for extension of this action item was submitted. As of 12/31/01, no decision on the extension request has been communicated.

**OD 01-3595 revision** by JAMES HANNA (12/31/2001 9:39:07 AM)  
 On 12/20/01 a second revision to OD 01-3595 was submitted to engineering management with a white paper detailing the basis for continued AF system operability. This revision would obviate the need for a "part II" since a determination of fully operable was reached. The revision has not yet been approved and is awaiting further management review.

**Note created during 'Return' transition** by JAMES HANNA (1/9/2002 10:45:36 AM)  
 Please extend this item until 3/1/2002 due to exceptional reviews required to disposition the Operability Determination for

this issue.

**Note created during 'Return' transition** by JAMES HANNA (2/19/2002 1:30:56 PM)  
Please transfer this item to Dave Black for action. See 2/19/02 update.

#### ATTACHMENTS AND PARENT/CHILD LINKS

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 [Linked From Parent 'CAP001415'](#)

[Extension request](#)

#### CHANGE HISTORY

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**12/20/2001 10:26:36 PM by admin**

Submit Date Changed From 12/20/2001 10:26:34 PM To 12/4/2001 1:00:00 AM

**12/20/2001 10:26:37 PM by admin**

Last Modified Date Changed From 12/20/2001 10:26:34 PM To 12/20/2001 10:26:37 PM

Last Modifier Changed From JAMES MASTERLARK To admin

Attachment Added: Linked From Parent 'CAP001415'

**12/31/2001 9:01:05 AM by JAMES HANNA**

Last Modified Date Changed From 12/20/2001 10:26:37 PM To 12/31/2001 9:01:05 AM

Last Modifier Changed From admin To JAMES HANNA

Attachment Added: Request for extension

**12/31/2001 9:11:50 AM by JAMES HANNA**

Last Modified Date Changed From 12/31/2001 9:01:05 AM To 12/31/2001 9:11:50 AM

Attachment Added: Extension request

**12/31/2001 9:39:07 AM by JAMES HANNA**

Last Modified Date Changed From 12/31/2001 9:11:50 AM To 12/31/2001 9:39:07 AM

Attachment Added: OD 01-3595 revision

**1/2/2002 12:39:10 PM by SCOTT PFAFF**

Responsible Department Changed From (None) To Engineering

Activity Supervisor Changed From JULIE KREIL To STEWART YUEN

Last Modified Date Changed From 12/31/2001 9:39:07 AM To 1/2/2002 12:39:10 PM

Last Modifier Changed From JAMES HANNA To SCOTT PFAFF

**1/9/2002 10:45:36 AM by JAMES HANNA**

State Changed From Conduct Work To Assign Work Via Transition: Return

Owner Changed From JAMES HANNA To STEWART YUEN

Last Modified Date Changed From 1/2/2002 12:39:10 PM To 1/9/2002 10:45:36 AM

Last Modifier Changed From SCOTT PFAFF To JAMES HANNA

Last State Change Date Changed From 12/20/2001 10:26:34 PM To 1/9/2002 10:45:36 AM

Last State Changer Changed From JAMES MASTERLARK To JAMES HANNA

**1/9/2002 10:45:37 AM by JAMES HANNA**

Last Modified Date Changed From 1/9/2002 10:45:36 AM To 1/9/2002 10:45:37 AM

Attachment Added: Note created during 'Return' transition

**1/14/2002 2:48:58 PM by STEWART YUEN**

Due Date Changed From 12/31/2001 To 3/1/2002

Last Modified Date Changed From 1/9/2002 10:45:37 AM To 1/14/2002 2:48:58 PM

Last Modifier Changed From JAMES HANNA To STEWART YUEN

**1/14/2002 2:49:06 PM by STEWART YUEN**

State Changed From Assign Work To Conduct Work Via Transition: Assign

Owner Changed From STEWART YUEN To JAMES HANNA

Assigned Date Changed From Unassigned To 1/14/2002

Last Modified Date Changed From 1/14/2002 2:48:58 PM To 1/14/2002 2:49:06 PM

Last State Change Date Changed From 1/9/2002 10:45:36 AM To 1/14/2002 2:49:06 PM

Last State Changer Changed From JAMES HANNA To STEWART YUEN

Activity Supervisor Changed From STEWART YUEN To WILLIAM ZIPP  
Due Date Changed From 3/1/2002 To 3/1/2002  
Assigned Date Changed From 1/14/2002 To 1/14/2002  
Last Modified Date Changed From 1/14/2002 2:49:06 PM To 2/14/2002 7:12:18 AM  
Last Modifier Changed From STEWART YUEN To SCOTT PFAFF

**2/19/2002 1:29:36 PM by JAMES HANNA**

Activity Completed Changed From " To [Appended:]2/19/2002 1:29PM - JAMES HANNA: Revision to OD and White paper supporting PBNP position regarding Auxillary Feed System operability has been completed (January) and is with engineering management (Armstrong) awaiting approval. Current ac[...]  
Last Modified Date Changed From 2/14/2002 7:12:18 AM To 2/19/2002 1:29:36 PM  
Last Modifier Changed From SCOTT PFAFF To JAMES HANNA

**2/19/2002 1:30:56 PM by JAMES HANNA**

State Changed From Conduct Work To Assign Work Via Transition: Return  
Owner Changed From JAMES HANNA To WILLIAM ZIPP  
Last Modified Date Changed From 2/19/2002 1:29:36 PM To 2/19/2002 1:30:56 PM  
Last State Change Date Changed From 1/14/2002 2:49:06 PM To 2/19/2002 1:30:56 PM  
Last State Changer Changed From STEWART YUEN To JAMES HANNA  
Attachment Added: Note created during 'Return' transition

**2/26/2002 1:29:15 PM by WILLIAM ZIPP**

Responsible Group Code Changed From EESN Engineering Equipment Systems NSSS Mech PB To EPN Engineering Programs Nuclear Safety Analysis PB  
Activity Supervisor Changed From WILLIAM ZIPP To RICK WOOD  
Activity Performer Changed From JAMES HANNA To DAVID BLACK  
Owner Changed From WILLIAM ZIPP To RICK WOOD  
Last Modified Date Changed From 2/19/2002 1:30:56 PM To 2/26/2002 1:29:15 PM  
Last Modifier Changed From JAMES HANNA To WILLIAM ZIPP

**2/27/2002 9:57:08 AM by RICK WOOD**

Activity Supervisor Changed From RICK WOOD To SHAWN HILLS  
Owner Changed From RICK WOOD To SHAWN HILLS  
Last Modified Date Changed From 2/26/2002 1:29:15 PM To 2/27/2002 9:57:08 AM  
Last Modifier Changed From WILLIAM ZIPP To RICK WOOD

**3/19/2002 12:49:42 PM by SHAWN HILLS**

Due Date Changed From 3/1/2002 To 4/10/2002  
Activity Completed Changed From [Original Text] To [Appended:] 3/19/2002 12:49PM - SHAWN HILLS: Extended due date to 4/10/2002.  
State Changed From Assign Work To Conduct Work Via Transition: Assign  
Owner Changed From SHAWN HILLS To DAVID BLACK  
Assigned Date Changed From 1/14/2002 To 3/19/2002  
Last Modified Date Changed From 2/27/2002 9:57:08 AM To 3/19/2002 12:49:42 PM  
Last Modifier Changed From RICK WOOD To SHAWN HILLS  
Last State Change Date Changed From 2/19/2002 1:30:56 PM To 3/19/2002 12:49:42 PM  
Last State Changer Changed From JAMES HANNA To SHAWN HILLS

**5/21/2002 1:59:04 PM by DAVID BLACK**

Responsible Group Code Changed From EPN Engineering Programs Nuclear Safety Analysis PB To (None)  
Activity Completed Changed From [Original Text] To [Appended:] A 50.59 evaluation (EVAL 2002-005) has been completed, reviewed by MSS at Meeting Number 2002-026, and approved by the plant manager on 4/27/2002. This evaluation addressed EOP procedure changes which directs operators to maintain AFW fl[...]  
State Changed From Conduct Work To Review & Approval Via Transition: Work Complete  
Owner Changed From DAVID BLACK To SHAWN HILLS  
Last Modified Date Changed From 3/19/2002 12:49:42 PM To 5/21/2002 1:59:04 PM  
Last Modifier Changed From SHAWN HILLS To DAVID BLACK  
Last State Change Date Changed From 3/19/2002 12:49:42 PM To 5/21/2002 1:59:04 PM  
Last State Changer Changed From SHAWN HILLS To DAVID BLACK

**5/21/2002 3:39:12 PM by SHAWN HILLS**

State Changed From Review & Approval To Quality Check Via Transition: Approved  
Owner Changed From SHAWN HILLS To PBNP CAP Admin  
Last Modified Date Changed From 5/21/2002 1:59:04 PM To 5/21/2002 3:39:12 PM  
Last Modifier Changed From DAVID BLACK To SHAWN HILLS

Last State Change Date Changed From 5/21/2002 1:59:04 PM To 5/21/2002 3:39:12 PM

Last State Changer Changed From DAVID BLACK To SHAWN HILLS

CAP Admin Changed From (None) To PBNP CAP Admin

5/22/2002 8:51:27 AM by JULIE KREIL

Activity Completed Changed From '[Original Text]' To '[Appended:] Since the AFW pumps have been declared fully operable, no additional action is required, and therefore no Part II of the OD form PBF-1553 needs to be completed. CLOSED CA002593 to actions taken and documented in above update of 5/21/2002.'

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From PBNP CAP Admin To (None)

Last Modified Date Changed From 5/21/2002 3:39:12 PM To 5/22/2002 8:51:27 AM

Last Modifier Changed From SHAWN HILLS To JULIE KREIL

Last State Change Date Changed From 5/21/2002 3:39:12 PM To 5/22/2002 8:51:27 AM

Last State Changer Changed From SHAWN HILLS To JULIE KREIL

Close Date Changed From Unassigned To 5/22/2002 8:51:27 AM

References Changed From 'CR 01-2278 RCE 01-069 GOOD CATCH' To 'CR 01-2278 RCE 01-069 GOOD CATCH EVAL 2002-005 MSS MEETING 2002-026 OD CR 01-3595 REV 2'

Point Beach Nuclear Plant  
**OPERABILITY DETERMINATION  
PART I**

**COPY**

CR 01 - 3595

REV 2

ENGINEERING TO COMPLETE THIS BOX WHEN OD ACCEPTED BY DSS

SYNOPSIS FOR NIM INFORMATION ONLY

Unit(s) 1 & 2 System AF CHAMPS  
Equipment ID various (n/a)

- Inoperable - does not meet the minimum level of performance.
- Operable - fully meets performance requirements. No further action required.
- Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures ARE required.
- Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures are NOT required.

Potential for simultaneous failure of all AFW pumps due to loss of air & directed operator action

TITLE (EQUIPMENT NUMBER AND DESCRIPTION OF ISSUE)

1. Describe the condition.  
In the event of a transient that involves a loss of instrument air, a combination of the existing plant design and operating procedures may result in a failure mode of one or more AFW pumps.

The minimum recirculation flow control valves for each pump fail closed on a loss of instrument air. When steam generator (SG) levels have been restored to desired levels, manual action is directed to maintain those levels. This manual action could be accomplished by securing the associated pump(s), or by reducing flow to match the steaming rate. It could also be accomplished by completely closing off flow to one or both SGs if desired; this is likely to be the case if the desired level has been exceeded due to overfill, swell, etc. This last combination of events, could result in very low or no flow through a running AFW pump and would cause very rapid failure of these multi-stage high pressure pumps.

Due to the common causes (loss of instrument air and a possible operator response), there is a potential for a loss of one or more AFW pumps during an anticipated transient (loss of instrument air).

2. Identify the Current Licensing Basis (CLB) functions and performance requirements including:

Tech Spec Reference 3.7.5

FSAR Reference Chapter 10.2

NRC Commitment Reference contained w/in FSAR

Other None identified

If no CLB function, requirement or commitment is affected, no further action is required. N/A Steps 3, 4 and 5 and proceed with Step 6.

**BEST COPY AVAILABLE**

The AFW System shall be OPERABLE with one turbine driven AFW pump system <per Unit> and two motor driven AFW pump systems when in modes 1, 2, and 3. The bases for this Technical Specification states that "The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply".

FSAR Chapter 10.2

The AFW system is credited for automatically starting and delivering adequate AF system flow to maintain adequate generator levels during accidents which may result in main steam safety valve opening. These accidents include: Loss of Normal Feedwater (LONF) and Loss of All AC Power to the Station Auxiliaries (LOAC). These accidents are evaluated in detail in sections 14.1.10 and 14.1.11 respectively.

The AF system is credited with automatically starting and delivering sufficient AF flow to maintain adequate steam generator levels during accidents which require rapid reactor coolant system cooldown to achieve cold shutdown condition within the limits of the analysis, including Steam Generator Tube Rupture (SGTR; FSAR Chapter 14.2.4), and Main Steam Line Break (MSLB; FSAR Chapter 14.2.5).

The AF system shall be capable of isolating the AF steam and feedwater supply lines from the ruptured generator following a SGTR event.

The AF system also is capable of automatically supplying sufficient feedwater to remove decay heat from both units without any reliance on AC power for one hour (station blackout).

In the event of plant fires, including those that require evacuation of the control room, the AF system shall be capable of manual initiation to provide feedwater to a minimum of one steam generator per unit at sufficient flow and pressure to remove decay and sensible heat from the reactor coolant system over the range from hot shutdown to cold shutdown conditions.

It is identified that "Each pump has an AOV controlled recirculation line back to the condensate storage tanks to ensure minimum flow to dissipate pump heat". This statement however is a description of system arrangement and not part of the design basis.

3. **Aggregate Review:** Identify related issues by review of active ODs for the same system including as applicable their compensatory measures. Historical ODs can also be included in this review at the discretion of the Engineer. The review of the active ODs and their compensatory measures is to ensure there is no conflict between the related conditions, i.e., conflicting assumptions or compensatory measures.

No related issues exist.

Related CR Number 01-3648

Impact: This CR addresses a similar issue resulting from an appendix R situation.

Related CR Number CAP001763

Impact: This CR questions the adequacy of a single recirculation path through AF-117.

Related CR Number \_\_\_\_\_

Impact: \_\_\_\_\_

Review additionally, as applicable, these items to help clarify current plant conditions. These items may have impact on the SSC performance.

Active Temporary Operating Procedure Changes None Applicable

Active Temporary Modifications None Applicable

Modifications currently being installed None Applicable

Recent Work Orders None Applicable

Approved DCNs None Applicable

Recently Performed Inservice Testing All testing per IST program is current.

4. Evaluate the CLB functions and performance requirements identified in Step 2 against the as-found condition and the related issues identified in Step 3. The evaluation must identify the extent to which the SSC is capable of performing its identified CLB function. Document the evaluation:

No degradation of any System, Structure, or Component (SSC) as defined by Part 9900 of the NRC Inspection Manual (Technical Guidance on the Resolution of Degraded and Nonconforming Conditions) has been identified.

The identified concern postulates a mechanistic failure within the license and design basis of the facility (loss of instrument air). This failure may be either an initiating event or a result of a different failure, also within the design and license basis of the facility. Any loss of instrument air is expected to also result in an AFW start signal due to a loss of normal feedwater (the normal feed water regulating valves fail closed on loss of air).

Under this postulated condition, all components of the AF system are fully capable of performing their design functions supporting automatic starting and supplying sufficient flow to the SGs to mitigate any transient or accident. However, the function of the minimum flow recirculation AOV is in question.

A PRA assessment of possible failure modes and effects has identified a significant potential increase in Core Damage Frequency (CDF) due to a previously unanalyzed mode of component failure due to a combination of a design limitation and in part to possible anticipated Operator actions. This combination



Degraded or nonconforming. The following compensatory measures are REQUIRED in order to maintain operability.

If Compensatory Measures are not required go to Step 6.

Compensatory measures must be in place prior to OD final approval by the DSS

Affected Unit (1 OR 2 OR 0) \_\_\_\_\_

Describe the Compensatory Measure (what needs to be performed):

Basis which indicates the Compensatory Measure maintains operability:

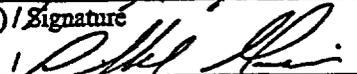
Implementation Mechanism (Procedure number, Temp Mod number, etc):

Plant condition(s) or mode(s) of operation which require the Compensatory Measure:

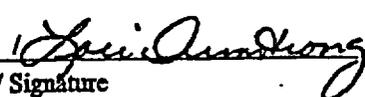
Under what conditions may the Compensatory Measure be terminated? \_\_\_\_\_

6. Prepared By:

J. H. Hanna  Date/Time: 4/27/2002 12:30  
Name (Print) / Signature

P. S. Gingrass  Date/Time: 4/27/2002  
Name (Print) / Signature

Engineering Manager Approval of Evaluation and Proposed Compensatory Measure (if applicable)

LORI ARMSTRONG  Date/Time: 4/27/2002 1405  
Name (Print) / Signature

7. SRO Review of Operability Documentation:

- Inoperable – does not meet the minimum level of performance.
- Operable - fully meets performance requirements. No further action required.
- Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures ARE required.
- Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures are NOT required.
- Evaluation Accepted
- Evaluation and Compensatory Measures Accepted.
- Compensatory Measures Verified in Place.
- NP 10.1.1, LCO Tracking Log updated to include new items.

DSS: Rick MERKES / *[Signature]* Date/Time: 4-27-02 2630  
Name (Print) / Signature

*Route OD package to in-box in WCC for processing. Package includes original Part I, all attachments, and related condition report.*

# OPERABILITY DETERMINATION

CR \_\_\_\_\_

REV \_\_\_\_\_

## PART II CORRECTIVE ACTION PLAN, SCHEDULE AND JUSTIFICATION

This plan should be developed as a part of the EAC process. (30 days to complete)

1. For those Operable But Degraded or Nonconforming items, what action(s) need to be done to restore the condition to its "fully operable" or "fully qualified" status?
  - Also consider any compensatory measures in place and what needs to be done for their removal.
  
2. When should the action(s) listed in question 1 be performed? This schedule represents the earliest available opportunity to perform the corrective actions, allowing reasonable time for planning, scheduling, design, procurement, etc.
  
3. Please provide justification for this schedule based on:
  - the amount of time required for design, review, and approval of the corrective action,
  - procurement for replacement or repair,
  - availability of specialized equipment to perform the repair,
  - the need to be in hot or cold shutdown to implement the corrective action,
  - or other factors that constrain the corrective action schedule.

Prepared by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Name (Print) / Signature

Engineering Manager  
Approval: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Name (Print) / Signature

**COPY**

**To: Mark Reddemann**

**From: James H. Hanna**

**Date: January 8, 2002**

**Subject: AF SYSTEM CONTINUED OPERABILITY (Rev 1)**

**Copy To: Rick Mende   Fred Cayia   Tom Taylor   Lori Armstrong   Stew Yuen**

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The following explains the assessment of the AF system as being fully operable and capable of meeting its design requirements relative to system descriptions included in the FSAR. The PBNP FSAR describes the use and function of the recirculation flow provided for the auxiliary feed water pumps, including the design features, equipment and system performance. Section 10.2.2 "System Design and Operation" and 10.2.3 "System Evaluation" contain these references and section titles can cause confusion with the "Design Basis" for the system as defined by 10 CFR 50.2. These FSAR sections are attached with references to recirculation highlighted.

This review does not incorporate the affects of 10 CFR 50 Appendix R events relative to equipment performance. An Appendix R assessment is being separately conducted under CR 01-3648.

Using NRC Inspection Manual Procedure Part 9900, "Operability," as a template for review of the Auxiliary Feed pump recirculation line issue and its attendant operability assessment by the station, the following is determined.

**A. Licensing basis:**

1. 10 CFR Parts 2, 19, 20, 21, 30, 40, 50, 51, 55, 72, 73, 100.
2. Orders
3. License conditions
4. License exemptions
5. Technical Specifications
6. Commitments
7. Plant-specific design basis information in current FSAR.

With the exception of the FSAR and Technical Specification system descriptions, no specific information regarding the performance of the AF system relative to recirculation has been found in any of the above.

**B. Design basis, Defined by 10 CFR 50.2:**

*Design bases* means that information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals, or (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals.

The "specific functions" to be performed by the Auxiliary Feed system are identified in the FSAR section 10.2.1 "Design Basis." These functions are quoted here for reference:

1. The AF system shall automatically start and deliver adequate AF system flow to maintain adequate steam generator levels during accidents which may result in main steam safety valve opening. Such accidents include; LOSS OF NORMAL FEEDWATER (LONF), FSAR Chapter 14.1.10, and LOSS OF ALL AC POWER TO THE STATION AUXILIARIES (LOAC), FSAR chapter 14.1.11, events, LONF and LOAC are time-sensitive to AF system start-up.
2. The AF system shall automatically start and deliver sufficient AF system flow to maintain adequate steam generator levels during accidents which require rapid reactor coolant system cooldown to achieve the cold shutdown condition within the limits of the analysis. Such accidents include; STEAM GENERATOR TUBE RUPTURE (SGTR), FSAR Chapter 14.2.4, and MAIN STEAM LINE BREAK (MSLB), FSAR Chapter 14.2.5.
3. The AF system shall be capable of isolating the AF steam and feedwater supply lines from the ruptured steam generator following a SGTR event.
4. In the event of a station blackout (prolonged loss of offsite and onsite AC power) affecting both units, the AF system shall be capable of automatically supplying sufficient feedwater to remove decay heat from both units without any reliance on AC power for one hour.
5. In the event of plant fires, including those requiring evacuation of the control room, the AF system shall be capable of manual initiation to provide feedwater to a minimum of one steam generator per unit at sufficient flow and pressure to remove decay and sensible heat from the reactor coolant system over the range from hot shutdown to cold shutdown conditions. The AF system shall support achieving cold shutdown within 72 hours.

- C. Degraded Condition: A condition of an SSC in which there has been any loss of quality or functional capability. Since the postulated failure can only occur after an operator has intervened to alter the "automatic" operation of the AF system, this issue is clearly associated only with operator actions subsequent to accident initiation and no loss of quality nor loss of

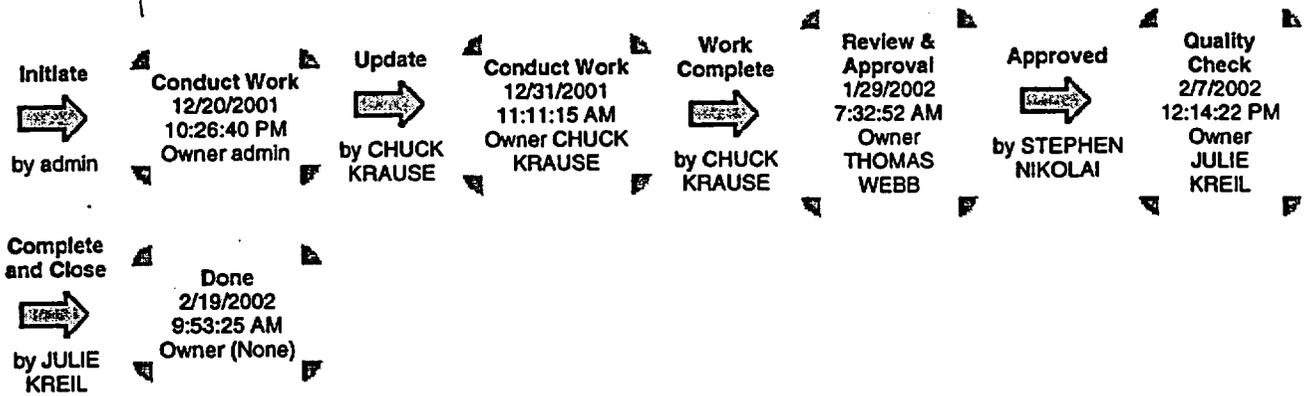
functional capability exists. The AF system will function today, as it would have in the past, to perform the functions listed in the design basis.

D. **Nonconforming Condition:** A condition of an SSC in which there is a failure to meet requirements or licensee commitments. Some examples of nonconforming conditions include the following.

1. There is a failure to conform to one or more applicable codes or standards specified in the FSAR. Although piping and systems are covered by codes and standards, the system feature of AF recirculation flow is not governed by any codes or standards included in the CLB.
2. As-built equipment, or as-modified equipment, does not meet FSAR design requirements. The PBNP GDCs and Design Basis (as explained in section B) represent "FSAR design requirements." Again, absent operator action, the function to automatically provide AF water to support the Design Basis is unaffected by this issue.
3. Operating experience or engineering reviews demonstrate a design inadequacy. Design of the AF system is adequate to fulfill the requirements of the Design Basis as demonstrated through testing and surveillances. Since the SSC's are capable of achieving these requirements, no loss nor degradation of function is present. Design adequacy is ensured by the system performing those functions for which it was designed and therefore no design inadequacy exists. The design function of the recirculation valves is clearly to isolate recirculation flow to ensure adequate forward flow is provided to cool steam generators. System design did not include features to protect equipment from all possible subsequent manual operator actions once operators took control of the equipment. Additionally, Probabilistic Risk Assessment (PRA) analysis (a tool not available when the system was designed) has identified a scenario which results in an increase in core damage frequency unacceptable by today's standards. This, however does not suggest nor confirm that the original design was inadequate.
4. Documentation required by NRC requirements such as 10 CFR 50.49 is not available or deficient. Documentation is not relevant to this issue.

E. **Full Qualification:** Full qualification constitutes conforming to all aspects of the current licensing basis, including codes and standards, design criteria, and commitments. As demonstrated in the preceding paragraphs, no deviation from stated requirements exists as a result of the discovery of the need for procedural enhancements to ensure operators will take actions consistent with plant conditions to protect the AF pumps in exceptional circumstances.

STATE CHANGE HISTORY



SECTION 1

**Activity Request Id:** CA002594  
**Activity Type:** Corrective Action **Submit Date:** 12/12/2001 1:00:00 AM  
**Site/Unit:** Point Beach - Common

**Activity Requested:** REQUESTED ACTION: Prepare and submit an LER on this event. \DESCRIPTION: \While performing an update to the Auxiliary Feed Water (AFW) System model in the PRA, a procedural shortcoming was identified in AOP 5B with regards to the availability of the minimum recirculation valve with the loss of instrument air. This issue was documented in CR 01-2278 with a recommendation to upgrade the procedure. Upon further review of this issue with PRA engineers, Operations, and Design Engineering, it was discovered that this issue has further reaching affects as documented below. \Instrument air (IA) can be lost primarily by two failure mechanisms. The first, and most likely, is a loss of off-site power where the IA and Service Air (SA) compressors are stripped from the bus and not automatically re-loaded. The second less likely scenario is a random loss of the Instrument air system due to equipment failure without potential for short term recovery. When IA is lost, the minimum flow recirculation valves for AFW fail closed. During these two transients, the AFW pumps will start injecting into the steam generators. Early in the EOPs, the operator is directed to control flow to the steam generators to maintain desired level. This may include shutting off flow to one or both steam generators if level is above the desired band. If flow from any auxiliary feed pump is reduced too low (as would occur if the auxiliary feed regulating valves are closed) without functional recirculation valves, the pump will fail in a very short period of time. This common mode of failure (common loss of instrument air and common response to high steam generator level) could result in simultaneous failure of all AFW pumps. \PRA has estimated the risk associated with this issue. The total risk increase due to both the loss of off-site power and loss of instrument air contribution is approximately a factor of 4 times higher than our assumed base risk with an overall increase in the area of 2E-4 CDF per year (base risk is around 5E-5 CDF per year).

**CATPR:** N **Initiator:** MASTERLARK, JAMES  
**Initiator Department:** EPN Engineering Programs Nuclear Safety Analysis PB **Responsible Group Code:** ALR Site Licensing Regulatory Compliance PB  
**Responsible Department:** Assessment **Activity Supervisor:** THOMAS WEBB  
**Activity Performer:** CHUCK KRAUSE

SECTION 2

Priority:	1	Due Date:	1/29/2002
Mode Change Restraint:	(None)	Management Exception From PI?:	N
QA/Nuclear Oversight?:	N	Licensing Review?:	N
NRC Commitment?:	N	NRC Commitment Date:	

SECTION 3

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**Activity Completed:** 1/29/2002 7:32AM - CHUCK KRAUSE:  
 LER 266/2001-005-00, "PRA Assessment of AFW System Reveals Procedural Vulnerability Related to Loss of Instrument Air" has been issued. The LER was reviewed at the MSS on January 21 and subsequent changes reviewed at the January 28th meeting. The LER was signed and forwarded to the NRC with letter NRC 2002-012 on January 28, 2002. The abstract of the LER follows:

While conducting a self-initiated, voluntary review and revision of the Point Beach Nuclear Plant (PBNP) PRA model, including the auxiliary feedwater system (AFWS) portion of that model, NMC identified that the air-operated valves in the minimum flow recirculation piping for the AFWS pumps were not included in the PRA model. These valves fail closed on the loss of instrument air. While examining the significance of this failure, in conjunction with initiating events that require AFWS flow, NMC identified a misalignment between system design and EOPs. If the AFWS pump discharge or flow control valves were throttled closed with the minimum recirculation valve failed closed, it is possible that the AFW pumps could be placed in a condition of insufficient flow. This could result in pump damage in a short interval of time. The operators were trained on the significance of maintaining adequate AFW recirculation flow. However, early in the post reactor trip emergency operating procedures, the operators were directed to control AFWS flow without specific written guidance to maintain minimum AFW flow. It was postulated that the loss of instrument air together with a common operator response to high steam generator level or overcooling of the RCS had some probability to result in failure of one or all of the AFWS pumps. This could cause the loss of a safety function to mitigate the consequences of the accident and was determined to be reportable under 10 CFR 50.72. The PRA evaluation of this event sequence indicated that the potential consequences of this hypothesized failure were significant. Corrective actions included procedure changes to alert the operator to this potential failure sequence and additional operator training

2/7/2002 12:14PM - STEPHEN NIKOLAI:  
 Per direction of T. Webb, this item is complete and can be closed.

2/19/2002 9:53AM - JULIE KREIL:  
 LER 266/2001-005-00, has been issued. The LER was reviewed at the MSS on January 21 and subsequent changes reviewed at the January 28th meeting. The LER was signed and forwarded to the NRC via NRC 2002-012 on 1/28/2002.  
 CLOSED to completion of Requested Activity.

SECTION 4

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QA Supervisor:	(None)	Licensing Supervisor:	(None)
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SECTION 5

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Project:	CAP Activities & Actions		
State:	Done	Active/Inactive:	Inactive
Owner:	(None)	AR Type:	Daughter
Submitter:	admin	Assigned Date:	
Last Modified Date:	2/19/2002 9:53:25 AM	Last Modifier:	JULIE KREIL 
Last State Change Date:	2/19/2002 9:53:25 AM	Last State Changer:	JULIE KREIL 

One Line Description: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW  
 NUTRK ID: CR 01-3595  
 Child Number: 4  
 References: CR 01-2278 ERCE 01-069 EGGOOD CATCH  
 Update: (12/14/01 TJW) Received Action into Group: RES\Responsible Person: CWK:CHUCK KRAUSE Due Date: 01/29/2002\((20011214 XX1770 TJW) Set Work Priority to 1. this is a priority 1 example 3 the due date is set by 10CFR50.73  
 Import Memo Field: XU0190:Activity Performer//  
 CAP Admin: JULIE KREIL  Site: Point Beach  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

#### ATTACHMENTS AND PARENT/CHILD LINKS

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 [Linked From Parent 'CAP001415'](#)

#### CHANGE HISTORY

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12/20/2001 10:26:43 PM by admin

Submit Date Changed From 12/20/2001 10:26:40 PM To 12/12/2001 1:00:00 AM

12/20/2001 10:26:44 PM by admin

Last Modified Date Changed From 12/20/2001 10:26:40 PM To 12/20/2001 10:26:44 PM

Attachment Added: Linked From Parent 'CAP001415'

12/31/2001 11:11:15 AM by CHUCK KRAUSE

Responsible Department Changed From (None) To Assessment

Activity Supervisor Changed From JULIE KREIL To THOMAS WEBB

Activity Performer Changed From admin To CHUCK KRAUSE

Owner Changed From admin To CHUCK KRAUSE

Last Modified Date Changed From 12/20/2001 10:26:44 PM To 12/31/2001 11:11:15 AM

Last Modifier Changed From admin To CHUCK KRAUSE

12/31/2001 11:22:43 AM by CHUCK KRAUSE

Initiator Changed From WEBB, THOMAS To MASTERLARK, JAMES

Last Modified Date Changed From 12/31/2001 11:11:15 AM To 12/31/2001 11:22:43 AM

Site Changed From (None) To Point Beach

1/29/2002 7:32:52 AM by CHUCK KRAUSE

Due Date Changed From 1/29/2002 To 1/29/2002

Activity Completed Changed From " To '[Appended:]1/29/2002 7:32AM - CHUCK KRAUSE: LER 266/2001-005-00, "PRA Assessment of AFW System Reveals Procedural Vulnerability Related to Loss of Instrument Air" has been issued. The LER was reviewed at the MSS on January 21 and subsequent changes[...]

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Owner Changed From CHUCK KRAUSE To THOMAS WEBB

Last Modified Date Changed From 12/31/2001 11:22:43 AM To 1/29/2002 7:32:52 AM

Last State Change Date Changed From 12/20/2001 10:26:40 PM To 1/29/2002 7:32:52 AM

Last State Changer Changed From admin To CHUCK KRAUSE

2/7/2002 12:14:22 PM by STEPHEN NIKOLAI

Activity Completed Changed From '[Original Text]' To '[Appended:] 2/7/2002 12:14PM - STEPHEN NIKOLAI: Per direction of T. Webb, this item is complete and can be closed.'

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From THOMAS WEBB To JULIE KREIL

Last Modified Date Changed From 1/29/2002 7:32:52 AM To 2/7/2002 12:14:22 PM

Last Modifier Changed From CHUCK KRAUSE To STEPHEN NIKOLAI

Last State Changer Changed From CHUCK KRAUSE To STEPHEN NIKOLAI

CAP Admin Changed From (None) To JULIE KREIL

2/19/2002 9:53:25 AM by JULIE KREIL

Activity Completed Changed From '[Original Text]' To '[Appended:] 2/19/2002 9:53AM - JULIE KREIL: LER 266/2001-005-00, has been issued. The LER was reviewed at the MSS on January 21 and subsequent changes reviewed at the January 28th meeting. The LER was signed and forwarded to the NRC via NRC 200[...]'

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From JULIE KREIL To (None)

Last Modified Date Changed From 2/7/2002 12:14:22 PM To 2/19/2002 9:53:25 AM

Last Modifier Changed From STEPHEN NIKOLAI To JULIE KREIL

Last State Change Date Changed From 2/7/2002 12:14:22 PM To 2/19/2002 9:53:25 AM

Last State Changer Changed From STEPHEN NIKOLAI To JULIE KREIL

Close Date Changed From Unassigned To 2/19/2002 9:53:25 AM

LER 266/2001-005-00117

LICENSEE EVENT REPORT  
LER 266/2001-005-00

PAGE: 1 of 6  
DATE: 06/18/02

CLOSED UNIT: 0 SYSTEM: AFW INITIATED: 01/28/02 CLOSED: 06/18/02 MSS #:  
OR: CHUCK KRAUSE ADMINISTRATOR: CHUCK KRAUSE ISSUE MANAGER: LORI ARMSTRONG  
NUMBER OF OPEN ACTIONS: 0 NUMBER OF CLOSED ACTIONS: 2 TOTAL NUMBER OF ACTIONS: 2

RA Assessment of AFW System Reveals Procedural Vulnerability Related to Loss of Instrument Air

DESCRIPTION:

While conducting a self-initiated, voluntary review and revision of the PBNP PRA model, including the AFW portion of that model, NMC identified that the AOVs in the minimum flow recirculation piping for the AFW pumps were not included in the PRA model. These valves fail close on loss of instrument air. While examining the significance of this failure, in conjunction with initiating events that require AFW flow, NMC identified a misalignment between system design and the EOPs. If the ASW pump discharge or flow control valves were throttled closed with the minimum recirculation valves failed close, it is possible that the AFW pumps could be placed in a condition of insufficient flow. This could result in pump damage in a short period of time. The operators were trained on the significance of maintaining adequate AFW recirculation flow. However, early in the post reactor trip EOPs, the operators were directed to control AFW flow without specific written guidance to maintain minimum AFW flow. It was postulated that the loss of IA together with a common operator response to high SG level or overcooling of the RCS had some probability to result in failure of one or all of the AFW pumps. This could cause the loss of a safety function to mitigate the consequences of the accident and was determined to be reportable under 10 CFR 50.72. The PRA evaluation of this event sequence indicated that the potential consequences of this hypothesized failure was significant. Corrective actions included procedure changes to alert the operator to this potential failure sequence and additional operator training.

STATUS UPDATE:

(20020618 NP4017 CWK) Corrective actions completed as discussed under the applicable child records.

SCREENED BY : DATE: COMMITMENT.....(Y/N): N  
REGULATORY REPORTABLE.....(Y/N): TS VIOLATION.....(Y/N): 10 CFR 21.....(Y/N):  
TS LCO ENTRY .....(Y/N): OPERABILITY IMPACT PER TS.(Y/N): ACTION .....(A N P R W):  
MSS REVIEW REQUIRED .....(Y/N): SIGNIFICANCE .....(A B C D): OPERABILITY DETERMINATION.(Y/N):

SUPPORTING DETERMINATIONS:

RELATIONSHIPS: NRCOIL NRC 2001-012 CR 01-3595  
COMMIT-I MR 02-001 MR 01-144  
SDR 02-0046

LER 266/2001-005-0 ACTION NUMBER 1  
0  
\*\*\*\*\*

DONE DUE DATE: 04/22/02 PRIORITY: -100 EXTENSIONS MADE: 0  
CREATED : 01/31/02 RES LORI ARMSTRONG RECEIVED: 04/22/02 SDC DICK HORNAK  
WORK DONE: DICK HORNAK APPROVED: 04/22/02 DICK HORNAK  
VERIFIED : 04/22/02 LORI ARMSTRONG CLOSED : 04/22/02 CHUCK KRAUSE

The following corrective action commitment was identified in the parent LER: Please take the following evaluation for action.  
Plant modifications to enhance system reliability, including providing a backup air or nitrogen supply to the AFW minimum recirculation isolation valves are being evaluated.

(04/18/02 LJA1) Issued to Group: SDM

(04/22/02 RFH) Received Action into Group: SDC  
Responsible Person: RFH:DICK HORNAK Due Date: 04/22/2002

(04/22/02 RFH) Passed to LORI ARMSTRONG for Verification.  
MR 01-144 provides a backup nitrogen supply to the miniflow valves for each Motor Driven Aux Feed Pump P-38A/B.

MR 02-001 provides provides a backup instrument air supply to the miniflow valves for each Turbine Driven Aux Feed Pump 1/2P-29.

Both of these modifications have been installed and accepted in the plant.

This item may be closed.

(04/22/02 LJA1) Passed to CHUCK KRAUSE for Final Close Out.  
Please close this item.

(04/22/02 CWK) PLA Closure of Item.  
Per direction of verification and after validation using the MR database that these mods have been accepted, this action item may be closed out to modifications accepted.

REC'D JUL 11 2002

LICENSEE EVENT REPORT  
LER 266/2001-005-00

PAGE: 2 of 26  
DATE: 06/18/02

REFERENCES: NRCOIL  
COMMIT-1

NRC 2001-012  
MR 02-001

CR 01-3595  
MR 01-144

LER 266/2001-005-0 ACTION NUMBER 2  
0  
\*\*\*\*\*

DONE		DUE DATE: 05/10/02	PRIORITY: 3	EXTENSIONS MADE: 0
CREATED : 01/31/02	RES	CHUCK KRAUSE	RECEIVED: 01/31/02	TPR PAUL SHITH
WORK DONE:		RICK PARLATO	APPROVED: 05/07/02	RICK PARLATO
VERIFIED : 06/06/02		LORI ARMSTRONG	CLOSED : 06/18/02	CHUCK KRAUSE

The following action item was identified in the parent LER. Please take this evaluation for action:

Simulator modifications to enhance modeling the potential failure of the AFW pumps following loss of IA scenarios are being evaluated.

(01/31/02 PJS1) Received Action into Group: TROPS  
Responsible Person: RDP:RICK PARLATO Due Date: 05/10/2002

(20020131 PB3058 PJS1) Set Work Priority to 3. Regulatory significance

(05/07/02 RDP) Passed to LORI ARMSTRONG for Verification.  
Work has been completed under SDR02-0046.

(06/06/02 LJA1) Passed to CHUCK KRAUSE for Final Close Out.  
Please close completed per update.

(06/18/02 CWK) PLA Closure of Item.  
Simulator modifications were evaluated under SDR 02-0046.

REFERENCES: NRCOIL  
COMMIT-1

NRC 2001-012  
SDR 02-0046

CR 01-3595

SIGNATURES

DATES

Issue Manager:	Date:
<i>Charles Krause</i>	<i>6/18/2002</i>



Search



EXIT

Mr:  System:  Component:

Outage Work?  Unit:  Priority:  Installer:

Resp Engr:   Milestone:

Closout Assigned to:  Field Eng:

Description:

Notes:

Long Description:

Work Scope:

Administrator Notes:

Material Status:

Comments:

Last Updated by:  Refresh Date:

Status:  Filed:  Issue Date:

Outage:  In Design:

Scoping Doc:  LOE:  In Review:

Parent:  Count:  Released:

Expected Date to Review:  Inst Start:

Expected Release Date:  Inst Comp:

Tentative Sched Date:  Test Start:

TWR:  Accepted:

Account:  Targrec:

MOD Requester:  Paper Closed:

**From Original Database (not used)**

Reason:	<input type="text"/>	Req 5059:	<input type="text"/>
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Mot-appl:	<input type="text"/>	Ed-trasp:	<input type="text"/>
Pro-luc:	<input type="text"/>	Li-emp:	<input type="text"/>
Acceptance:	<input type="text"/>	Semo:	<input type="text"/>
LastChanger:	<input type="text"/>	SourceDoc:	<input type="text"/>



Search



EXIT

Mr: 02-001 System: IA Component:   
 Outage Work? N Unit: C Priority: LOE Installer: IC   
 Resp Engr: JJN Jeff J. Novak Milestone: CR 01-3595   
 Closout Assigned to: Field Eng:

Status: RELEASED Filed: N Issue Date: 1/2/2002   
 Outage: N/002 In Design: 1/2/2002   
 Scoping Doc: LOE:  In Review: 1/30/2002   
 Parent: Count: N Released: 3/1/2002   
 Expected Date to Review: Inst Start:   
 Expected Release Date: Inst Comp:   
 Tentative Sched Date: 3/11/2002 Test Start:   
 TWR: TWR 02-003 Accepted:   
 Account: Targrec:   
 MOD Requester: JEFF NOVAK Paper Closed:

Description: TDAFP MINI RECIRC VALVE (1/2AF-4002 ) INSTRUMENT AIR ACCUMULATOR ADDITION

Notes: LOE

Long Description: PROVIDE A BACKUP SOURCE OF AIR FOR EACH TURBINE DRIVEN AUX-FEED PUMP

Work Scope: INSTALL AN AIR TANK THAT SUPPLIES A SOURCE OF AIR TO 1/2AF-4002 IN THE EVENT OF LOSS OF AIR.

Administrator Notes: LOE

Material Status:

Comments: LOE

Last Updated by: XX5487 Refresh Date: 2/8/2002

From Original Database (not used)

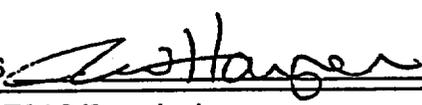
Reason:		
Material:	QA	Rqd:50587
Min Appl:		MS Appl:
Prj no:		Rd resp:
		Laender:
Acceptance Resp:		Serno:
As changed:		Splice:00000

**WO WORK PLAN**

Work Control Document: 0200356  
 Equipment ID: 2AF-04002  
 Equipment Description: 2P-29 AFP MINI RECIRC CONTROL  
 Work Plan Originator: Jeff Novak x7412

**COPY**

Date: February 28, 2002

Hold Point	Step No	Work Plan Description	Worker	Date
	41.	PMT and return to service testing have been completed. QA BOLTS ARE IN PLACE INSTALLED TO MOUNT THE 2AF-4002 AIR REGULATOR ON # P001812 INIT 3/22/02	 OPS	3/22/02 DATE
	28 JNV 3/19/02	The work can be accepted as complete (Reference PBF-1606). ENSURE SQVG Walk Downs are complete (Novak) SQVG WALKDOWN COMPLETE S/D&OW 3/22/02 DPB Row RE JNV for J. Novak as phase Date 3/22/02  DSS  Date 3/22/02		
	42.	Exit TSAC if required. FIRST NEED IST eng signoff of IT-09A, step 5.80.	gen OPS	3/22/02 DATE
LABELING	43.	Ensure labeling is adequate. Transfer or order new labels if required.	ell ENG	3/29/02 DATE

**OPERATIONS**

RETURN TO SERVICE TESTING	1.	17-9A	JNV OPS	3/22/02 DATE
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**POST-JOB BRIEF**

Conduct post-job debrief using PBF-9218 (Mtn and I&C) or OM 3.29 (OPs). Document lessons learned, good practices, problems encountered, etc. on feedback form. Debrief should include all applicable work groups.

POST-JOB DEBRIEF COMPLETED	 Supervisor or Job Leader 3/22/02 Date
----------------------------	---

**FEEDBACK**

Fill out feedback form attached to work package (maintenance group use PBF-9929)	MT 3/22/02 DATE
--	-----------------------

# WO WORK PLAN

# COPY

Work Control Document: 0200355  
 Equipment ID: 1AF-04002  
 Equipment Description: 1P-29 AFP MINI RECIRC CONTROL  
 Work Plan Originator: Jeff Novak x7412

Date: February 28, 2002

Hold Point	Step No	Work Plan Description	Worker	Date
PMT	40.	Perform IT-8A as required to complete the following: • Stroke tests of AF-4002.	<i>OPM</i> OPS	<sup>19</sup> <i>3/15/02</i> DATE
	41.	PMT and return to service testing have been completed. <del>REMOVE REMAINING DRUG TESTS ON 3/19/02</del>	<i>OPM</i> OPS	<i>3/19/02</i> DATE
Conditioned Acceptance JTN 3/19/02	28	The work can be accepted as complete (Reference PBF-1606). ensure SAUG walk down is complete Modification is conditional accepted. waiting for a DCN # see below		
	<i>3/19/02</i>	RE <i>[Signature]</i> Date <i>3/19/02</i> DSS <i>[Signature]</i> for RWH Date <i>3/19/02</i>		
	42.	Exit TSAC if required.	<i>OPM</i> OPS	<i>3/19/02</i> DATE
LABELING	43.	Ensure labeling is adequate. Transfer or order new labels if required.	<i>JTN</i> ENG	<i>3/19/02</i> DATE

## OPERATIONS

RETURN TO SERVICE TESTING	1.	<i>n/a</i>	<i>OPM</i> OPS	<i>3/22/02</i> DATE
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## POST-JOB BRIEF

Conduct post-job debrief using PBF-9218 (Mtn and I&C) or OM 3.29 (OPs). Document lessons learned, good practices, problems encountered, etc. on feedback form. Debrief should include all applicable work groups.

POST-JOB DEBRIEF COMPLETED

*[Signature]*  
Supervisor or Job Leader  
*3/22/02* Date

## FEEDBACK

Fill out feedback form attached to work package (maintenance group use PBF-9929)

*[Signature]*  
MT *3/22/02*  
DATE

Final Acceptance JTN 3/17/02	44.	All Required updates for Mod acceptance are complete (DCN # + Red Lines complete)		
		RE <i>[Signature]</i> Date <i>3/20/02</i> DSS <i>[Signature]</i> for RWH Date <i>3/22/02</i>		

NRC 2002-0012

10 CFR 50.73

January 28, 2002

Document Control Desk  
U.S. NUCLEAR REGULATORY COMMISSION  
Mail Station P1-137  
Washington DC 20555

Ladies/Gentlemen:

Dockets 50-266 And 50-301

Licensee Event Report 266/2001-005-00

PRA Assessment of Auxiliary Feedwater System Reveals  
Procedural Vulnerability Related To Loss Of Instrument Air  
Point Beach Nuclear Plant, Units 1 And 2

Enclosed is Licensee Event Report 266/2001-005-00 for the Point Beach Nuclear Plant, Units 1 and 2. The subject condition was determined to be reportable under 10 CFR 50.73(a)(2)(v)(D) as; "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (D) Mitigate the consequences of an accident." Paragraph 50.73(a)(2)(vi) states that events covered in Paragraph (a)(2)(v) may include discovery of design, analysis, and/or procedural inadequacies. This LER discusses the identification of a misalignment between plant design and plant procedures. This vulnerability had the potential to cause the failure of all four auxiliary feedwater pumps and result in the inability of the auxiliary feed water system to mitigate the consequences of the initiating accident.

Corrective actions, completed and proposed, have been identified in the attached report. New commitments have been identified in italics.

Should you have any questions concerning the information provided in this report, please contact Mr. C.W. Krause at (920) 755-6809.

Sincerely,

Tom Taylor  
Plant Manager

Enclosure

cc: NRC Resident Inspector  
NRC Regional Administrator

PSCW  
INPO Support Services

bcc: R. A. Anderson  
R. R. Grigg (P460)  
K. E. Peveler  
D. A. Weaver (P129)  
File

A. J. Cayia  
R. G. Mende  
R. P. Pulec  
T. J. Webb

K. M. Duescher (3)  
L. Schofield (JOSRC)  
M. E. Reddemann  
E. J. Weinkam III

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [bj1@nrc.gov](mailto:bj1@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. # means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1) <b>POINT BEACH NUCLEAR PLANT UNIT 1</b>	DOCKET NUMBER (2) <b>05000266</b>	PAGE (3) <b>1 OF 6</b>
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TITLE (4)  
**PRA Assessment of Auxiliary Feedwater System Reveals Procedural Vulnerability Related to Loss of Instrument Air**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	29	2001	2001	005	00	01	28	2002	Point Beach Unit 2	05000301
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check all that apply) (11)							
POWER LEVEL (10) 100			20.2201(b)			20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
			20.2201(d)			20.2203(a)(4)			50.73(a)(2)(iii)	50.73(a)(2)(x)
			20.2203(a)(1)			50.36(c)(1)(i)(A)			50.73(a)(2)(iv)(A)	73.71(a)(4)
			20.2203(a)(2)(i)			50.36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)	73.71(a)(5)
			20.2203(a)(2)(ii)			50.36(c)(2)			50.73(a)(2)(v)(B)	OTHER
			20.2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)			50.73(a)(2)(i)(A)	X		50.73(a)(2)(v)(D)	
			20.2203(a)(2)(v)			50.73(a)(2)(i)(B)			50.73(a)(2)(vii)	
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)	
			20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(B)	

LICENSEE CONTACT FOR THIS LER (12)  
 NAME: **Charles Wm. Krause, Senior Regulatory Compliance Engineer**  
 TELEPHONE NUMBER (Include Area Code): **(920) 755-6809**

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)  
 YES (If yes, complete EXPECTED SUBMISSION DATE)  X NO  X

EXPECTED SUBMISSION DATE (15)  
 MONTH:      DAY:      YEAR:

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

While conducting a self-initiated, voluntary review and revision of the Point Beach Nuclear Plant (PBNP) PRA model, including the auxiliary feedwater system (AFWS) portion of that model, NMC identified that the air-operated valves in the minimum flow recirculation piping for the AFWS pumps were not included in the PRA model. These valves fail closed on the loss of instrument air. While examining the significance of this failure, in conjunction with initiating events that require AFWS flow, NMC identified a misalignment between system design and EOPs. If the AFWS pump discharge or flow control valves were throttled closed with the minimum recirculation valve failed closed, it is possible that the AFW pumps could be placed in a condition of insufficient flow. This could result in pump damage in a short interval of time. The operators were trained on the significance of maintaining adequate AFW recirculation flow. However, early in the post reactor trip emergency operating procedures, the operators were directed to control AFWS flow without specific written guidance to maintain minimum AFW flow. It was postulated that the loss of instrument air together with a common operator response to high steam generator level or overcooling of the RCS had some probability to result in failure of one or all of the AFWS pumps. This could cause the loss of a safety function to mitigate the consequences of the accident and was determined to be reportable under 10 CFR 50.72. The PRA evaluation of this event sequence indicated that the potential consequences of this hypothesized failure were significant. Corrective actions included procedure changes to alert the operator to this potential failure sequence and additional operator training.

**LICENSEE EVENT REPORT (LER)  
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Point Beach Nuclear Plant, Unit 1	05000266	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 6
		2001	- 005	- 00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**Event Description:**

While conducting a self-initiated, voluntary review and revision of the Point Beach Nuclear Plant (PBNP) PRA model, including the auxiliary feedwater system (AFWS) (BA) portion of that model, Nuclear Management Company (the licensee for PBNP) engineers revealed a previously unidentified vulnerability. NMC observed that the air operated valves (V) in the minimum flow recirculation piping for the AFWS pumps (P) were not modeled within the PRA. The recirculation line provides a flow path back to the condensate storage tanks. This recirculation path is provided to ensure adequate flow through the AFWS pumps to prevent hydraulic instabilities and to dissipate pump heat during low AFWS flow conditions. The isolation valves in the recirculation line are operated with Instrument Air (IA) (LD) and are designed to fail close. Therefore, if the AFW pump discharge valves had been throttled or closed and the recirculation valves had closed (either before or after the discharge valves were closed) due to a hypothesized loss of IA, the AFW pumps could have been placed in a condition of reduced or insufficient pump flow. NMC further identified that a loss of offsite power (LOOP) could also initiate the event since the IA compressors are tripped on under-voltage and not automatically re-powered from a safeguards bus. Certain design basis accidents assume a LOOP. A loss of IA would also cause a loss of normal feedwater and would initiate a dual unit trip. During these transients, the AFWS pumps will start injecting into the steam generators (SG). Early in the emergency operating procedures (EOPs), which would be entered as a result of the reactor trip transient, the plant operators are directed to control flow to the steam generators to maintain desired level and to prevent overcooling of the RCS (AB). This may include shutting off flow to one or both steam generators by either securing the pump(s) or shutting an AFW pump discharge valve. At the time of discovery, the EOPs did not contain information addressing the requirement to maintain a minimum amount of flow through the pump. If flow from any AFWS pump is reduced too low (as would occur if the AFWS discharge valves are closed) and the recirculation valves had closed (either before or after the discharge valves were closed) due to a hypothesized loss of IA and the operators fail to identify the lack of recirculation flow, then the associated pump could fail in a very short period of time. This failure mode (common loss of IA and similar operator response to high steam generator level or overcooling of the RCS) could potentially result in the failure of more than one or all of the AFW pumps.

On November 29, 2001, a corrective action report (CR 01-3595) was initiated to document this condition. During the internal screening of this report, the AFWS was determined to be operable and capable of performing its safety function to provide water to the steam generators for decay heat removal. However, since we had determined that the potential loss of IA, in conjunction with inappropriately directed operator action, could have affected multiple trains of a safety related system, we conservatively concluded that this condition should be reported. An ENS notification (EN #38525) was made at 1705 CST pursuant to 10 CFR 50.72(b) (3)(v)(D) for "a condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:...(D) Mitigate the consequences of an accident. This vulnerability appears to be applicable to this situation in that EOP-0, "Reactor Trip or Safety Injection" and EOP 0.1 "Reactor Trip Response" did not include explicit operator directions regarding the concern for maintaining adequate minimum AFWS pump flow. As a result, there was some probability that operator action could have prevented the AFWS from completing its safety function. At 1746 on November 30, 2001, the ENS event notification was supplemented to further clarify the discussion of the specific failures postulated and to reiterate that the loss of IA affects only the AFWS pump recirculation valves and not the air operated discharge valves. The discharge valves fail open on loss of instrument air and have nitrogen backup.

**Cause:**

The apparent cause of this condition was the failure to recognize that the lack of guidance within the EOPs, in conjunction with action directed by the EOPs, could exacerbate an event that included a loss of IA. The PBNP abnormal operating procedure, AOP-5B, "Loss Of Instrument Air," addresses the vulnerability of the AFWS system to the fail closed minimum recirculation air operated valves. That procedure includes specific directions to gag open the AFWS recirculation valves using the valve handwheels. However, the timing of that step in this procedure was such that action at that point may occur after the operator has already taken action to throttle back on the AFWS pump

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

discharge flow. The significance of the timing of these actions was realized by the NMC in its self-initiated, voluntary review and update of the PRA. This condition had not been identified in the baseline PRA.

Operator training included lesson plans which identified the need and basis for maintaining minimum flows through the AFWS pumps and discussed the opening and closing logic for the recirculation valves. Operating crew simulator training included loss of instrument air scenarios. However, the specifics of the simulator program are such that failing closed the recirculation valves and shutting the AFWS discharge valves does not automatically fail the AFW pump. Therefore, the crew simulator training may not have sensitized the operators to this vulnerability.

The PRA's capacity to integrate system performance with potential human actions to obtain a spectrum of plant responses allowed for identification of this vulnerability. The NMC has concluded that this vulnerability would not likely have been identified through normal surveillance or quality assurance activities. The root cause investigation of this condition identified that previous reviews in this area were generally focused on the necessity of providing adequate flow to the steam generators to remove decay heat. Because of the small margin in the capacity of the motor driven AFWS pumps in particular, it is essential in many scenarios that the recirculation valves are shut in order to assure adequate flow to the steam generators.

**Corrective Actions:**

- A Root Cause Evaluation (RCE 01-069) Team was chartered to evaluate the vulnerability and why the risk significance of this condition was not recognized previously. The report of this team is scheduled to be provided for senior management review in late January 2002. The preliminary findings of this team with regard to root cause and contributing factors are included in the "Cause" section of this report.
- Beginning at 1520 on November 30, 2001, the operating crews were briefed on the concerns identified with a loss of IA and AFWS pump requirements to maintain adequate minimum pump flow. Temporary information tags were placed adjacent to the Control Room controls for all four AFW pumps to provide a reminder of the minimum flow requirements for each AFW pump.
- Temporary procedure changes were completed on November 30 to EOP-0, "Reactor Trip or Safety Injection" and EOP 0.1 "Reactor Trip Response," to reflect the guidance provided earlier to operators via the temporary information tags. On December 14, 2001, these changes were made permanent. The step was added as a foldout page item so that operators would stop the pumps any time the minimum flow requirements were not met.
- Each operating crew received just in time training, briefings and simulator training concerning this event scenario to reinforce proper AFWS flow control.
- On December 20, 2001, EOP 0 and EOP 0.1 were further revised to link problems with IA as indicated by the IA header pressure low alarm with the continuing need to closely monitor and maintain adequate AFWS pump flows. This revision was also included in ECA 0.0, "Loss of All AC Power".
- *Plant modifications to enhance system reliability, including providing a backup air or nitrogen supply to the minimum recirculation valves, are being evaluated.*
- *Simulator modifications to enhance modeling the potential failure of the AFWS pumps following loss of instrument air scenarios are being pursued.*

**LICENSEE EVENT REPORT (LER)  
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**Component and System Description:**

The following component and system description comes from Section 10.2 of the PBNP FSAR. A diagram of the major AFWS flowpaths is provided on the last page of this LER.

The auxiliary feedwater system consists of two electric motor-driven pumps, two steam turbine-driven pumps, pump suction and discharge piping, and the controls and instrumentation necessary for operation of the system. Redundancy is provided by utilizing two different pumping methods, two different sources of power for the pumps, and two sources of water supply to the pumps. The AFWS is categorized as seismic Class I and is designed to ensure that a single fault will not obstruct the system function.

One AFWS water source uses a steam turbine-driven pump for each unit with the steam capable of being supplied from either or both steam generators. Each turbine driven pump is capable of supplying 400 gpm of feedwater to its dedicated unit, or 200 gpm to each steam generator through normally throttled motor-operated discharge valves. The feedwater flowrate from the turbine-driven auxiliary feedwater pump depends on the throttle position of these motor operated valves (MOVs). Each pump has an AOV controlled recirculation line back to the condensate storage tanks to ensure minimum flow to dissipate pump heat. The pump drive is a single-stage turbine, capable of quick starts from cold standby and is directly connected to the pump. The turbine is started by opening either one or both of the isolation valves between the turbine supply steam header and the main steam lines upstream of the main steam isolation valves. The turbine and pump are normally cooled by service water with an alternate source of cooling water from the feedwater system.

The other AFW source is common to both units and uses two similar motor-driven pumps each capable of obtaining its electrical power from the plant emergency diesel generators. Each pump has a capacity of 200 gpm with one pump capable of supplying the "A" steam generator in either or both units through an AOV back-pressure control valve and normally closed MOVs and with the other pump capable of supplying the "B" steam generator in either or both units through an AOV back-pressure control valve and normally closed MOVs.

Both back-pressure control valves fail open when instrument air to the valves is lost. The discharge valves are provided with a backup nitrogen supply to provide pneumatic pressure in the event of a loss of instrument air. This backup supply assures that the discharge valves do not move to the full open position which, combined with low steam generator pressures, may cause the pump motor to trip on over-current due to high flow conditions. Each pump has an AOV controlled recirculation line back to the condensate storage tanks to ensure minimum flow to prevent hydraulic instabilities and dissipate pump heat. The discharge headers also provide piping, valves, and tanks for chemical additions to any steam generator. The pump bearings are ring lubricated and bearing oil is cooled by service water.

The water supply source for the auxiliary feedwater system is redundant. The normal source is by gravity feed from two nominal capacity 45,000 gallon condensate storage tanks, while the safety-related supply is taken from the plant service water system whose pumps are powered from the diesel generators if station power is lost.

**Safety Assessment:**

Any complete loss of IA for a significant time is expected to result in a reactor trip and an AFW start signal due to a loss of normal feedwater (the normal feed water regulating valves fail close on loss of air). Under this postulated condition, all components of the AFWS are now and continue to be fully capable of performing their design functions supporting automatic starting and supplying sufficient flow to the steam generators to mitigate any transient or accident by removal of decay heat. It is the continued function of the AFWS, in response to directed operator actions to control AFWS flow and the lack of specific guidance contained within the original EOPs regarding a loss of IA, that is the issue identified in this event report.

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

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		2001	- 005	- 00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

A PRA assessment of the possible failure modes and effects associated with an IA failure identified a previously unrecognized vulnerability. This failure would have been caused by a combination of a design limitation, a specific sequence of postulated operator actions, and a lack of clear guidance within the EOPs. This combination could have resulted in failure of one or more of the AFW pumps due to aggressive AFW flow reduction (as may be expected in response to a steam generator overfill or RCS over-cooling) after automatic system start and flow had been established. The likelihood of success or failure in the postulated scenario is highly dependent upon plant transient response (which may vary with the nature of the initiating event, initial power levels, etc.) and operator response. Operator response is highly dependent upon prior training, procedural usage, system knowledge and awareness, experience, and other human effectiveness (HE) factors. It should be noted that a control board alarm is provided (Instrument Air Header Pressure Low) to alert the operator to the existence of an initiating condition for this event and that established plant procedures direct the restoration of IA (both Emergency Operating Procedures and Abnormal Operating Procedures), and the manual gagging open of the minimum flow recirculation valves in the event that IA cannot be promptly restored (AOP 5B). PBNP has experienced partial losses of IA, including one event involving the loss of all off-site power and another involving a low IA header pressure alarm following a reactor trip. In each of these cases the operators demonstrated the ability to cope with the loss of IA casualty and recover IA header pressure before it had an adverse affect on plant equipment or response.

Preliminary PRA results show that the vulnerability described in this LER, prior to the procedural changes, was potentially risk significant. Although the initiating event frequencies are low to moderate, the unrecoverable IA scenario was risk significant due to the consequences of a total loss of all AFW pumps requiring feed and bleed without the pressurizer PORVs (AOVs which fail closed). The risk results are highly dependant upon human interactions. PBNP operators are trained on AFW system operations and have experience with degraded IA scenarios. Because of this training and experience, we believe it is reasonable to assume that the operators would have successfully handled this combination of conditions in the unlikely event that it would have occurred.

Although the AFWS met, and continues to meet all of its design and licensing requirements, the initiating event of a loss of IA, in conjunction with a misaligned procedure, had the potential to affect redundant trains of the AFWS, a safety-related system. Since it could be postulated that the same operator action could have impacted all the AFWS pumps, there is some probability that the result could have been the complete loss of the AFWS safety-related function. Accordingly, we have also identified this event as a possible safety system functional failure.

**Similar Occurrences:**

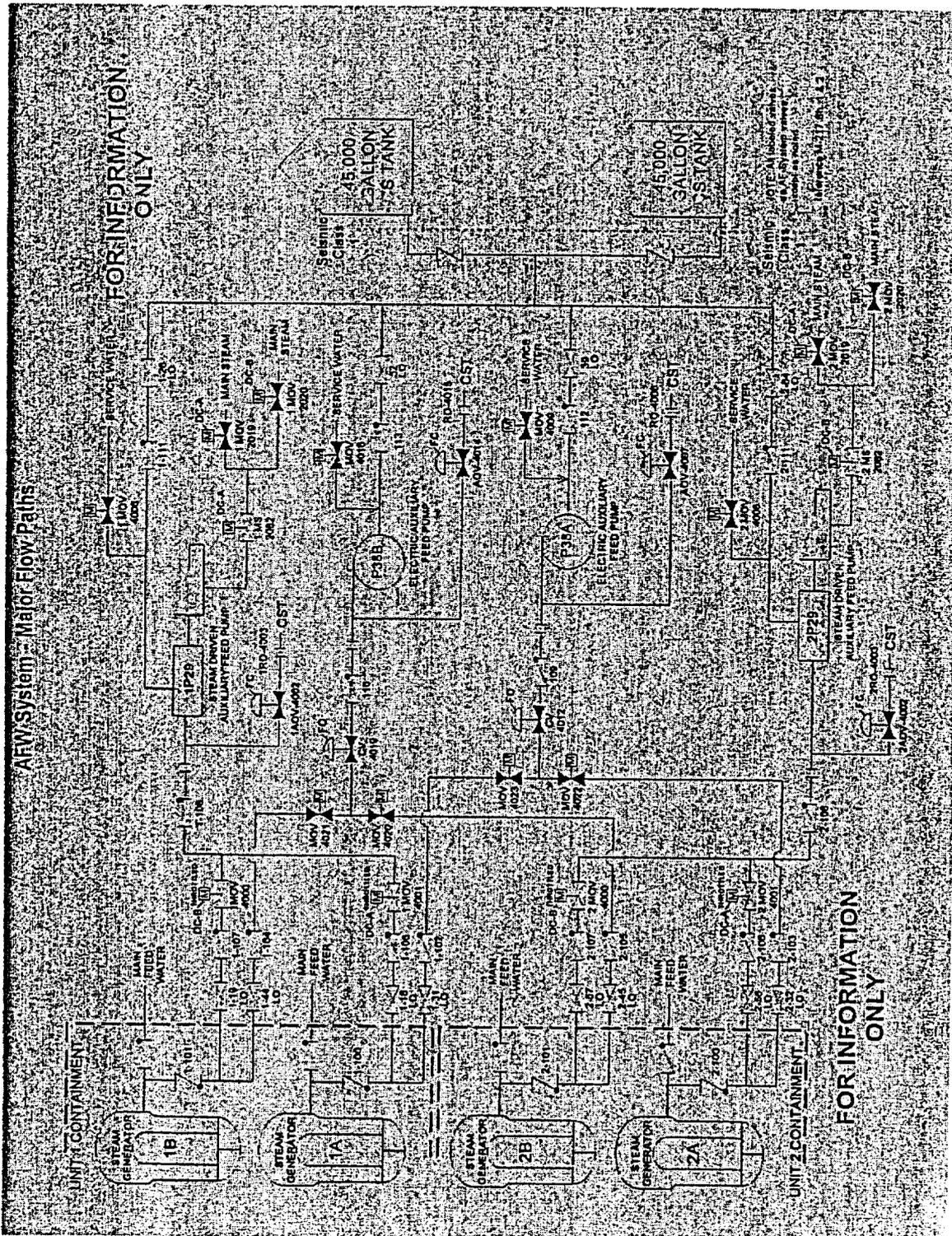
A review of recent LERs (past two years) identified the following event which was also determined to involve the potential for a loss of safety function:

<u>LER NUMBER</u>	<u>Title</u>
266/2001-002-00	Use of the Steam Generator Blowdown Isolation Interlock Defeat Switch Could Result in Loss of Safety Function

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Point Beach Nuclear Plant, Unit 1	DOCKET NUMBER (2) 05000266	LER NUMBER (6)			PAGE (3) 8 OF 6
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		2001	005	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)





**INTERNAL  
CORRESPONDENCE**

NPM 2002-0376

**To:** A. J. Cayia

**From:** D. D. Schoon

**Date:** July 29, 2002

**Subject:** CORRECTIVE ACTION REVIEW - POST AFW RED FINDING  
REGULATORY CONFERENCE

**Copy To:** T. Taylor            M. E. Warner        R. F. Hornak  
                 M. A. Hansen        K. B. Stokes        File

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On May 9, 2002, Fred Cayia, Kewaunee Point Beach Site Director, chartered a team to review the corrective actions taken subsequent to the subject conference. That conference dealt with our discovery of a risk significant condition where loss of instrument air concurrent with another event requiring Auxiliary Feedwater (AFW) could have resulted in failure of the AFW pumps because of the fail close design of the AFW pumps' mini-recirculation valves. The team conducted an independent review of Point Beach's corrective actions completed subsequent to the discovery of the condition. A copy of the team charter is attached. Team members were Duane Schoon (team leader - Operations), Dick Hornak (Engineering Design), Ken Stokes (Nuclear Oversight), and Mark Hansen (Operations SRO).

The team concluded that overall corrective actions were effective at addressing the condition. Additional corrective actions were made during the review and additional procedure feedbacks written to enhance the procedural guidance. Other questions were raised during the corrective action review; those are being tracked in the corrective action program with references provided below.

EOP's/AOP's/SEP's

These procedures were reviewed to ensure that adequate guidance existed to effectively respond to the condition briefly described above. The team identified two other procedures for change, EOP 2.0, "Faulted Steam Generator Isolation," and EOP 3.0, "Steam Generator Tube Rupture." We recommended the change to these based on the potential that they could be entered prior to restoring instrument air, and there are AFW flow changes made in those procedures. These procedures were both temporarily changed in early June and permanently changed on June 24, 2002. The changes consisted of adding the same fold out page minimum AFW flow steps that are included in EOP 0. We also recommended that SEP 3.0, "Loss of all AC Power to a Shutdown unit," also receive the same minimum flow fold out page direction. We could not identify a scenario where this condition is of concern, however, the team concluded that, since we control AFW flow in this procedure, it would be prudent to include appropriate procedural guidance therein.

### Backup Nitrogen/Air to the AFW Pump Mini-Recirculation Valves

We reviewed the modifications made to supply backup nitrogen (motor driven pumps) and backup air (turbine driven pumps) to the air operated minimum flow recirculation valves. The concerns identified are with the periodic testing of these backup supplies.

- There is no pressure drop test on the backup supply check valves for the turbine driven AFW pump recirc valves.
- We do not quantify/trend the leakage from the backup supplies to the recirc valves. Also, the testing we are doing, does not account for leakage within the positioner or controller for the valves.
- The turbine driven AFW pump mini-recirc valve backup supplies are currently not included in the IST program.

These issues are being addressed under CAP028472 assigned to Design Engineering.

### AFW Pump Stuffing Box Leakage

There were also questions regarding the amount of leakage on the inboard and outboard stuffing boxes of the Auxiliary Feedwater pumps. Per the system engineer, it is necessary to have pump packing leakage for cooling and lubrication purposes. A complete packing failure will not adversely affect the operation of the Auxiliary Feedwater pumps as the stuffing box only sees suction pressure, typically around 15 psi whether the pump is running or not. If the packing rings and lantern ring were to allow water to flow completely through the stuffing box, the follower would still provide a limitation as to how much water will actually escape. Normal accepted packing leakage criteria for the Auxiliary Feedwater pumps is governed by OI 62A and OI 62B.

### EOP/AOP Verification and Validation

The requirements for EOP and AOP verification and validation are contained with OM 4.3.2, "Verification/Validations Process." On May 13, 2002, OM 4.3.2 was revised to provide a matrix of procedures versus PSA-significant accidents. This matrix is now used to help determine which procedures and associated changes would require procedure validation. Additionally, OM 4.3.2 provides guidance for procedure verification by PRA.

Review of EOP's for Other Similar Loss of Instrument Air Concerns

The review of the EOP set was completed in April 2002. That review identified one important concern, the long-term availability of PORV's following a loss of instrument air. That concern was also recently identified during analysis of plant response to an ATWS event. That concern is being tracked under CAP025497, assigned to the Engineering Analysis group.

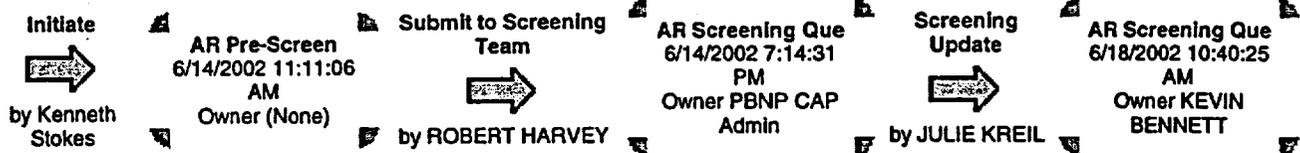
Maintaining a Continuous AFW Minimum Flow to the Steam Generators

Finally, we assessed the potential of procedurally controlling minimum flow to the steam generators at a lesser flow than 50 gpm such as 10-20 gpm. This would increase the time the pump would run before failing due to low flow, minimize the level control problems in the steam generators, and allow additional time to restore instrument air. The design of the air operated discharge pressure control valves and flow indication for the AFW pumps is such that at flows below 25-30 gpm, flow control is erratic; therefore, controlling at low AFW flows was not prudent.

sls

Attachment

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CAP028472  
 Activity Type: CAP Submit Date: 6/14/2002 11:11:06 AM

One Line Description: Auxiliary Feedwater Testing Concerns

Detailed Description: 6/14/2002 11:11:06 AM - Kenneth Stokes:  
 There is no leakage pressure drop test in place for the plant modification # MR02-001, Back Up Air Supply For The TDAFP mini recirculation valves 1AOV-4002 and 2AOV-4002. There is an action item on ECR No.2002-0077 to include check valves 1AF-173 and 2AF-173 into the IST program, however the scope is not well defined and it is unclear where the status of the station is in regard to having a leakage pressure drop test implemented. This test will verify there is adequate motive force to operate the TDAFP mini recirculation valves for 1 hour on a loss of IA.

There is a leakage pressure drop test for the N2 Backup First Off Isolation check valves for the MDAFP per IT10. This test quantifies the leakage in the tubing between the First-Off check valves AF-133/153, the N2 bottles, and the N2 isolations for control Air/N2 supply to the AFW discharge valve controller and AFW mini recirculation valve positioner of each system.

The supply to the positioners/controllers are isolated during this test thereby taking away a potential leakage path. Acknowledging the calcs, evaluation is needed to determine if there is sufficient margin in the event on loss of IA, to operate the MDAFP mini recirculation valves and the discharge valves of the MDAFP for 1 hour if the positioner/controller degrades.

6/18/2002 10:40:25 AM - JULIE KREIL:  
 COMMENT from 6/18/02 Managers' Meeting: ECR 2002-077 was initiated to address this concern. Mod MR 02-001 is still w/in its 90 closeout window. Components are not safety related.

Initiator: Stokes, Kenneth Initiator Department: NP PB QA PB  
 Date/Time of Discovery: 6/14/2002 8:37:37 AM Date/Time of Occurrence: 6/14/2002 8:37:37 AM  
 Identified By: QA/Nuclear Oversight System: (None)  
 Equipment # (1st): (None) Equipment Type (1st): (None)  
 Equipment # (2nd): (None) Equipment Type (2nd): (None)  
 Equipment # (3rd): (None) Equipment Type (3rd): (None)  
 Site/Unit: Point Beach - Common

Why did this occur?: 6/14/2002 11:11:06 AM - Kenneth Stokes:  
 A test to quantify leakage for the Back Up Air Supply For The TDAFP mini recirculation valves 1AF-4002 and 2AF-4002 has not been established. The scope for the modification process was not well defined.

Immediate Action Taken: 6/14/2002 7:14:31 PM - ROBERT HARVEY:  
 None

Recommendations: 6/14/2002 11:11:06 AM - Kenneth Stokes:  
 Expedite the inclusion of 1AF-173 and 2AF-173 into the IST program per the direction of ECR 2002-077.



OPR Completed?: N  
 OLD\_ACTION\_NUM: 1  
 sub\_tsld: 0 original\_project\_id: 32  
 original\_issue\_id: 028472  
 Site: Point Beach  
 Cartridge and Frame:

#### ATTACHMENTS AND PARENT/CHILD LINKS

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 [Principal to CA025621: Auxiliary Feedwater Testing Concerns](#)

 [Linked To CA026277](#)

#### CHANGE HISTORY

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**6/14/2002 11:31:44 AM by SCOTT PFAFF**

SRO Review Required? Changed From N To Y  
 Last Modified Date Changed From 6/14/2002 11:11:06 AM To 6/14/2002 11:31:44 AM  
 Last Modifier Changed From Kenneth Stokes To SCOTT PFAFF

**6/14/2002 7:14:31 PM by ROBERT HARVEY**

Immediate Action Taken Changed From " To '[Appended:] None'  
 Operability Status Changed From (None) To Operable  
 Basis for Operability Changed From " To '[Appended:] 1 & 2P-29 are operable base on the fact that the mini recirc's do not have a safety related function.'  
 State Changed From AR Pre-Screen To AR Screening Que Via Transition: Submit to Screening Team  
 Owner Changed From (None) To PBNP CAP Admin  
 Last Modified Date Changed From 6/14/2002 11:31:44 AM To 6/14/2002 7:14:31 PM  
 Last Modifier Changed From SCOTT PFAFF To ROBERT HARVEY  
 Last State Change Date Changed From 6/14/2002 11:11:06 AM To 6/14/2002 7:14:31 PM  
 Last State Changer Changed From Kenneth Stokes To ROBERT HARVEY

**6/18/2002 10:40:25 AM by JULIE KREIL**

Detailed Description Changed From '[Original Text]' To '[Appended:] COMMENT from 6/18/02 Managers' Meeting: ECR 2002-077 was initiated to address this concern. Mod MR 02-001 is still w/in its 90 closeout window. Components are not safety related.'  
 Screened? Changed From N To Y  
 Significance Level Changed From (None) To C  
 CAP Admin Changed From PBNP CAP Admin To KEVIN BENNETT  
 Owner Changed From PBNP CAP Admin To KEVIN BENNETT  
 Last Modified Date Changed From 6/14/2002 7:14:31 PM To 6/18/2002 10:40:25 AM  
 Last Modifier Changed From ROBERT HARVEY To JULIE KREIL  
 References Changed From " To 'ECR 2002-077 MR 02-001'

**6/18/2002 12:49:39 PM by JULIE KREIL**

Last Modified Date Changed From 6/18/2002 10:40:25 AM To 6/18/2002 12:49:39 PM  
 original\_project\_id Changed From 0 To 32  
 original\_issue\_id Changed From " To '028472'

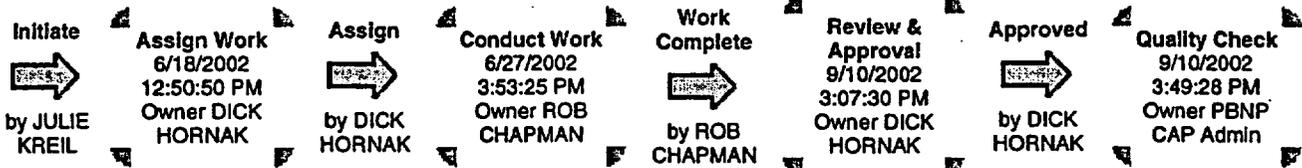
**6/18/2002 12:50:52 PM by JULIE KREIL**

Last Modified Date Changed From 6/18/2002 12:49:39 PM To 6/18/2002 12:50:52 PM  
 Attachment Added: Principal to CA025621: Auxiliary Feedwater Testing Concerns

**9/10/2002 3:04:53 PM by admin**

Last Modified Date Changed From 6/18/2002 12:50:52 PM To 9/10/2002 3:04:53 PM  
 Last Modifier Changed From JULIE KREIL To admin  
 Attachment Added: Linked To CA026277

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CA025621  
 Activity Type: Corrective Action      Submit Date: 6/18/2002 12:50:50 PM  
 Site/Unit: Point Beach - Common  
 Activity Requested: Review CAP028472 Significance Level C, and implement the Recommendations.  
 CATPR: N      Initiator: Stokes, Kenneth   
 Initiator Department: NP PB QA PB      Responsible Group Code: EDMP Engineering Design Mechanical PB   
 Responsible Department: Engineering      Activity Supervisor: DICK HORNAK   
 Activity Performer: ROB CHAPMAN

SECTION 2

Priority: 4      Due Date: 8/23/2002  
 Mode Change Restraint: (None)      Management Exception From PI?: N  
 QA/Nuclear Oversight?: N      Licensing Review?: N  
 NRC Commitment?: N      NRC Commitment Date:

SECTION 3

Activity Completed: 9/10/2002 3:07:30 PM - ROB CHAPMAN:  
 ECR 2002-077 was initiated when PBNP management decided to conservatively upgrade the MR 02-001 installation of backup air accumulator tanks for the 1/2AF-4002 TDAFP mini-flow recirc valves to safety related. NPM 2002-0228 documents this decision as a deviation from normal PBNP processes in that the 1/2AF-4002 valves currently have no safety function in the open position.

Furthermore, it was conservatively decided to test the check valves (1/2AF-173) for leakage quarterly, even though they have no safety function. An emergent revision to IT 08A and IT 09A was not performed as part of the ECR, since the check valves were recently leak testing following modification installation.

The CAP initiator states that the scope of the ECR is not well defined with regard to the leakage test of the 1/2AF-173 check valves. However, an ECR is not the proper document to specify procedure revision information. The scope is defined in that the ECR states that the check valves will be added to the IST program. A revision to SCR 2002-0010 was performed to support the ECR, which also states that the AF-173 check valves will be tested. The decision to also test the AF-172 check valves was an additional conservative decision made by the IST group, and was not required.

Subsequently, letter NRC 2002-0068 has committed Point Beach to upgrade the AFW pump mini-recirc valves (1/2AF-4002, AF-4007, AF-4014) to have a safety related function to open. Following this decision, additional revisions to IT 8A/9A/10/10A/10B were prepared to upgrade testing of the AOVs, the recirc line check valves (1/2AF-114, AF-115, AF-116), and the pneumatic backup check valves (1/2AF-173) to support this new safety function.

The CAP initiator states that no pressure drop test is in place, and recommends expediting the inclusion of 1/2AF-173 into the IST program. However, Rev 28 to IT 09A had already been completed for Unit 2 at the time of CAP initiation, and Rev 28 to IT 08A for Unit 1 was under way, and was issued 6/17/2002 (3 days after CAP initiation). These revisions perform a gross leak check of the 1/2AF-173 check valves, but do not quantify the leakage. Since the procedures as written meet all IST requirements, no expediting is necessary. New procedures IT 8C and IT 9C are currently being prepared to perform a larger scope system leakage test for the TDAFP backup air system, up to and including the AOV, which will quantify the leakage from the system.

The CAP initiator also suggests that an evaluation of IT 10 be performed, since the leak check of the AF-133/153 check valves for the nitrogen backup system isolates the positioners for AF-4012/4019, and if they degrade the time duration for backup operation of the MDAFP discharge valves and mini-recirc valves (AF-4007/4014) comes into question. Currently, IT 10/10A/10B quantify leakage past AF-133 and AF-153 including a small portion of the system. This meets IST requirements. However, an increase in leakage rate through the positioners would not be discovered by this test. Therefore, it is recommended that a new procedure be generated to perform a system leakage test that will include the recirc and discharge AOVs.

A meeting between design, systems, and IST engineering on 9/10/02 has resulted in agreement in the following proposed scope of testing for the pneumatic backup systems:

- IT 8A/9A should be revised to quantify leakage past the 1/2AF-173 check valves on a quarterly basis, similar to what is performed in IT 10/10A/10B for the AF-133/153 check valves.
- IT 8C/9C are already in the process of being issued, and should be issued. However, once the revisions to IT 8A/9A are made to quantify leakage past the check valves, these procedures can be cancelled. This test should be incorporated into a new OI or PC procedure, or as part of a PM callup to perform a system leakage test on an 18-24 month frequency.
- New procedures (OI or PC) or callups should be developed to perform a system leakage test of the nitrogen system, similar to the IT 8C/9C tests for the air backup systems, on an 18-24 month frequency.

It is recommended that the proposed changes above be implemented within the next 3 to 4 months. All IST requirements are currently being met, but the proposed changes will provide an additional assurance that the pneumatic backups for the AFW pump mini-recirc AOVs will perform their safety functions by improving the ability to detect leakage in the system.

CA026277 has been initiated to track the above procedure revisions. This item may be closed.

9/10/2002 3:49:28 PM - DICK HORNAK:  
Verified CA026277 initiated to track above procedure revisions.

**SECTION 4**

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QA Supervisor:	(None)	Licensing Supervisor:	(None)
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**SECTION 5**

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Project:	CAP Activities & Actions		
State:	Quality Check	Active/Inactive:	Active
Owner:	PBNP CAP Admin	AR Type:	Parent

ⓧ **Submitter:** JULIE KREIL  **Assigned Date:** 6/27/2002  
 ⓧ **Last Modified Date:** 9/10/2002 3:49:28 PM **Last Modifier:** DICK HORNAK   
 ⓧ **Last State Change Date:** 9/10/2002 3:49:28 PM **Last State Changer:** DICK HORNAK   
 ⓧ **Close Date:**  
 ⓧ **One Line Description:** Auxiliary Feedwater Testing Concerns  
**NUTRK ID:**  
**Child Number:** 0  
**References:** ECR 2002-077  
 MR 02-001  
**Update:**  
**Import Memo Field:**  
**CAP Admin:** PBNP CAP Admin **Site:** Point Beach  
**OLD\_ACTION\_NUM:**  
**Cartridge and Frame:**

#### ATTACHMENTS AND PARENT/CHILD LINKS

---

 [Subtask from CAP028472: Auxiliary Feedwater Testing Concerns](#)

#### CHANGE HISTORY

---

6/18/2002 12:50:53 PM by JULIE KREIL

Last Modified Date Changed From 6/18/2002 12:50:50 PM To 6/18/2002 12:50:53 PM

Attachment Added: Subtask from CAP028472: Auxiliary Feedwater Testing Concerns

6/27/2002 3:53:25 PM by DICK HORNAK

Activity Performer Changed From (None) To ROB CHAPMAN

Priority Changed From (None) To 4

Due Date Changed From Unassigned To 8/23/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Owner Changed From DICK HORNAK To ROB CHAPMAN

Assigned Date Changed From Unassigned To 6/27/2002

Last Modified Date Changed From 6/18/2002 12:50:53 PM To 6/27/2002 3:53:25 PM

Last Modifier Changed From JULIE KREIL To DICK HORNAK

Last State Change Date Changed From 6/18/2002 12:50:50 PM To 6/27/2002 3:53:25 PM

Last State Changer Changed From JULIE KREIL To DICK HORNAK

9/10/2002 2:55:07 PM by ROB CHAPMAN

Last Modified Date Changed From 6/27/2002 3:53:25 PM To 9/10/2002 2:55:07 PM

Last Modifier Changed From DICK HORNAK To ROB CHAPMAN

9/10/2002 2:57:27 PM by ROB CHAPMAN

Last Modified Date Changed From 9/10/2002 2:55:07 PM To 9/10/2002 2:57:27 PM

9/10/2002 3:07:30 PM by ROB CHAPMAN

Activity Completed Changed From " To [Appended:] ECR 2002-077 was initiated when PBNP management decided to conservatively upgrade the MR 02-001 installation of backup air accumulator tanks for the 1/2AF-4002 TDAFP mini-flow recirc valves to safety related. NPM 2002-0228 documents this[...]

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Owner Changed From ROB CHAPMAN To DICK HORNAK

Last Modified Date Changed From 9/10/2002 2:57:27 PM To 9/10/2002 3:07:30 PM

Last State Change Date Changed From 6/27/2002 3:53:25 PM To 9/10/2002 3:07:30 PM

Last State Changer Changed From DICK HORNAK To ROB CHAPMAN

9/10/2002 3:49:28 PM by DICK HORNAK

Activity Completed Changed From [Original Text] To [Appended:] Verified CA026277 initiated to track above procedure revisions.'

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From DICK HORNAK To PBNP CAP Admin

Last Modified Date Changed From 9/10/2002 3:07:30 PM To 9/10/2002 3:49:28 PM

Last Modifier Changed From ROB CHAPMAN To DICK HORNAK

Last State Change Date Changed From 9/10/2002 3:07:30 PM To 9/10/2002 3:49:28 PM

Last State Changer Changed From ROB CHAPMAN To DICK HORNAK

CAP Admin Changed From (None) To PBNP CAP Admin

**STATE CHANGE HISTORY**

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Initiate  Assign Work  
 9/10/2002 3:04:43 PM  
 Owner ERIC SCHULTZ  
 by ROB CHAPMAN 

**SECTION 1**

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**Activity Request Id:** CA026277  
**Activity Type:** Corrective Action      **Submit Date:** 9/10/2002 3:04:43 PM  
**Site/Unit:** Point Beach - Common  
**Activity Requested:** Per recommendations of CA025621, perform the following procedure revisions:

- IT 8A/9A should be revised to quantify leakage past the 1/2AF-173 check valves on a quarterly basis, similar to what is performed in IT 10/10A/10B for the AF-133/153 check valves.
- IT 8C/9C are already in the process of being issued, and should be issued. However, once the revisions to IT 8A/9A are made to quantify leakage past the check valves, these procedures can be cancelled. This test should be incorporated into a new OI or PC procedure, or as part of a PM callup to perform a system leakage test on an 18-24 month frequency.
- New procedures (OI or PC) or callups should be developed to perform a system leakage test of the nitrogen system, similar to the IT 8C/9C tests for the air backup systems, on an 18-24 month frequency.

It is recommended that the proposed changes above be implemented within the next 3 to 4 months. All IST requirements are currently being met, but the proposed changes will provide an additional assurance that the pneumatic backups for the AFW pump mini-recirc AOVs will perform their safety functions by improving the ability to detect leakage in the system.

**CATPR:** N      **Initiator:** Stokes, Kenneth   
  
**Initiator Department:** NP PB QA PB       **Responsible Group Code:** EPT Engineering Programs Testing PB   
**Responsible Department:** Engineering      **Activity Supervisor:** ERIC SCHULTZ   
**Activity Performer:** (None)

**SECTION 2**

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**Priority:** (None)      **Due Date:**  
**Mode Change Restraint:** (None)      **Management Exception From PI?:** N  
**QA/Nuclear Oversight?:** N      **Licensing Review?:** N  
**NRC Commitment?:** N      **NRC Commitment Date:**

**SECTION 3**

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**Activity Completed:**

**SECTION 4**

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QA Supervisor: (None)

Licensing Supervisor: (None)

SECTION 5

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Project: CAP Activities & Actions   
 State: Assign Work      Active/Inactive: Active  
 Owner: ERIC SCHULTZ      AR Type: Parent  
            
 Submitter: ROB CHAPMAN      Assigned Date: 6/27/2002  
            
 Last Modified Date: 9/10/2002 3:04:55 PM      Last Modifier: admin  
 Last State Change Date: 9/10/2002 3:04:43 PM      Last State Changer: ROB CHAPMAN   
 Close Date:  
 One Line Description: Auxiliary Feedwater Testing Concerns  
 NUTRK ID:  
 Child Number: 0  
 References: ECR 2002-077  
          MR 02-001  
 Update:  
 Import Memo Field:  
 CAP Admin: (None)      Site: Point Beach  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

ATTACHMENTS AND PARENT/CHILD LINKS

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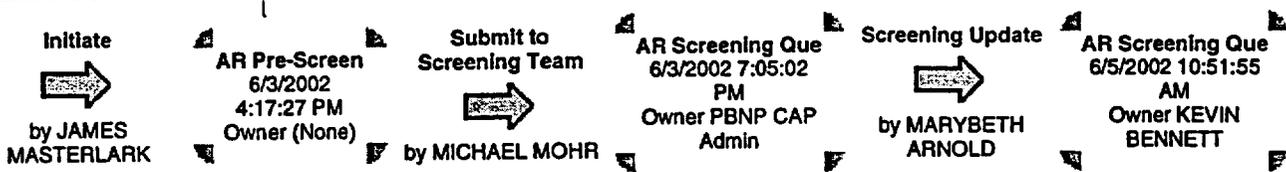
 [Linked From CAP028472](#)

CHANGE HISTORY

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9/10/2002 3:04:55 PM by admin  
 Last Modified Date Changed From 9/10/2002 3:04:43 PM To 9/10/2002 3:04:55 PM  
 Last Modifier Changed From ROB CHAPMAN To admin  
 Attachment Added: Linked From CAP028472

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CAP028370  
 Activity Type: CAP Submit Date: 6/3/2002 4:17:27 PM  
 One Line Description: PORVs ability to limit RCS pressure response during an ATWS event questioned

Detailed Description: 6/3/2002 4:17:27 PM - JAMES MASTERLARK:  
 While performing risk calculations associated with the failed pressurizer safety valve found during last Unit 2 refuel outage, a design question came up regarding the use of the pressurizer PORVs during an ATWS event.

The risk calculation was being performed based upon the latest Westinghouse guidance. In this analysis, the PORVs can be credited for pressure relief in addition to the pressurizer safety valves. The PORV support systems (including Instrument Air, DC power, and logic/control) were being reviewed for their inclusion in the model. During this review, the dependency of the PORVs on Instrument Air and the possible loss of Instrument Air due to an SI/Containment Isolation signal was explored.

To meet the ATWS rule, the station depends upon a generic Westinghouse analysis. This analysis credits both pressurizer safety valves and pressurizer PORVs to limit the RCS pressure response within design limits. During the first part of the ATWS event, a large amount of inventory is released into containment from the PORVs and safety valves. This fluid release will exceed the capacity of the PRT and cause a rise in containment pressure. The increase will likely be above the SI/Containment Isolation set-point. On a containment isolation signal we lose instrument air to containment. Since the PORVs are dependant upon instrument air, they will close soon after the containment isolation signal.

The closure of the PORVs is not considered in our generic ATWS analysis performed by Westinghouse. The generic analysis shows that peak pressure will occur within the first 250 seconds of the transient. If the PORVs were to close prior to this time, the peak pressure may be above that considered in the generic analysis. The containment response is also not included in the analysis, therefore, it is not known if the PORVs would close before or after the peak pressure has occurred. A conservative MAAP analysis was performed based upon input from the generic analysis. The MAAP runs show that containment isolation design pressure would occur around 100 seconds. This is before the peak pressure is reached and may result in an increase in this pressure above design.

The risk significance of this issue is very low. The ATWS frequency from our PRA model is around 3E-6/ yr. Considering addition mitigation factors contained within the PRA for an ATWS even with the potential loss of the PORVs brings the CDF less than 1E-6/ yr (classified as very low safety significance).

Reference:

1. WCAP-10858P-A, Rev 1, AMSAC Generic Design Package
2. Westinghouse Letter, NS-TMA-2182, December 30, 1979 to NRR, "ATWS Submittal"
3. FSAR, Section 7.4.1, AMSAC

Others knowledgeable of issue:

Tom Kendall x7661  
 Dave Black x7354

Initiator: MASTERLARK, JAMES Initiator Department: EPN Engineering Programs  
 Nuclear Safety Analysis PB

**B**

<b>Date/Time of Discovery:</b>	6/3/2002 3:42:40 PM	<b>Date/Time of Occurrence:</b>	6/3/2002 3:42:40 PM
<b>Identified By:</b>	Site-identified	<b>System:</b>	XX PB
<b>Equipment # (1st):</b>	RC-00430 PB <del>4</del>	<b>Equipment Type (1st):</b>	GLOBE
<b>Equipment # (2nd):</b>	RC-00431C PB <del>4</del>	<b>Equipment Type (2nd):</b>	GLOBE
<b>Equipment # (3rd):</b>	(None)	<b>Equipment Type (3rd):</b>	(None)
<b>Site/Unit:</b>	Point Beach - Common		
<b>Why did this occur?:</b>	6/3/2002 4:17:27 PM - JAMES MASTERLARK: The Point Beach analysis credited a generic Westing House analysis. The generic analysis did not consider the potential for equipment credited in the analysis not to be available based upon plant specific design.		
<b>Immediate Action Taken:</b>	6/3/2002 7:05:02 PM - MICHAEL MOHR: Reviewed the requirements of ATWS rule 10 CFR 50.62. Point Beach complies with the requirements of 10 CFR 50.62 with the installation of AMSAC for units 1 and 2.		
<b>Recommendations:</b>	6/3/2002 4:17:27 PM - JAMES MASTERLARK: Determine conservatism in analysis and determine if PORV closure would actually occur before or after peak pressure is released. Conservativisms may include: actual peak pressure, time for PORV closure with the loss of IA, and actual pressures reached with the closure of the PORVs.		
<b>☉ Notify Me During Eval?:</b>	N	<b>☉ SRO Review Required?:</b>	Y

**SECTION 2**

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<b>Operability Status:</b>	Operable	<b>☉ Compensatory Actions:</b>	N
<b>Basis for Operability:</b>	6/3/2002 7:05:02 PM - MICHAEL MOHR: AMSAC system was installed to midigate a ATWS senerio. This system was acceptable and is in compliance with the ATWS rule. This is recorded in Docket NOS 50-266 and 50-301 headed COMPLIANCE WITH ATWS RULE 10 CFR 50.62. The above senerio identifies the loss of PORV's during a ATWS condition. The PORV status is not noted in the design proposal, However code safety's are required for critical operation and would be available if PORV's are not available to maintain RCS pressure. Also CSP procedures were developed for operators to midigate a ATWS to shut the RX down, If a RX did not trip when required. AMSAC system is operable for Units 1 and 2, No loss of safety .Systems remains fully operable.		
<b>☉ Unplanned TSAC Entry:</b>	N	<b>☉ External Notification:</b>	N

**SECTION 3**

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<b>Screened?:</b>	Y	<b>☉ Significance Level:</b>	B
<b>INPO OE Req'd?:</b>	N	<b>Potential MRFF?:</b>	N
<b>☉ QA/Nuclear Oversight?:</b>	N	<b>☉ Licensing Review?:</b>	Y
<b>Good Catch/Well Doc'd?:</b>	Y		

**SECTION 4**

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<b>Inappropriate Action:</b>	8/15/2002 11:31:10 AM - KEVIN BENNETT: None: This issue deals with App R and ATWS issues. The analysis that was not required to be run at the time these issue were first presented are over two years old. Per procedure any issue that exceeds this time frame is not to be trend coded.		
<b>Process:</b>	N/A - Not Applicable	<b>Activity:</b>	N/A - Not Applicable
<b>Human Error Type:</b>	UNK - Unknown	<b>Human Perf Fall Mode:</b>	N/A - Not Applicable

Equip Failure Mode:	Inadequate lubrication	Process Fail Mode:	N/A - Not Applicable
Org/Mgt Failure Mode:	(None)	Group Causing Prob:	(None)
Hot Buttons:	(None)		

SECTION 5

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CAP Admin:	KEVIN BENNETT	Prescreener:	(None)
Project:	Corrective Action Process (CAP)		
State:	AR Screening Que	Active/Inactive:	Active
Submitter:	JAMES MASTERLARK	Owner:	KEVIN BENNETT
AR Type:	Parent	Last Modified Date:	8/15/2002 11:31:10 AM
Last Modifier:	KEVIN BENNETT	Last State Change Date:	6/3/2002 7:05:02 PM
Last State Changer:	MICHAEL MOHR	Close Date:	
NUTRK ID:			
# of Children:	0		
References:	WELL DOCUMENTED		
Update:			
Prescreen Comments:			
Import Memo Field:			
OPR Completed?:	N		
OLD_ACTION_NUM:			
sub_tsid:	0	original_project_id:	32
original_issue_id:	028370		
Site:	Point Beach		
Cartridge and Frame:			

ATTACHMENTS AND PARENT/CHILD LINKS

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[Principal to CA025497: PORVs ability to limit RCS pressure response during an ATWS event questioned](#)

CHANGE HISTORY

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6/3/2002 7:05:02 PM by MICHAEL MOHR

Immediate Action Taken Changed From \* To [Appended:] Reviewed the requirements of ATWS rule 10 CFR 50.62. Point Beach complies with the requirements of 10 CFR 50.62 with the installation of AMSAC for units 1 and 2.'

Operability Status Changed From (None) To Operable

Basis for Operability Changed From \* To [Appended:] AMSAC system was installed to mitigate a ATWS scenario. This system was acceptable and is in compliance with the ATWS rule. This is recorded in Docket NOS 50-266 and 50-301 headed COMPLIANCE WITH ATWS RULE 10 CFR 50.62. The above scenario [...]

State Changed From AR Pre-Screen To AR Screening Que Via Transition: Submit to Screening Team

Owner Changed From (None) To PBNP CAP Admin

Last Modified Date Changed From 6/3/2002 4:17:27 PM To 6/3/2002 7:05:02 PM

Last Modifier Changed From JAMES MASTERLARK To MICHAEL MOHR

Last State Change Date Changed From 6/3/2002 4:17:27 PM To 6/3/2002 7:05:02 PM

Last State Changer Changed From JAMES MASTERLARK To MICHAEL MOHR

6/5/2002 10:51:55 AM by MARYBETH ARNOLD

System Changed From (None) To XX PB

Screened? Changed From N To Y

Significance Level Changed From (None) To B

Licensing Review? Changed From N To Y

Good Catch/Well Doc'd? Changed From NA To Y

CAP Admin Changed From PBNP CAP Admin To KEVIN BENNETT

Owner Changed From PBNP CAP Admin To KEVIN BENNETT

Last Modified Date Changed From 6/3/2002 7:05:02 PM To 6/5/2002 10:51:55 AM

Last Modifier Changed From MICHAEL MOHR To MARYBETH ARNOLD

References Changed From " To 'WELL DOCUMENTED'

6/5/2002 11:15:07 AM by JULIE KREIL

Last Modified Date Changed From 6/5/2002 10:51:55 AM To 6/5/2002 11:15:07 AM

Last Modifier Changed From MARYBETH ARNOLD To JULIE KREIL

original\_project\_id Changed From 0 To 32

original\_issue\_id Changed From " To '028370'

6/5/2002 11:18:44 AM by JULIE KREIL

Last Modified Date Changed From 6/5/2002 11:15:07 AM To 6/5/2002 11:18:44 AM

Attachment Added: Principal to CA025497: PORVs ability to limit RCS pressure response during an ATWS event questioned

8/15/2002 11:31:10 AM by KEVIN BENNETT

Inappropriate Action Changed From " To '[Appended:] None: This issue deals with App R and ATWS issues. The analysis that was not required to be run at the time these issue were first presented are over two years old. Per procedure any issue that exceeds this time frame is not to be tren[...]

Process Changed From (None) To N/A - Not Applicable

Activity Changed From (None) To N/A - Not Applicable

Human Error Type Changed From (None) To UNK - Unknown

Human Perf Fail Mode Changed From (None) To N/A - Not Applicable

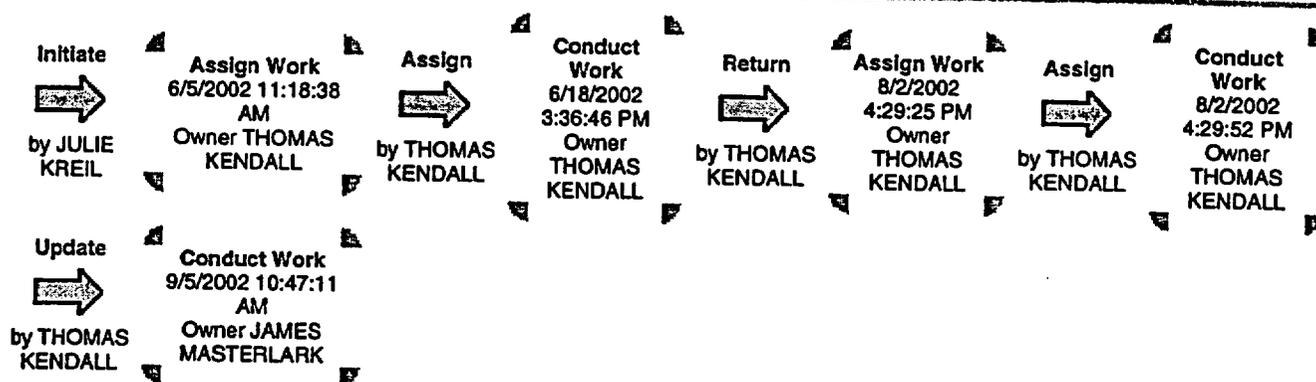
Equip Failure Mode Changed From (None) To Inadequate lubrication

Process Fail Mode Changed From (None) To N/A - Not Applicable

Last Modified Date Changed From 6/5/2002 11:18:44 AM To 8/15/2002 11:31:10 AM

Last Modifier Changed From JULIE KREIL To KEVIN BENNETT

**STATE CHANGE HISTORY**



**SECTION 1**

Activity Request Id: CA025497  
 Activity Type: Corrective Action      Submit Date: 6/5/2002 11:18:38 AM  
 Site/Unit: Point Beach - Common  
 Activity Requested: Review CAP028370 Significance Level B, and implement Recommendations. Licensing followup of this action is required per 6/05/2002 Manager's Meeting.  
 CATPR: N      Initiator: MASTERLARK, JAMES   
 Initiator Department: EPN Engineering Programs Nuclear Safety Analysis PB      Responsible Group Code: EPP Engineering Programs PRA PB   
 Responsible Department: Engineering      Activity Supervisor: RICK WOOD   
 Activity Performer: JAMES MASTERLARK

**SECTION 2**

Priority: 2      Due Date: 10/1/2002  
 Mode Change Restraint: (None)      Management Exception From PI?: N  
 QA/Nuclear Oversight?: N       Licensing Review?: Y  
 NRC Commitment?: N       NRC Commitment Date:

**SECTION 3**

Activity Completed:

**SECTION 4**

QA Supervisor: (None)      Licensing Supervisor: (None)

**SECTION 5**

Project: CAP Activities & Actions

State: Conduct Work      Active/Inactive: Active  
 Owner: JAMES MASTERLARK      AR Type: Parent  
 Submitter: JULIE KREIL      Assigned Date: 8/2/2002  
 Last Modified Date: 9/5/2002 10:47:11 AM      Last Modifier: THOMAS KENDALL  
 Last State Change Date: 8/2/2002 4:29:52 PM      Last State Changer: THOMAS KENDALL  
 Close Date:  
 One Line Description: PORVs ability to limit RCS pressure response during an ATWS event questioned  
 NUTRK ID:  
 Child Number: 0  
 References: WELL DOCUMENTED  
 Update:  
 Import Memo Field:  
 CAP Admin: (None)      Site: Point Beach  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

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 NOTES/COMMENTS
 

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**Note created during 'Return' transition by THOMAS KENDALL (8/2/2002 4:29:25 PM)**

Request a due date extension until the beginning of September. Westinghouse hydraulic transient analyses has been completed and determined the necessary power trajectory to maintain RCS pressure below 3200 psig. The analysis is now awaiting work by the Westinghouse core dynamics group to determine what UET corresponds to the prior fuel load given the necessary power trajectories. The task has an estimated completion date of mid-August 2002. Initial reports from Westinghouse have been favorable (i.e. the UET obtained was less than 1/2 cycle).

**Due date extension by THOMAS KENDALL (9/5/2002 10:25:31 AM)**

Westinghouse analysis has been completed and shows a UET of 23.8% of the previous fuel cycle (reference Westinghouse correspondence WEP-02-56 dated 8/23/2002). This item is being transferred to the PRA group for evaluation of safety significance, and the due date is being extended by 1 week.

Note that this item is of regulatory concern, and a response/update is due soon. However, limited PRA resources and conflicting SDPs are necessitating the extension.

**Due date extension, transfer of item by THOMAS KENDALL (9/5/2002 10:27:17 AM)**

Westinghouse analysis has been completed and shows a UET of 23.8% of the previous fuel cycle (reference Westinghouse correspondence WEP-02-56 dated 8/23/2002). This item is being transferred to the PRA group for evaluation of safety significance, and the due date is being extended by 2 weeks.

Note that this item is of regulatory concern, and a response/update is due soon. However, limited PRA resources and conflicting SDPs are necessitating the extension.

**Update on due dates by THOMAS KENDALL (9/5/2002 10:37:01 AM)**

The plant committed to a response by 10/30/02. Accordingly, this action is being extended to 10/1/02 to permit work on higher priority SDP issues, while still permitting sufficient time to develop the LER update. This was discussed with and approved by J. Freels.

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 ATTACHMENTS AND PARENT/CHILD LINKS
 

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 Subtask from CAP028370: PORVs ability to limit RCS pressure response during an ATWS event questioned

  
**CHANGE HISTORY**

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**6/5/2002 11:18:45 AM by JULIE KREIL**

Last Modified Date Changed From 6/5/2002 11:18:38 AM To 6/5/2002 11:18:45 AM

Attachment Added: Subtask from CAP028370: PORVs ability to limit RCS pressure response during an ATWS event questioned

**6/18/2002 3:36:46 PM by THOMAS KENDALL**

Activity Performer Changed From (None) To THOMAS KENDALL

Priority Changed From (None) To 2

Due Date Changed From Unassigned To 8/1/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Assigned Date Changed From Unassigned To 6/18/2002

Last Modified Date Changed From 6/5/2002 11:18:45 AM To 6/18/2002 3:36:46 PM

Last Modifier Changed From JULIE KREIL To THOMAS KENDALL

Last State Change Date Changed From 6/5/2002 11:18:38 AM To 6/18/2002 3:36:46 PM

Last State Changer Changed From JULIE KREIL To THOMAS KENDALL

**8/2/2002 4:29:25 PM by THOMAS KENDALL**

State Changed From Conduct Work To Assign Work Via Transition: Return

Last Modified Date Changed From 6/18/2002 3:36:46 PM To 8/2/2002 4:29:25 PM

Last State Change Date Changed From 6/18/2002 3:36:46 PM To 8/2/2002 4:29:25 PM

**8/2/2002 4:29:26 PM by THOMAS KENDALL**

Last Modified Date Changed From 8/2/2002 4:29:25 PM To 8/2/2002 4:29:26 PM

Attachment Added: Note created during 'Return' transition

**8/2/2002 4:29:52 PM by THOMAS KENDALL**

Due Date Changed From 8/1/2002 To 9/1/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Assigned Date Changed From 6/18/2002 To 8/2/2002

Last Modified Date Changed From 8/2/2002 4:29:26 PM To 8/2/2002 4:29:52 PM

Last State Change Date Changed From 8/2/2002 4:29:25 PM To 8/2/2002 4:29:52 PM

**9/5/2002 10:25:31 AM by THOMAS KENDALL**

Last Modified Date Changed From 8/2/2002 4:29:52 PM To 9/5/2002 10:25:31 AM

Attachment Added: Due date extension

**9/5/2002 10:27:17 AM by THOMAS KENDALL**

Attachment Added: Due date extension, transfer of item

**9/5/2002 10:37:01 AM by THOMAS KENDALL**

Last Modified Date Changed From 9/5/2002 10:25:31 AM To 9/5/2002 10:37:01 AM

Attachment Added: Update on due dates

**9/5/2002 10:37:38 AM by THOMAS KENDALL**

Responsible Group Code Changed From EDT Engineering Design Thermal/Hydraulic Analysis PB To EPP Engineering Programs PRA PB

Activity Supervisor Changed From THOMAS KENDALL To RICK WOOD

Due Date Changed From 9/1/2002 To 10/1/2002

Last Modified Date Changed From 8/2/2002 4:29:52 PM To 9/5/2002 10:37:38 AM

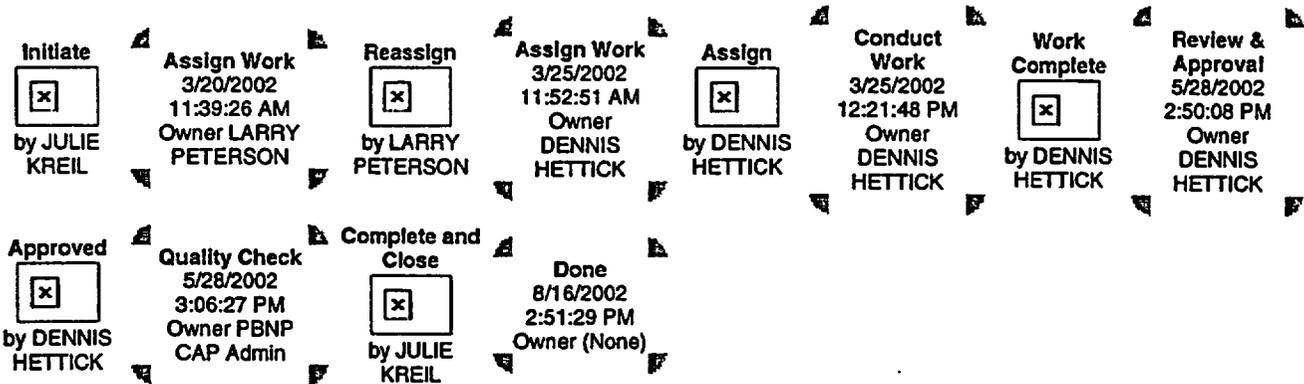
**9/5/2002 10:47:11 AM by THOMAS KENDALL**

Activity Performer Changed From THOMAS KENDALL To JAMES MASTERLARK

Owner Changed From THOMAS KENDALL To JAMES MASTERLARK

Last Modified Date Changed From 9/5/2002 10:37:38 AM To 9/5/2002 10:47:11 AM

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CA004074

Activity Type: Corrective Action      Submit Date: 3/20/2002 11:39:26 AM

Site/Unit: Point Beach - Common

Activity Requested: Contact NMC and have an independent review performed of the RCE described in CAP002612.

CATPR: N      Initiator: GADZALA, JACK

Initiator Department: ALR Site Licensing Regulatory Compliance PB      Responsible Group Code: AP Performance Assessment PB

Responsible Department: Assessment      Activity Supervisor: DENNIS HETTICK

Activity Performer: DENNIS HETTICK

SECTION 2

Priority: 5      Due Date: 5/23/2002

Mode Change Restraint: (None)      Management Exception From PI?: N

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

NRC Commitment?: N       NRC Commitment Date:

SECTION 3

Activity Completed: 3/25/2002 11:52AM - LARRY PETERSON:  
Reassigned to PAS (Dennis Hettick) per discussion 3/25/02.

4/19/2002 10:56AM - DENNIS HETTICK:  
The assessment has been completed by Mr. Jeff Summy. Mr. Summy provided verbal results of his assessment to myself and Rich Flessner. Mr. Flessner shared these results with Tom Webb via e-mail. The formal write-up is due the week of 4/22/02

5/6/2002 7:41:40 AM - DENNIS HETTICK:  
Final report, incorporating comments was received 4/29. This was passed on to R. Flessner. Mr. Summy is waiting for any additional comments. Changed due date to accomodate Mr.

Flessner's review, and receipt of the signed report.

5/28/2002 2:50:08 PM - DENNIS HETTICK:

The final signed report has been received and is attached as a pdf file. Mr. Rich Flessner also reviewed the report and used it in preparing for the NRC meeting. This action may be closed.

8/16/2002 2:51:29 PM - JULIE KREIL:

Action completed as documented above. CLOSED CA004074.

9/12/2002 9:46:29 AM - RICHARD FLESSNER:

Action item OTH026285 documents the evaluation of the independent review report.

#### SECTION 4

QA Supervisor:	(None)	Licensing Supervisor:	(None)
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#### SECTION 5

Project:	CAP Activities & Actions		
State:	Done	Active/Inactive:	Inactive
Owner:	(None)	AR Type:	Parent
Submitter:	JULIE KREIL 	Assigned Date:	3/25/2002
Last Modified Date:	9/12/2002 9:46:29 AM	Last Modifier:	RICHARD FLESSNER 
Last State Change Date:	8/16/2002 2:51:29 PM	Last State Changer:	JULIE KREIL 
Close Date:	8/16/2002 2:51:29 PM		
One Line Description:	Request Independent Review of Root Cause for AFW Recir Issue		
NUTRK ID:			
Child Number:	0		
References:			
Update:			
Import Memo Field:			
CAP Admin:	PBNP CAP Admin	Site:	Point Beach
OLD_ACTION_NUM:			
Cartridge and Frame:			

#### NOTES/COMMENTS

**Received Action** by DENNIS HETTICK (3/25/2002 12:20:56 PM)

Received this action after discussion with Larry Peterson. At this point, the initiator (T. Webb) has indicated that an external assessment should be performed and agreed that AMERI would be an acceptable choice. I have initiated discussions with AMERI (T. Theesfeld).

This was assigned priority 5, as there is no safety significance associated with this action. Assigned to myself to work, as the actual work will be done by an independent party.

**Update: Proposal received** by DENNIS HETTICK (3/27/2002 6:26:56 AM)

Proposal has been received from AEMRI. Also, have completed a Budget Emergent Impact Change form and forwarded to

finance (Jackie Walker-Johnson)

## ATTACHMENTS AND PARENT/CHILD LINKS

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 [Linked From CAP002612](#)

[Independent Review of Root Cause Evaluation 01-069.pdf](#) (1263835 bytes)

  [Linked from OTH026285: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW](#)

## CHANGE HISTORY

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**3/20/2002 11:39:28 AM by JULIE KREIL**

Last Modified Date Changed From 3/20/2002 11:39:26 AM To 3/20/2002 11:39:28 AM

Attachment Added: Linked From CAP002612

**3/25/2002 11:52:51 AM by LARRY PETERSON**

Activity Supervisor Changed From LARRY PETERSON To DENNIS HETTICK

Activity Completed Changed From " To '3/25/2002 11:52AM - LARRY PETERSON: Reassigned to PAS (Dennis Hettick) per discussion 3/25/02.'

Owner Changed From LARRY PETERSON To DENNIS HETTICK

Last Modified Date Changed From 3/20/2002 11:39:28 AM To 3/25/2002 11:52:51 AM

Last Modifier Changed From JULIE KREIL To LARRY PETERSON

**3/25/2002 12:20:56 PM by DENNIS HETTICK**

Last Modified Date Changed From 3/25/2002 11:52:51 AM To 3/25/2002 12:20:56 PM

Last Modifier Changed From LARRY PETERSON To DENNIS HETTICK

Attachment Added: Received Action

**3/25/2002 12:21:48 PM by DENNIS HETTICK**

Responsible Department Changed From Engineering To Assessment

Activity Performer Changed From (None) To DENNIS HETTICK

Priority Changed From (None) To 5

Due Date Changed From Unassigned To 4/18/2002

State Changed From Assign Work To Conduct Work Via Transition: Assign

Assigned Date Changed From Unassigned To 3/25/2002

Last Modified Date Changed From 3/25/2002 11:52:51 AM To 3/25/2002 12:21:48 PM

Last Modifier Changed From LARRY PETERSON To DENNIS HETTICK

Last State Change Date Changed From 3/20/2002 11:39:26 AM To 3/25/2002 12:21:48 PM

Last State Changer Changed From JULIE KREIL To DENNIS HETTICK

**3/27/2002 6:26:56 AM by DENNIS HETTICK**

Last Modified Date Changed From 3/25/2002 12:21:48 PM To 3/27/2002 6:26:56 AM

Attachment Added: Update: Proposal received

**3/27/2002 6:44:41 AM by DENNIS HETTICK**

Responsible Group Code Changed From EX Engineering Processes PB To AP Performance Assessment PB

Last Modified Date Changed From 3/27/2002 6:26:56 AM To 3/27/2002 6:44:41 AM

**4/19/2002 10:56:15 AM by DENNIS HETTICK**

Due Date Changed From 4/18/2002 To 5/2/2002

Activity Completed Changed From '[Original Text]' To '[Appended:] 4/19/2002 10:56AM - DENNIS HETTICK: The assessment has been completed by Mr. Jeff Summy. Mr. Summy provided verbal results of his assessment to myself and Rich Flessner. Mr. Flessner shared these results with Tom Webb via e-mail. [...]'

Last Modified Date Changed From 3/27/2002 6:44:41 AM To 4/19/2002 10:56:15 AM

**5/6/2002 7:41:40 AM by DENNIS HETTICK**

Due Date Changed From 5/2/2002 To 5/23/2002

Activity Completed Changed From '[Original Text]' To '[Appended:] Final report, incorporating comments was received 4/29. This was passed on to R. Flessner. Mr. Summy is waiting for any additional comments. Changed due date to accommodate Mr. Flessner's review, and receipt of the signed report.'

Last Modified Date Changed From 4/19/2002 10:56:15 AM To 5/6/2002 7:41:40 AM

**5/28/2002 2:19:57 PM by TRACEY ZIFKO**

Last Modified Date Changed From 5/6/2002 7:41:40 AM To 5/28/2002 2:19:57 PM

Last Modifier Changed From DENNIS HETTICK To TRACEY ZIFKO

Attachment Added: Independent Review of Root Cause Evaluation 01-069.pdf

**5/28/2002 2:50:08 PM by DENNIS HETTICK**

Activity Completed Changed From [Original Text] To [Appended:] The final signed report has been received and is attached as a pdf file. Mr. Rich Flessner also reviewed the report and used it in preparing for the NRC meeting. This action may be closed.'

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Last Modified Date Changed From 5/28/2002 2:19:57 PM To 5/28/2002 2:50:08 PM

Last Modifier Changed From TRACEY ZIFKO To DENNIS HETTICK

Last State Change Date Changed From 3/25/2002 12:21:48 PM To 5/28/2002 2:50:08 PM

**5/28/2002 3:06:27 PM by DENNIS HETTICK**

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From DENNIS HETTICK To PBNP CAP Admin

Last Modified Date Changed From 5/28/2002 2:50:08 PM To 5/28/2002 3:06:27 PM

Last State Change Date Changed From 5/28/2002 2:50:08 PM To 5/28/2002 3:06:27 PM

CAP Admin Changed From SCOTT PFAFF To PBNP CAP Admin

**8/16/2002 2:51:29 PM by JULIE KREIL**

Activity Completed Changed From [Original Text] To [Appended:] Action completed as documented above. CLOSED CA004074.'

State Changed From Quality Check To Done Via Transition: Complete and Close

Active/Inactive Changed From Active To Inactive

Owner Changed From PBNP CAP Admin To (None)

Last Modified Date Changed From 5/28/2002 3:06:27 PM To 8/16/2002 2:51:29 PM

Last Modifier Changed From DENNIS HETTICK To JULIE KREIL

Last State Change Date Changed From 5/28/2002 3:06:27 PM To 8/16/2002 2:51:29 PM

Last State Changer Changed From DENNIS HETTICK To JULIE KREIL

Close Date Changed From Unassigned To 8/16/2002 2:51:29 PM

**9/12/2002 9:41:26 AM by RICHARD FLESSNER**

Attachment Added: Linked from

**9/12/2002 9:42:40 AM by RICHARD FLESSNER**

Last Modified Date Changed From 8/16/2002 2:51:29 PM To 9/12/2002 9:42:40 AM

Last Modifier Changed From JULIE KREIL To RICHARD FLESSNER

Attachment Updated: Linked from OTH026285: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW

**9/12/2002 9:46:29 AM by RICHARD FLESSNER**

Activity Completed Changed From [Original Text] To [Appended:] Action Item OTH026285 documents the evaluation of the independent review report.'

Last Modified Date Changed From 9/12/2002 9:42:40 AM To 9/12/2002 9:46:29 AM

**Independent Review of Point Beach Nuclear Plant RCE 01-069  
Increased CDF in AFW PRA Model Due to Procedural Inadequacies Related  
to Loss of Instrument Air**

**Purpose:**

This report is intended to document the AEMRI independent review of a previously performed root cause evaluation RCE 01-069. This root cause evaluation was completed on February 5<sup>th</sup>, 2002 and was conducted by a team at the Point Beach Nuclear Plant. The purpose of this root cause evaluation was to determine the root and contributing causes of why the emergency operating procedural inadequacies existed that contributed to the increased core damage frequency (CDF) for the Auxiliary Feedwater System during a loss of instrument air event, and why these inadequacies were not identified previously.

**Event Synopsis:**

During a review of the AFW PRA model in June 2001, it was discovered that the AFW recirculation valves were not modeled. Subsequent discussions disclosed that under a loss of instrument air condition (IA), operators might close the AFW discharge valves to stop AFW flow. Because the recirculation valves fail closed on loss of IA, these actions could deadhead the AFW pumps and result in pump damage. Initially the procedural concern was directed at AOP-5B, but it was later realized that the AOP was not the only concern. Operator actions could be taken earlier in an accident scenario to control or stop AFW flow, prior to entering AOP-5B, while still in EOP-0.1. PRA modeling of the AFW system continued and on 11/26/01 a factor of 2.3 risk increase in CDF was identified. As discussions with site personnel continued, additional initiating events were identified and on 11/28/01 a revised PRA model was run that changed the risk estimate to a factor of 4 to 5 increase in CDF. Condition report CR 01-3595 was initiated at 1445 on 11/29/01 and an NRC event notification was made at 1705 the same day. RCE 01-069 charter to perform the root cause evaluation was approved on 12/4/01 and the final team report was issued 2/5/02.

**Method of Independent Analysis:**

The independent analysis by AEMRI was conducted by performing a structured review of the completed root cause analysis performed and supplied by Point Beach Nuclear Plant personnel. The structured review of the RCE was conducted using standard criteria for root cause analysis ensuring that all the necessary elements were included. As this structured review was being performed the reviewers formulated questions based on the information provided in the report. A site visit was then conducted and interviews with Point Beach personnel were used to assist in determining answers to the Independent Reviewers questions. Additionally, site specific investigation data was also reviewed to corroborate facts discussed in the investigation report. No effort was made to perform a completely independent root cause analysis. The primary purpose was to provide Point

Beach with an assessment of the quality, thoroughness, completeness, and effectiveness of the root cause evaluation the station team had completed.

#### **Conclusions:**

The root cause analysis report is well written and addresses all major aspects of what is expected to be included in a root cause analysis based on the scope as defined in the charter provided to the team. However, the charter and the scope of the investigation does not investigate the root cause of failure of why the design allowed the mini-flow valves to "fail closed" on loss of instrument air and how this condition went uncorrected until the time of discovery by the PRA analysis. The concern of the Independent Reviewer is that no corrective actions are prescribed to ensure that similar components in the plant do not have the same failure mode. The root cause as documented in the RCE, "The root cause of the EOP procedural weaknesses was the failure of the original EOP validation process to identify that specific operator actions were needed to properly control or stop AFW flow under a loss of instrument air condition. This resulted in a mismatch between plant design and procedural guidance" may be too narrowly focused. Minor specific improvement suggestions made by the Independent Reviewer are documented later in the report and were debriefed at an exit held at Point Beach on 4/9/02.

#### **Description of Problem being Evaluated:**

The Auxiliary Feedwater System (AFW) used at Point Beach employs a multiple stage centrifugal pump for supplying water to the steam generators during plant startup and for certain accident scenarios. The AFW system is provided with a recirculation flow path for pump testing and to ensure minimum flow through the pump is maintained at all times. The pump design has been demonstrated to degrade rapidly if permitted to run with less than minimum flow through the pump. The design therefore uses the recirculation flow path through flow control valves to ensure minimum flow through the pump if the normal discharge flow path to the steam generators is not available. The flow control valves are sized to provide sufficient pump flow to ensure no short-term degradation of the pump occurs. These flow control valves are air operated and supplied by the instrument air system and are controlled based on total pump flow. The valves are designed to "fail closed" on loss of instrument air.

In June 2001 the PRA group was reviewing and revising the AFW portion of the PRA model. During this review it was discovered that the minimum flow recirculation valves were not modeled within the PRA. Therefore, a failure modes and effects analysis was performed to determine potential failure modes. A discussion was held with past operations personnel about how the system was operated within the AOPs and EOPs. It was then determined that upon a complete loss of instrument air, the operators may use the EOPs and stop AFW flow by closing the discharge MOV or the flow control valve. However, since the recirculation valve fails closed on a loss of instrument air, the AFW pump would not have adequate recirculation flow. This issue was discussed with a design engineer who informed the PRA group that the AFW pumps could be damaged in a short period of time without adequate recirculation flow.

Subsequent to this discovery and initial discussions the problem was entered into the corrective action program with assignments to determine additional information regarding the potential problem including PRA analysis. In late November the PRA analysis revealed a significant increase in CDF as a result of this failure mechanism during certain accident scenarios. CR 01-3595 was issued on 11/29/01 to document the results of the PRA analysis. At this point as a result of the recognized significance level and the potential impact to the CDF, Senior Plant Management was briefed and the issue was reported to the NRC on 11/29/01. Corrective measures in the form of crew briefings and temporary information tags placed on the control boards were taken concurrent with the notification. On 12/4/01 the Plant Manager approved the root cause evaluation charter. The root cause evaluation was completed on 2/5/02.

### **Detailed Results of Independent Review**

The root cause as reviewed addresses the key attributes of an effective root cause. Those key attributes are:

- Cover page
- Team Charter
- Title Page with signatures
- Table of Contents
- Executive Summary
  - Event description
  - Root Cause(s)
  - Corrective Actions
  - Other Susceptible items
- Background
- Facts and Evidence
- Failure Mode Identification
- Failure Scenario Investigation
- Root Cause Identification
- Other susceptible equipment
- Operating experience review
- Corrective actions

The report is well written and accurately reflects the facts collected. The investigation is thorough and sufficiently detailed to ensure a complete understanding of the event under investigation in order to arrive at effective corrective actions.

The following are areas that might be considered for improvement with respect to the RCE.

The method used to identify potential inappropriate actions was the Event and Causal Factor charting method. The event and causal factor charting method is a very good graphic tool to illustrate a timeline of events taking place that eventually results in an

unwanted event occurring. The event and causal factor chart constructed and included in the RCE does this and is very detailed to list each timeline event as it occurred. It is suggested that the Barrier Analysis technique might also be used considering the root cause was attributed to the EOP validation process. Using the barrier analysis technique on the EOP development and validation process should identify those barriers that were weak or missing in the process that allowed this error to occur. Once those barriers are identified then effective corrective actions that would have prevented this particular condition from occurring can be determined. Just as importantly it could identify where other similar conditions may still exist based on the weak or missing barrier(s).

The report does not discuss the use of system based single failure analysis in deriving the EOP's or if it was considered as a corrective action. System based single failure analysis studies have been shown to be effective when used in conjunction with PRA analysis and EOP development methods to ensure multiple barriers are used in producing EOP's. In this particular case had these valves been shown as a single failure point, for example loss of instrument air, that could render the pumps inoperable then additional actions would have been taken to prevent this from occurring. Without this strong barrier in support of EOP development there may be additional single failures that are not addressed.

The RCE does not address the timeliness or effectiveness of the corrective action program in bringing this issue to station management's attention. The issue was first discussed when identified by the PRA Group in June 2001 and documented in the corrective action program on CR 01-2278 on 7/6/01. A second CR, 01-3595 was initiated on 11/29/01 at the time that it was recognized that the CDF was much higher for this failure scenario. This resulted in quick escalation to Senior Management and notification to the NRC was made on that same day. Although not directly related to the root cause, evaluations of this nature should address the effectiveness of programs such as the corrective action program to detect and cause prompt actions to be taken. There should be some discussion of whether this met management expectations and was effective.

There may be a problem with the station dropping a commitment with respect to how the IST program allowed removal to test in the opening position for the recirculation flow control valves. In reviewing the data that was assembled during the investigation the following scenario was constructed. In the early 90's an IST relief request was sent to the NRC to not include the open stroke test for the recirculation flow control valves in the IST program. The NRC wrote a response that indicated that these valves had a safety function to open and therefore should be included in the IST program. Point Beach responded that these valves did not have a safety function to open but subsequently dropped these from the relief request and said they would include them in the IST program and test them in the open position. In the late 90's during a subsequent revision to the IST program the test for the open position on these valves was removed. It's not clear to the Independent Reviewer how the decision was made to remove the valves from the IST program and if this represents a missed commitment that needed additional approvals to implement. CR 97-3363 documents the decision why the AFW recirculation valves do not perform a safety related function to open but does not detail how the

possible commitment to the NRC from the previous correspondence was resolved and what allowed PBNP to remove them from the test program.

The report discusses the fact that these valves were different with regards to Point Beach design compared to the generic Westinghouse design that the standard EOP's were written for. These specific design differences were to be handled by each site through site specific EOP development. The report does not discuss how these design differences were to be identified through the original EOP development process. This could be important since if other Point Beach design specific occurrences exist in the plant that were not identified then the EOP's for those components/systems may have similar problems as the ones covering AFW. The original EOP development guide should have required some process for identifying design differences from the standard Westinghouse design. If the process did not require this then some other barrier should be present to ensure this occurred.

The report does not, because of the direction provided by the approved charter, address the cause for why these valves fail closed on loss of instrument air, whether this design feature is correct, and what impact that had on not recognizing the importance of these valves to system operation in the EOP's. This seems to be a critical factor in determining the overall root cause of the problem that was excluded. As a result of this not being addressed the Independent Reviewer has the following unanswered observations from the root cause.

Is it a safety function of these valves to open? Throughout the documentation reviewed it seems that various documents at various times have had different points of view on this. This could be significant to the root cause since if the valves do have a safety function to open then the PRA would have modeled this and would have had to ensure this function was satisfied for affected accident scenarios.

The report does not discuss any findings regarding design configuration control differences. Specifically between the DBD and FSAR and how those documents are maintained. The FSAR was rewritten but it's not clear whether the validation process for the rewrite confirmed what the FSAR said and to ensure it was not in conflict with the DBD or other documents. This could indicate a more widespread problem with the quality and accuracy of the FSAR.

There is no discussion of how the Point Beach design compares to other similar plant designs specific to AFW recirculation flow path design. This could reveal potential design changes to make the design more robust for this portion of the system and could also reveal if there are other design features present at Point Beach that are undesirable.

There was at least one design change that appears to be a corrective action for this event that is not listed in the report as a corrective action. The Independent Reviewer was informed that accumulators were added to each of the recirculation control valves so that upon loss of instrument air the valves are assured to have a pneumatic source (either air or nitrogen) available to them for a predetermined time. This is an effective corrective

action but since it was not included in the root cause it may not be integrated with the other corrective actions and may not undergo an effectiveness review at some later date.

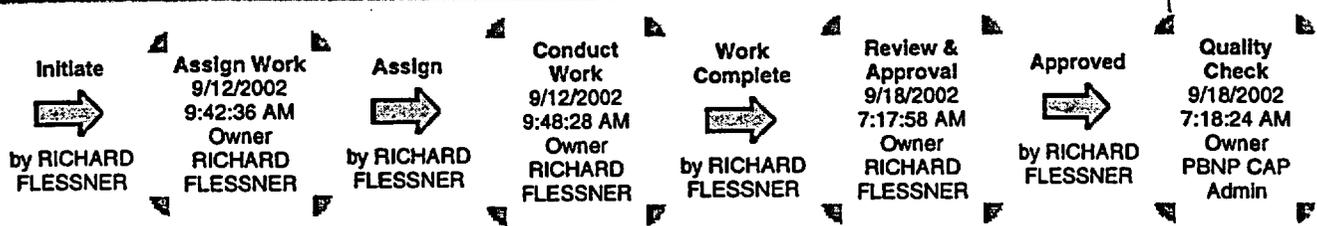
**Final Conclusions:**

The following final conclusion is based upon the scope of the investigation as prescribed by the management team in the investigation charter. The RCE represents a high quality, detailed, integrated investigation into the problem statement described in the Team Charter. The report is well constructed and well written and allows a non-involved reader to understand the event and the investigation performed. The root cause is supported by the facts, evidence and failure modes identification. The corrective actions are appropriate for the scope of the investigation and will ensure higher quality EOP documents in the future. Questions regarding the adequacy of the overall scope of the investigation are contained in the main body of the report.

Prepared by: Jeffrey S. Summy Date: 4/29/02  
Jeffrey S Summy

Approved by: Tracy Theesfeld Date: 5.4.02  
Tracy Theesfeld

**STATE CHANGE HISTORY**



**SECTION 1**

**Activity Request Id:** OTH026285  
**Activity Type:** Other **Submit Date:** 9/12/2002 9:42:36 AM  
**Site/Unit:** Point Beach - Common  
**Activity Requested:** Review the independent review report of RCE 01-069 (ACE000414) performed under CA00004074 and document the disposition of any recommendations made.  
**CATPR:** N **Initiator:** FLESSNER, RICHARD  
**Initiator Department:** EX Engineering Processes PB **Responsible Group Code:** EXC Engineering Processes Continuous Improvement PB  
**Responsible Department:** Engineering **Activity Supervisor:** RICHARD FLESSNER  
**Activity Performer:** RICHARD FLESSNER

**SECTION 2**

**Priority:** 5 **Due Date:** 9/20/2002  
**Mode Change Restraint:** (None) **Management Exception From PI?:** N  
**QA/Nuclear Oversight?:** N **Licensing Review?:** N  
**NRC Commitment?:** N **NRC Commitment Date:**

**SECTION 3**

**Activity Completed:** 9/18/2002 7:17:58 AM - RICHARD FLESSNER:  
 I reviewed the independent review report and documented my comments in NPM 2002-0495 as a memo to CARB addressing an addendum to RCE 01-069 Rev. 1/ACE000314. CARB approved that addendum at its meeting on 9/17/02. A copy of the NPM is attached.

**SECTION 4**

**QA Supervisor:** (None) **Licensing Supervisor:** (None)

**SECTION 5**

**Project:** CAP Activities & Actions

State: Quality Check      Active/Inactive: Active  
 Owner: PBNP CAP Admin      AR Type: Parent  
 Submitter: RICHARD FLESSNER       Assigned Date: 9/12/2002  
 Last Modified Date: 9/18/2002 7:18:24 AM      Last Modifier: RICHARD FLESSNER   
 Last State Change Date: 9/18/2002 7:18:24 AM      Last State Changer: RICHARD FLESSNER   
 Close Date:  
 One Line Description: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW  
 NUTRK ID: CR 01-3595  
 Child Number: 0  
 References: CR 01-2278  
                   RCE 01-069  
                   GOOD CATCH  
 Update:  
 Import Memo Field:  
 CAP Admin: PBNP CAP Admin      Site: Point Beach  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

**ATTACHMENTS AND PARENT/CHILD LINKS**

-   [Linked to CA004074: Request Independent Review of Root Cause for AFW Recir Issue](#)
-   [Subtask from CAP001415: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW](#)
-   [NPM 2002-0495 \(66048 bytes\)](#)

**CHANGE HISTORY**

9/12/2002 9:41:25 AM by RICHARD FLESSNER  
   Attachment Added: Linked to CA004074: Request Independent Review of Root Cause for AFW Recir Issue  
 9/12/2002 9:44:06 AM by RICHARD FLESSNER  
   Last Modified Date Changed From 9/12/2002 9:42:36 AM To 9/12/2002 9:44:06 AM  
   Attachment Added: Subtask from CAP001415: Probabilistic Risk Assessment PRA For Auxiliary Feedwater System AFW  
 9/12/2002 9:48:28 AM by RICHARD FLESSNER  
   Responsible Department Changed From (None) To Engineering  
   Activity Performer Changed From (None) To RICHARD FLESSNER  
   Priority Changed From (None) To 5  
   Due Date Changed From Unassigned To 9/20/2002  
   State Changed From Assign Work To Conduct Work Via Transition: Assign  
   Assigned Date Changed From Unassigned To 9/12/2002  
   Last Modified Date Changed From 9/12/2002 9:44:06 AM To 9/12/2002 9:48:28 AM  
   Last State Change Date Changed From 9/12/2002 9:42:36 AM To 9/12/2002 9:48:28 AM  
 9/18/2002 7:17:16 AM by RICHARD FLESSNER  
   Last Modified Date Changed From 9/12/2002 9:48:28 AM To 9/18/2002 7:17:16 AM

Attachment Added: NPM 2002-0495

9/18/2002 7:17:58 AM by RICHARD FLESSNER

Activity Completed Changed From " To [Appended:] I reviewed the independent review report and documented my comments in NPM 2002-0495 as a memo to CARB addressing an addendum to RCE 01-069 Rev. 1/ACE000314. CARB approved that addendum at its meeting on 9/17/02. A copy of the NPM is at[...]

State Changed From Conduct Work To Review & Approval Via Transition: Work Complete

Last Modified Date Changed From 9/12/2002 9:48:28 AM To 9/18/2002 7:17:58 AM

Last State Change Date Changed From 9/12/2002 9:48:28 AM To 9/18/2002 7:17:58 AM

9/18/2002 7:18:24 AM by RICHARD FLESSNER

State Changed From Review & Approval To Quality Check Via Transition: Approved

Owner Changed From RICHARD FLESSNER To PBNP CAP Admin

Last Modified Date Changed From 9/18/2002 7:17:58 AM To 9/18/2002 7:18:24 AM

Last State Change Date Changed From 9/18/2002 7:17:58 AM To 9/18/2002 7:18:24 AM

CAP Admin Changed From (None) To PBNP CAP Admin



**INTERNAL  
CORRESPONDENCE**

NPM 2002-0495

To: CARB Members

From: Richard Flessner *RAF*

Date: September 16, 2002

Subject: Addendum to RCE 01-069 Rev.1/ACE000314

Copy To: S. J. Nikolai      S. A. Pfaff      L. J. Peterson      File

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The attached addendum to RCE 01-069 Rev.1/ACE000314 is being submitted for CARB review and approval. This addendum is being created to provide a more complete documentation record of items related to RCE 01-069 Rev. 1. The focus of the addendum is primarily on actions taken after the RCE was completed and accepted by CARB. A revision to the RCE is not deemed necessary because the basic conclusions and resulting recommended actions have not changed. Additional discretionary actions have been implemented by NMC and are being included in the addendum for a more complete record.

Attachment

## Addendum to RCE 01-069 Rev.1/ACE000314

This addendum to RCE 01-069 Rev.1 (ACE000314) covers the following items:

1. Inaccuracy in RCE report regarding IST program testing
2. Comments on Independent Review of RCE Report
3. Addition of the Open Safety Function to the AFW recirculation valves
4. Creation of action items to document corrective actions described in RCE report
5. Expansion of Extent of Condition Review
6. Effectiveness Review

Reason for Addendum: This addendum is being created to provide a more complete documentation record of items related to RCE 01-069 Rev. 1. The focus of the addendum is primarily on actions taken after the RCE was completed and accepted by CARB. A revision to the RCE is not deemed necessary because the basic conclusions and resulting recommended actions have not changed. Additional discretionary actions have been implemented by NMC and are being included in the addendum for a more complete record.

### 1. Inaccuracy in RCE report regarding IST program testing

On page 23 of RCE 01-069, Rev. 1, a statement is made regarding the deletion of open testing of the AFW recirculation valves from the IST program as a result of the evaluation made for CR 97-3363. Additional review has determined that testing of the AFW recirculation valves was not deleted, and that time testing data exists for all 4 AFW recirculation valves during the period 1993 to 2002.

### 2. Comments on Independent Review of RCE Report

The independent review of the AFW RCE (CAP002612/CA004074) contained the following final conclusion:

"The following final conclusion is based upon the scope of the investigation as prescribed by the management team in the investigation charter. The RCE represents a high quality, detailed, integrated investigation into the problem statement described in the Team Charter. The report is well constructed and well written and allows a non-involved reader to understand the event and the investigation performed. The root cause is supported by the facts, evidence and failure modes identification. The corrective actions are appropriate for the scope of the investigation and will ensure higher quality EOP documents in the future. Questions regarding the adequacy of the overall scope of the investigation are contained in the main body of the report."

Specific issues discussed in the review are:

- Charter/scope of investigation does not investigate why the design allowed the recirculation valves to fail-closed on loss of instrument air and how this condition went uncorrected until discovered by the PRA review.  
*Comment: The fail-closed position was known and understood in the design and did NOT go uncorrected until discovered by the PRA review. What was not known was the timing of operator actions and the need for specific guidance in the EOPs. The problem was determined to be a procedural issue by PBNP and the NRC; hence the investigation scope was appropriate.*
- No corrective actions exist to ensure that similar components do not have the same failure mode.  
*Comment: Since there was not a problem with the failure mode of the valve, there was no need to evaluate similar components. All operator actions associated with a loss of instrument air condition were evaluated and determined to be appropriate.*
- Root cause may be too narrowly focused.  
*Comment: The RCE evaluated the mismatch between plant design and plant procedures. It was determined that the revised procedures could adequately support the plant design. The cited violation is for a procedural problem and not a design issue; hence, the focus was appropriate.*

- Barrier analysis might also be used (in addition to E&CF charting) on the EOP development and validation process.

*Comment: This would be an enhancement. Since the EOPs have been through 3 major revisions by WOG and the current processes for verification and validation are different (and enhanced by corrective actions in the RCE), it was felt that no value would be added by an additional barrier analysis.*

- Report does not discuss use of single failure analysis in deriving EOPs.

*Comment: This comment was based on the misperception that the fail-closed mode of the recirculation valves was not correct. Single failure analysis would be in addition to the designed failure mode of the valve and would not have been applicable.*

- RCE did not address timeliness or effectiveness of CA program in bringing issue to management's attention (initial CR 01-2278 written 7/6/01).

*Comment: This issue was discussed between the RCE investigator, his Manager and the PRA Group Lead during the RCE evaluation and determined to be appropriate based on the complexity of the issue, the involvement of operations, and risk associated with the issue at that time; therefore, no concern was identified in the final RCE. A statement of there being no problem was not added.*

- Was deletion of testing the recirculation valves (in the open direction) from the IST program a dropped or missed commitment?

*Comment: Evaluation of this item has determined that time testing of the AFW recirculation valves in the open direction is occurring and has not been deleted.*

- RCE does not discuss how PBNP specific design differences were identified through the original EOP development process.

*Comment: The report describes the EOP verification process in general terms and the results obtained. The verification was via an approved procedure and checklist. There were more than 2500 discrepancy sheets identified, which is ample evidence that specific plant differences were considered.*

- Is it a safety function for the recirculation valves to open?

*Comment: The report clearly describes the plant's licensed position that there was no required OPEN safety function for the recirculation valves. The NMC decision to add the OPEN safety function was based on improving equipment reliability and reducing CDF risk.*

- Report does not discuss any findings regarding design configuration control differences.

*Comment: The report identifies that there were inconsistencies between the FSAR, IST and DBD documents and initiated a corrective action to review the current versions for consistency. This was treated as a broke-fix issue since it was not a significant contributing cause to the event. The evaluator's perception of a design problem gave this issue more importance than warranted.*

- There is no discussion on how the PBNP design compares to other similar plants AFW design.

*Comment: A review of other plants AFW designs was performed and the PBNP design was found to be fairly unique; since there was no design deficiency, the issue was not discussed in the RCE report.*

- The design change for adding pneumatic back-up supply to the recirculation valves is not identified as a corrective action in the RCE

*Comment: This corrective action was added to Revision 1 of the RCE.*

### 3. Addition of the Open Safety Function to the AFW recirculation valves

During ongoing reviews of the AFW recirculation issue, NMC determined that there was increased nuclear safety benefit (improved reliability and reduced CDF risk) in the addition of an open safety function to the AFW recirculation valves beyond that credited by the pneumatic back-up supply modifications already installed. Therefore, modification MR 02-029 was initiated to add the open safety function to the AFW recirculation valves. This MR included removal of the internals of the AF-117 check valve to eliminate a common mode failure. The modification was accepted on 9/12/02.

#### **4. Creation of action items to document corrective actions described in RCE report**

RCE 01-069, Rev. 1 identifies the corrective actions already taken and those being implemented in section VIII of the report, beginning on page 37. T-track references had been provided for the actions being implemented, but not for all of the actions already completed. Subsequently, t-track records have been created to adequately document the completed actions discussed in the report. The following action items have been created:

- Interim Corrective Action #1 – CA026222
- Corrective Action #17 – CA026223
- Corrective Action #18 – CA026224
- Corrective Action #19 – CA026225

Other t-track items related to this event are:

- CA002592 – This item documents the review of the condition from a short-term Maintenance Rule risk monitoring perspective.
- CA002593 – This item documented the OD review of the condition.
- CA002594 – This item tracked issuance of the LER for this event.
- OTH003541 – This item tracked presentation of the completed RCE to CARB.
- CA003983 – This item brought closure documentation back for CARB review once CA003691, CA003692 and CA003693 were completed.
- OTH004389 – This item tracked revision of the RCE to reflect information gained during preparations for the NRC regulatory conference.
- OD Part 1 Rev 2 – This document is attached to the parent CAP001415 and documents the operability determination of the original condition.
- OTH004510 – This item tracks the correction of problems identified with some HEPs from the review performed under CA004388
- CAP012011/CE010138 (KNPP) – These items document KNPP's review of the industry OE notification issued for this event.

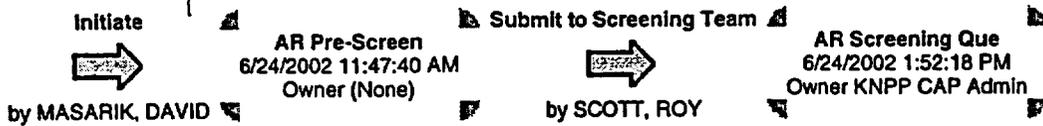
#### **5. Expansion of Extent of Condition Review**

The EOP weakness regarding controlling AFW flow was found during the PRA model update for the AFW system. The PRA model update involved a simultaneous review of plant design, procedures, failure modes and timing of operator actions. However, the update process is not specifically designed to identify procedural errors. Therefore, an alternate approach was developed that combined the elements of the effects of a loss of support component function, the procedures that deal with resolving this function, and the timing of required actions. CAP029344 has been initiated to expand the extent of condition review for the AFW Red Finding using this alternate approach to provide an additional level of assurance that similar issues do not exist in other emergency procedures.

#### **6. Effectiveness Review**

T-track action item CA003983 was created following the CARB Meeting on 3/5/02 to bring back closure documentation for review at a CARB Meeting once CATPRs 1 and 2 (CA003691 and CA003692), and corrective action #1 (CA003693) were completed. CA003693 is associated with the overall PRA update project, which now has an approved action plan that extends to the end of 2004. It is recommended that the scope of CA003983 be modified to be an effectiveness review of the completed CATPRs as normally performed on RCEs.

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CAP012011  
 Activity Type: CAP Submit Date: 6/24/2002 11:47:40 AM

One Line Description: Auxiliary Feedwater System Performance Inadequacies during a loss of instrument

Detailed Description: 6/24/2002 11:47:40 AM - MASARIK, DAVID :  
 OEA 2002-152 (OE 13861) Auxiliary Feedwater System Performance Inadequacies during a loss of instrument air event, and why these inadequacies were not identified previously. Point Beach 1&2

Abstract

During a review of the AFW PRA model, it was discovered that the AFW recirculation valves were not modeled. Subsequent discussions disclosed that under a loss of instrument air condition (IA), operators might close the AFW discharge valves to stop AFW flow. Because the recirculation valves fail close on loss of IA, these actions could deadhead the AFW pumps and result in pump damage. This potential failure mode was discovered during a detailed failure modes and effects analysis. The results of this analysis were then overlaid on the EOPs. Human reliability analysis was then used to determine the likelihood that an operator would isolate AFW pump discharge flow when the recirculation valves were in their failed closed position.

This was completed for each of the initiators that could cause the recirculation valves to fail closed. This analysis determined that operator actions could be taken early in an accident to control or stop AFW flow, as directed by steps in EOP-0.1 (Reactor Trip Response). This could occur, prior to taking manual actions directed by AOP-5B, "Loss of Instrument Air", to manually gag open the recirculation valves. PRA modeling of the AFW system determined a factor of 2.3 risk increase in CDF, "Core Damage Frequency" was identified. As discussions with site personnel continued, additional initiating events were identified and on 11/28/01. The revised PRA estimated the risk increased by approximately a factor of 10 increase in CDF. Condition report CR 01-3595 was initiated at 1445 on 11/29/01 and an NRC event notification was made at 1705 the same day.

Initiator: MASARIK, DAVID Initiator Department: APC Performance Assessment  
 CAP/OE KE  
 Date/Time of Discovery: 6/24/2002 11:40:53 AM Date/Time of Occurrence: 6/24/2002 11:40:53 AM  
 Identified By: Site-identified System: (None)  
 Equipment # (1st): (None) Equipment Type (1st): (None)  
 Equipment # (2nd): (None) Equipment Type (2nd) : (None)  
 Equipment # (3rd): (None) Equipment Type (3rd) : (None)  
 Site/Unit: Kewaunee  
 Why did this occur?: 6/24/2002 11:47:40 AM - MASARIK, DAVID :  
 This is an OEA evaluation of an external document that is being evaluated in the CAP system for work management and control issues.

Immediate Action Taken: 6/24/2002 1:52:18 PM - SCOTT, ROY :

None

Recommendations:

Notify Me During Eval?: Y  SRO Review Required?: N

SECTION 2

---

Operability Status: NA  Compensatory Actions: N

Basis for Operability: 6/24/2002 11:47:40 AM - MASARIK, DAVID :  
 OEA entered into AR System for work management and control issues. The OEA evaluation will determine if KNPP has an Operability/Reportability concern, and if so an additional AR will be generated at that time.

Unplanned TSAC Entry: N  External Notification: N

SECTION 3

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Screened?: Y  Significance Level: D

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

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

Good Catch/Well Doc'd?: NA

SECTION 4

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Inappropriate Action: 7/30/2002 1:11:07 PM - OLSOWY, TIMOTHY :  
 OEA

Process: OE - Operating Experience Activity: N/A - Not Applicable

Human Error Type: N/A - Not Applicable Human Perf Fail Mode: N/A - Not Applicable

Equip Failure Mode: (None) Process Fail Mode: N/A - Not Applicable

Org/Mgt Failure Mode: N/A - Not Applicable  Group Causing Prob: (None)

Hot Buttons: Engineering 

SECTION 5

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CAP Admin: KNPP CAP Admin Prescreener: (None)

Project: Corrective Action Process (CAP)

State: AR Screening Que  Active/Inactive: Active

Submitter: MASARIK, DAVID   Owner: KNPP CAP Admin

AR Type: Parent  Last Modified Date: 7/30/2002 1:11:07 PM

Last Modifier: OLSOWY, TIMOTHY   Last State Change Date: 6/24/2002 1:52:18 PM

Last State Changer: SCOTT, ROY (Deleted)   Close Date:

NUTRK ID:

# of Children: 0

References:

## Update:

## Prescreen Comments:

## Import Memo Field:

OPR Completed?: N

## OLD\_ACTION\_NUM:

sub\_tsid: 0 original\_project\_id: 51

original\_issue\_id: 012011

Site: Kewaunee

## Cartridge and Frame:

## NOTES/COMMENTS

**OEA Screening Basis** by MASARIK, DAVID (6/24/2002 11:43:34 AM)

KNPP has manual recircs and fail open discharge valves in Auxiliary Feedwater System. This problem does not exist but their may be other systems with EOPs that overlap to cause problems. Operations and PRA may need accident scenarios for problems. PP Brantmeier, SN 2002-0932

**Resource Manager** by MASARIK, DAVID (6/24/2002 11:44:07 AM)

OEA 2002-152 is to be evaluated using FP-PA-ARP-01, Rev.0, "Action Request Process" and the Operating Experience Assessment (OEA) Evaluation Guideline. The Resource Manager transmits the following information to the OEA Process Leader: CAP number, Significance, Priority, and evaluator. When the CAP evaluation is completed, the Resource Manager notifies the OEA Process Leader. If Corrective Actions are issued, the Resource Manager notifies the OEA Process Leader. When the Corrective Action is completed, the Resource Manager notifies the OEA Process Leader. If an electronic copy of the External Report is available, it will be attached to the CAP.

## ATTACHMENTS AND PARENT/CHILD LINKS

[oe13861.doc](#) (27648 bytes)

[Principal to CE010138: Auxiliary Feedwater System Performance Inadequacies during a loss of instrument](#)

## CHANGE HISTORY

6/24/2002 11:42:07 AM by MASARIK, DAVID

Attachment Added: oe13861.doc

6/24/2002 11:43:34 AM by MASARIK, DAVID

Attachment Added: OEA Screening Basis

6/24/2002 11:44:07 AM by MASARIK, DAVID

Attachment Added: Resource Manager

6/24/2002 1:52:18 PM by SCOTT, ROY

Immediate Action Taken Changed From " To '[Appended:] None'

Operability Status Changed From (None) To NA

State Changed From AR Pre-Screen To AR Screening Que Via Transition: Submit to Screening Team

Owner Changed From (None) To KNPP CAP Admin

Last Modified Date Changed From 6/24/2002 11:47:40 AM To 6/24/2002 1:52:18 PM

Last Modifier Changed From MASARIK, DAVID To SCOTT, ROY

Last State Change Date Changed From 6/24/2002 11:47:40 AM To 6/24/2002 1:52:18 PM

Last State Changer Changed From MASARIK, DAVID To SCOTT, ROY

6/26/2002 8:56:22 AM by WALES, DEBRA

Screened? Changed From N To Y

Significance Level Changed From (None) To D

Hot Buttons Changed From (None) To system performance

Last Modified Date Changed From 6/24/2002 1:52:18 PM To 6/26/2002 8:56:22 AM

Last Modifier Changed From SCOTT, ROY To WALES, DEBRA

**6/26/2002 10:29:55 AM by WALES, DEBRA**

Last Modified Date Changed From 6/26/2002 8:56:22 AM To 6/26/2002 10:29:55 AM

original\_project\_id Changed From 0 To 51

original\_issue\_id Changed From " To '012011'

**6/26/2002 10:31:11 AM by WALES, DEBRA**

Last Modified Date Changed From 6/26/2002 10:29:55 AM To 6/26/2002 10:31:11 AM

Attachment Added: Principal to CE010138: Auxiliary Feedwater System Performance Inadequacies during a loss of instrument

**7/16/2002 12:38:19 PM by BOWER, RICHARD**

Hot Buttons Changed From system performance To (None)

Last Modified Date Changed From 6/26/2002 10:31:11 AM To 7/16/2002 12:38:19 PM

Last Modifier Changed From WALES, DEBRA To BOWER, RICHARD

**7/30/2002 1:11:07 PM by OLSOWY, TIMOTHY**

Inappropriate Action Changed From " To '[Appended:] OEA'

Process Changed From (None) To OE - Operating Experience

Activity Changed From (None) To N/A - Not Applicable

Human Error Type Changed From (None) To N/A - Not Applicable

Human Perf Fail Mode Changed From (None) To N/A - Not Applicable

Process Fail Mode Changed From (None) To N/A - Not Applicable

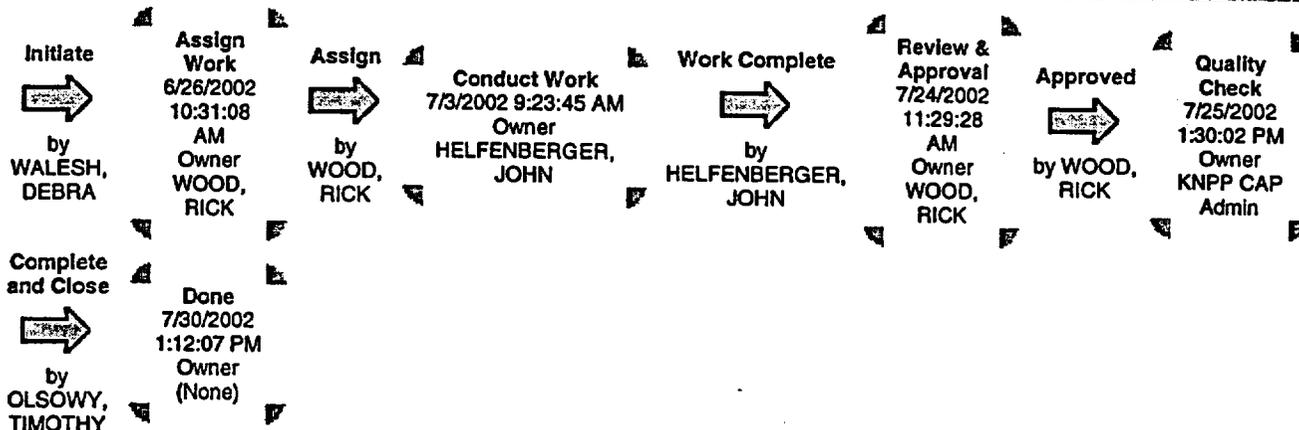
Org/Mgt Failure Mode Changed From (None) To N/A - Not Applicable

Hot Buttons Changed From (None) To Engineering

Last Modified Date Changed From 7/16/2002 12:38:19 PM To 7/30/2002 1:11:07 PM

Last Modifier Changed From BOWER, RICHARD To OLSOWY, TIMOTHY

**STATE CHANGE HISTORY**



**SECTION 1**

Activity Request Id: CE010138  
 Activity Type: Condition Evaluation Submit Date: 6/26/2002 10:31:08 AM  
 Site/Unit: Kewaunee  
 Activity Requested: CE - CONDITION EVALUATION:  
 Perform a Condition Evaluation per CAP 12011  
 30 Day Due Date

OEA 2002-152 (OE 13861) Auxiliary Feedwater System Performance Inadequacies during a loss of instrument air event, and why these inadequacies were not identified previously. Point Beach 1&2

**Abstract:**

During a review of the AFW PRA model, it was discovered that the AFW recirculation valves were not modeled. Subsequent discussions disclosed that under a loss of instrument air condition (IA), operators might close the AFW discharge valves to stop AFW flow. Because the recirculation valves fail close on loss of IA, these actions could deadhead the AFW pumps and result in pump damage. This potential failure mode was discovered during a detailed failure modes and effects analysis. The results of this analysis were then overlaid on the EOPs. Human reliability analysis was then used to determine the likelihood that an operator would isolate AFW pump discharge flow when the recirculation valves were in their failed closed position.

This was completed for each of the initiators that could cause the recirculation valves to fail closed. This analysis determined that operator actions could be taken early in an accident to control or stop AFW flow, as directed by steps in EOP-0.1 (Reactor Trip Response). This could occur, prior to taking manual actions directed by AOP-5B, "Loss of Instrument Air", to manually gag open the recirculation valves. PRA modeling of the AFW system determined a factor of 2.3 risk increase in CDF, "Core Damage Frequency" was identified. As discussions with site personnel continued, additional initiating events were identified and on 11/28/01. The revised PRA estimated the risk increased by approximately a factor of 10 increase in CDF. Condition report CR 01-3595 was initiated at 1445 on 11/29/01 and an NRC event notification was made at 1705 the same day.

© CATPR: N Initiator: MASARIK, DAVID

Initiator Department: APC Performance  
Assessment CAP/OE KE  
E

Responsible Group Code:

EPP Engineering  
Programs PRA KE  
E

Responsible Department: Engineering

Activity Supervisor:

WOOD, RICK E

Activity Performer: HELFENBERGER, JOHN  
E

SECTION 2

Priority:	4	Due Date:	7/26/2002
Mode Change Restraint:	(None)	Management Exception From PI?:	N
QA/Nuclear Oversight?:	N	Licensing Review?:	N
NRC Commitment?:	N	NRC Commitment Date:	

SECTION 3

**Activity Completed:** 7/24/2002 11:29:28 AM - HELFENBERGER, JOHN :  
During Point Beach's review of the AFW PRA model, it was discovered that their AFW recirculation valves were not modeled. Subsequent discussions disclosed that under a loss of instrument air condition, operators might close the AFW discharge valves to stop AFW flow. Because these recirculation valves fail closed on a loss of instrument air, these actions could deadhead the AFW pumps and result in pump damage.

This scenario was compared to Kewaunee's design and procedure actions during such stated event.

As stated in Kewaunee procedure E-AS-01, Loss of Instrument Air, a loss of instrument air causes air operated valves and dampers to revert to their fail safe position. In the case of AFW, per drawing OPERM-204, Air Operated Valves AFW-2A and AFW-2B fail open on a loss of air. These are the main flow control valves for Train A and B AFW. Per the same drawing, the recirculation valves, AFW-100A and AFW-100B for Train A and B, as well as AFW-100C (Turbine Driven Pump) are manually operated valves and are locked open (refer to checklist N-FW-05B-CL, Auxiliary Feedwater System Prestartup Checklist for their normal positions). In order for KNPP to be susceptible to this same scenario, the operators would have to manually close the recirculation valves and close AFW-2A and AFW-2B to deadhead the pumps. The turbine driven and one of the motor driven pumps could be deadheaded by closing one of the AFW-2A(B) valves and the crossover valves, AFW-10A(B). These actions would not be in accordance with emergency procedure E-AS-01 and would require special operator actions to perform. The recirculation valves are locally operated and deliberate actions would have to be taken to close these valves.

7/25/2002 1:30:02 PM - RICK WOOD:  
The review of this OE is complete. The Kewaunee AFW recirc valves fail in the open position and are not susceptible to loss of instrument air and subsequent deadheading.

SECTION 4

QA Supervisor:	(None)	Licensing Supervisor:	(None)
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SECTION 5

Project:	Condition Evaluation (CE)	Active/Inactive:	Inactive
State:	Done	AR Type:	Parent
Owner:	(None)		

Ⓞ Last Modified Date: 7/30/2002 1:12:07 PM      Ⓞ Last Modifier: OLSOWY, TIMOTHY   
 Ⓞ Last State Change Date: 7/30/2002 1:12:07 PM      Ⓞ Last State Changer: OLSOWY, TIMOTHY   
 Ⓞ Close Date: 7/30/2002 1:12:07 PM  
 Ⓞ One Line Description: Auxiliary Feedwater System Performance Inadequacies during a loss of instrument  
 NUTRK ID:  
 Child Number: 0  
 References:  
 Update:  
 Import Memo Field:  
 CAP Admin: KNPP CAP Admin      Site: Kewaunee  
 OLD\_ACTION\_NUM:  
 Cartridge and Frame:

**ATTACHMENTS AND PARENT/CHILD LINKS**

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 [Subtask from CAP012011: Auxiliary Feedwater System Performance Inadequacies during a loss of instrument](#)

**CHANGE HISTORY**

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**6/26/2002 10:31:12 AM by WALESH, DEBRA**

Last Modified Date Changed From 6/26/2002 10:31:08 AM To 6/26/2002 10:31:12 AM  
 Attachment Added: Subtask from CAP012011: Auxiliary Feedwater System Performance Inadequacies during a loss of instrument

**7/3/2002 9:23:45 AM by WOOD, RICK**

Activity Performer Changed From (None) To HELFENBERGER, JOHN  
 Priority Changed From (None) To 4  
 State Changed From Assign Work To Conduct Work Via Transition: Assign  
 Owner Changed From WOOD, RICK To HELFENBERGER, JOHN  
 Assigned Date Changed From Unassigned To 7/3/2002  
 Last Modified Date Changed From 6/26/2002 10:31:12 AM To 7/3/2002 9:23:45 AM  
 Last Modifier Changed From WALESH, DEBRA To WOOD, RICK  
 Last State Change Date Changed From 6/26/2002 10:31:08 AM To 7/3/2002 9:23:45 AM  
 Last State Changer Changed From WALESH, DEBRA To WOOD, RICK

**7/24/2002 11:29:28 AM by HELFENBERGER, JOHN**

Activity Completed Changed From " To [Appended:] During Point Beach's review of the AFW PRA model, it was discovered that their AFW recirculation valves were not modeled. Subsequent discussions disclosed that under a loss of instrument air condition, operators might close the AFW dlsch[...]  
 State Changed From Conduct Work To Review & Approval Via Transition: Work Complete  
 Owner Changed From HELFENBERGER, JOHN To WOOD, RICK  
 Last Modified Date Changed From 7/3/2002 9:23:45 AM To 7/24/2002 11:29:28 AM  
 Last Modifier Changed From WOOD, RICK To HELFENBERGER, JOHN  
 Last State Change Date Changed From 7/3/2002 9:23:45 AM To 7/24/2002 11:29:28 AM  
 Last State Changer Changed From WOOD, RICK To HELFENBERGER, JOHN

**7/25/2002 1:30:02 PM by WOOD, RICK**

Activity Completed Changed From [Original Text] To [Appended:] The review of this OE is complete. The Kewaunee AFW recirc valves fall in the open position and are not susceptible to loss of instrument air and subsequent deadheading.  
 State Changed From Review & Approval To Quality Check Via Transition: Approved  
 Owner Changed From WOOD, RICK To KNPP CAP Admin

Last Modified Date Changed From 7/24/2002 11:29:28 AM To 7/25/2002 1:30:02 PM  
Last Modifier Changed From HELFENBERGER, JOHN To WOOD, RICK  
Last State Change Date Changed From 7/24/2002 11:29:28 AM To 7/25/2002 1:30:02 PM  
Last State Changer Changed From HELFENBERGER, JOHN To WOOD, RICK

**7/30/2002 1:12:07 PM by OLSOWY, TIMOTHY**

State Changed From Quality Check To Done Via Transition: Complete and Close  
Active/Inactive Changed From Active To Inactive  
Owner Changed From KNPP CAP Admin To (None)  
Last Modified Date Changed From 7/25/2002 1:30:02 PM To 7/30/2002 1:12:07 PM  
Last Modifier Changed From WOOD, RICK To OLSOWY, TIMOTHY  
Last State Change Date Changed From 7/25/2002 1:30:02 PM To 7/30/2002 1:12:07 PM  
Last State Changer Changed From WOOD, RICK To OLSOWY, TIMOTHY  
Close Date Changed From Unassigned To 7/30/2002 1:12:07 PM

**Subject:** OE 13861 - Auxiliary Feedwater System Performance Inadequacies during a loss of instrument air event, and why these inadequacies were not identified previously.

**Date:** Tue, 28 May 2002 16:03:54 -0400

\*\*\*\* RESTRICTED AND CONFIDENTIAL \*\*\*\*

Event Date:.....11/29/2001  
Unit Name:.....Point Beach Nuclear Plant Units 1&2  
NSSS/A-E:.....Westinghouse/S&L  
Turbine Manufacturer:.....Westinghouse  
Docket No./LER No.:.....50-266/50-301 - N/A  
Year Commercial:.....1970/1972  
Rating:.....515 MWe / 515 Mwe

Area of Interest:

Sites with Auxiliary Feedwater recirculation valves that fail close on the loss of Instrument Air.

Abstract:

During a review of the AFW PRA model, it was discovered that the AFW recirculation valves were not modeled. Subsequent discussions disclosed that under a loss of instrument air condition (IA), operators might close the AFW discharge valves to stop AFW flow. Because the recirculation valves fail close on loss of IA, these actions could deadhead the AFW pumps and result in pump damage. This potential failure mode was discovered during a detailed failure modes and effects analysis. The results of this analysis were then overlaid on the EOPs. Human reliability analysis was then used to determine the likelihood that an operator would isolate AFW pump discharge flow when the recirculation valves were in their failed closed position.

This was completed for each of the initiators that could cause the recirculation valves to fail closed. This analysis determined that operator actions could be taken early in an accident to control or stop AFW flow, as directed by steps in EOP-0.1 (Reactor Trip Response). This could occur, prior to taking manual actions directed by AOP-5B, "Loss of Instrument Air", to manually gag open the recirculation valves. PRA modeling of the AFW system determined a factor of 2.3 risk increase in CDF, "Core Damage Frequency" was identified. As discussions with site personnel continued, additional initiating events were identified and on 11/28/01. The revised PRA

estimated the risk increased by approximately a factor of 10 increase in CDF. Condition report CR 01-3595 was initiated at 1445 on 11/29/01 and an NRC event notification was made at 1705 the same day.

**Conclusion:**

The investigation found that the EOP validation process is the barrier that failed, causing the weakness in EOP-0.1 (Reactor Trip Response). The EOP validation process failed because it did not evaluate the interaction among design, procedures, and human error timeline analysis. It was only from this integrated perspective that a loss of instrument air causing the recirculation valves to fail closed, combined with a possibility that an operator would close the discharge valve on an AFW pump, and the timing of this action prior to implementation of the abnormal procedure for loss of instrument air (AOP-5B) could the potential be seen to damage multiple AFW pumps. The combination of FMEA, timeline studies, and human error analysis is a recently implemented practice in the industry unique to PRA. Without the use of these combined analyses, it was not reasonable that previous evaluations would have identified this vulnerability.

**Causes:**

The root cause of the EOP procedural weaknesses was the failure of the original EOP validation process barrier to identify that specific operator actions were needed to properly control or stop AFW flow under a loss of instrument air condition. This barrier failed because the analytical tools needed to identify this vulnerability did not exist at that time.

This resulted in a misalignment between plant design and procedural guidance.

Significant contributing causes to this condition continuing to exist were:

- O The original PRA model fault trees evaluated system performance primarily on functions described in design documents and only considered operator actions taken to mitigate a failure
- O Previous evaluations focused on delivery of the minimum required AFW flow for providing decay heat removal

**Safety Significance:**

Preliminary PRA results show that the vulnerability described in this report, prior to the procedural changes, was potentially risk significant. Although the initiating event frequencies are low to moderate, the unrecoverable IA scenario was risk significant due to the consequences of a total loss of all AFW pumps requiring feed and bleed without the pressurizer PORVs. The risk results are highly dependant upon human interactions. PBNP operators are trained on AFW system operations and have experience with degraded IA scenarios. Because of this training and experience, it is reasonable to assume that operators would have successfully handled this combination of conditions in the unlikely event that it would have occurred.

**Corrective Actions:**

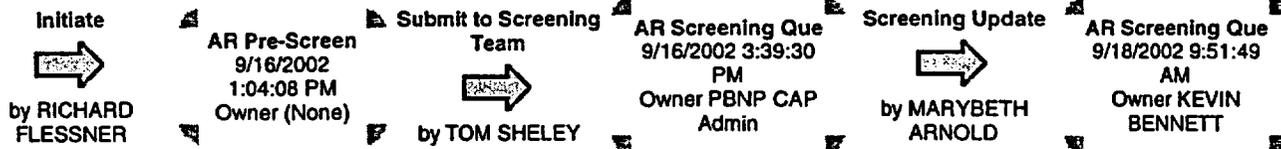
- \* EOP-0 (Reactor Trip or Safety Injection), EOP 0.1( Reactor Trip Response) and ECA-0.0 (Loss of AC Power) revised to address AFW control under loss of IA
- \* Back-up pneumatic supply added to AFW recirculation valves
- \* AOP-5B (Loss of Instrument Air) revised to incorporate back-up pneumatic supply for recirculation valves
- \* EOP validation process revised to include PRA
- \* Simulator enhanced to model potential for AFW pump failure on loss of IA
- \* Evaluated EOP steps to ensure successful implementation on loss of IA
- \* Completed detailed evaluation of PRA model for the four top risk-significant systems
- \* Validated PRA assumptions on next two risk-significant systems (these six systems comprise 80% of CDF risk)
- \* Continuing detailed evaluations of PRA model for other risk-significant systems
- \* Enhancing CDF risk reduction by incorporating PRA human error reduction methods into operator training and operating procedures

Information Contact: Eric Schmidt (920) 755-6265 or

eric.schmidt@nmcco.com

OE Coordinator Don Peterson (920) 755-6361 or don.Peterson@nmcco.com

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: CAP029344  
 Activity Type: CAP Submit Date: 9/16/2002 1:04:08 PM

One Line Description: Expanded Extent of Condition Review for AFW Red Finding

Detailed Description: 9/16/2002 1:04:08 PM - RICHARD FLESSNER:  
 While performing a review of corrective actions from the RCE related to the AFW Red Finding (RCE 01-069/ACE000314), possible additional actions were identified that could further address the extent of condition identified in the original root cause. These actions should be explored for feasibility to provide an additional level of assurance that similar issues brought forth by the root cause do not exist in other emergency procedures.

The issue in the root cause involved procedural actions contained within AOPs and EOPs that were not adequate when considering timing of the actions. The corrective actions from the RCE (associated with PRA integration with procedure validation and PRA Failure Modes and Effects Analysis) provide the opportunity to identify these types of issues. However, those approaches are not specifically designed to identify procedural errors. Therefore, an additional review of EOP/AOP procedures using an alternate rigorous approach should be performed considering the following: 1) the effect of a loss of support component function, 2) the procedures that deal with resolving this function, and 3) the timing of these actions.

Two methods of performing this review have been identified.

1- Procedure Review including Failure Modes and Effects Analysis and Procedure Timing:

A detailed look at support system failures and effects on safety related components should be performed. This review would be combined with a timing study to ensure actions taken to mitigate support system loss will be adequate when compared to timing of plant response or EOP response to the associated accidents/transients.

The first step would be to identify all non-safety systems that have an impact on safety system operation and determine the specific safety-related components affected. The effect on the system/component will be identified (for example: a pump has the potential to fail or trip under low flow, high flow conditions, loss of suction or loss of support functions such as cooling). Next procedures and plant operation would be reviewed to find operator actions or plant responses that could cause the situation. Procedures would also be reviewed to determine manual actions that exist to cope with the issue. Finally a comparison of causes and resolutions would be compared with respect to timing to determine adequacy.

2- Additional Simulator modeling of consequential failures:

The PBNP Simulator is modeled to handle the effects of direct component failures (the normal industry approach) and not consequential failures. It has been identified that adding the consequential failure of the AFW pump (due to no flow) to the simulator would have likely increased the possibility of the identification of this issue. Therefore, the second approach is to evaluate additional consequential failures of major safety system components for inclusion into the simulator model.

The first step would be to identify all major components from safety systems and support systems that typically have dependant failures (pumps, compressors, diesels, etc.) along with their associated consequential failure modes (such as failures due to run-out, deadhead, loss of cooling, lack of NPSH). A matrix would be developed to identify those failure modes currently not in the simulator. Engineering would then identify the failure mode criteria for those items not already in the simulator. Finally, each item would be evaluated to determine if





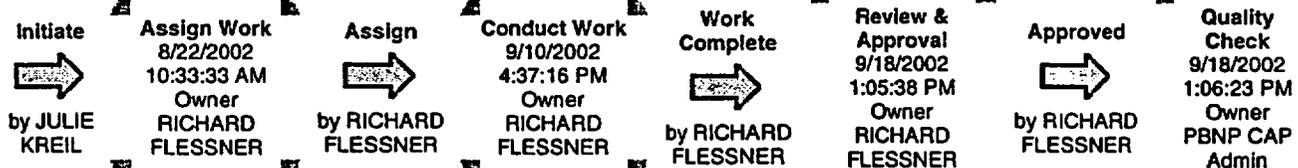
sub\_tsid: 0 original\_project\_id: 32  
original\_issue\_id: 029344  
Site: Point Beach  
Cartridge and Frame:

**ATTACHMENTS AND PARENT/CHILD LINKS**

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 [Principal to CA026346: Expanded Extent of Condition Review for AFW Red Finding](#)

STATE CHANGE HISTORY



SECTION 1

Activity Request Id: ACE000871

Activity Type: Apparent Cause Evaluation      Submit Date: 8/22/2002 10:33:33 AM

Site/Unit: Point Beach - None

Activity Requested: Perform an Apparent Cause Evaluation, per CAP029091 Significance Level C, in accordance with NP 5.3.1. 30 day due date.

CATPR: N      Initiator: PETERSON, LARRY

Initiator Department: EX Engineering Processes PB      Responsible Group Code: EXC Engineering Processes Continuous Improvement PB

Responsible Department: Engineering      Activity Supervisor: RICHARD FLESSNER

Activity Performer: RICHARD FLESSNER

SECTION 2

Priority: 4      Due Date: 9/23/2002

Mode Change Restraint: (None)      Management Exception From PI?: N

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

NRC Commitment?: N       NRC Commitment Date:

SECTION 3

Apparent Cause Evaluation: Event Description:  
 CAP029091 describes the event as: "CA003702 is a Corrective Action from RCE 01-069 associated with the Root Cause Evaluation for the AFW Increased CDF on Loss of Instrument Air. The RCE explicitly identified the priority and due date as a priority 3 with a due date of 6/5/02. The priority and due date established were priority 4 and due date 8/13/02, which is inconsistent with the RCE."

The record of CA003702 was reviewed and showed that the original due date and priority for this item were properly set in accordance with the RCE when the item was entered into t-track system on 2/5/2002. The activity was linked to the RCE t-track item that is identified as ACE000314. The t-track item has an ACE prefix because the AR Screening Committee initially specified that an ACE be performed for event and later determined that a RCE should be performed. Once an item is entered into t-track, the prefix designator cannot be changed. The RCE investigator had discussed the specified corrective action with the System Engineering Manager prior to its assignment. CARB

subsequently approved the RCE on 3/5/02.

The activity was initially assigned to System Engineering on 2/5/02 and to a System Engineer on 2/7/02. The System Engineer assignment was changed on 2/8/02. The item was returned for reassignment on 3/4/02. The item was then returned to the RCE investigator on 3/21/02. System Engineering did not feel that the work belonged to them and requested that it be assigned to the Design Group that was involved with the modifications to the AFW recirculation valves. The activity was assigned to the Design Mechanical group on 4/11/02. During assignment of the task to a Design Engineer on 4/15/02, the Design Mechanical Group Lead changed the priority of the item from a 3 to a 4, and changed the due date from 6/5/02 to 8/5/02. An additional due date change to 9/30/02 was made on 8/13/02 when the activity was reassigned to another Design Engineer.

The Design Mechanical Group Lead was interviewed regarding the priority and due date changes. The Group Lead stated that he set the priority and due date based on the description of the requested activity and the activity being a corrective action from an ACE because it was linked to t-track item ACE000314. He stated he was not aware that ACE000314 was actually a RCE. The Group Lead believed that he had set the priority and due date in accordance with NP 5.3.1.

**Extent of Condition Assessment:**

A review was performed of the corrective actions associated with all RCEs completed during 2002 to evaluate if due dates and priorities were properly established and maintained. The scope was limited to RCEs completed in 2002 because of the transition of corrective action tracking to the t-track system that occurred in late December 2001. The review encompassed 15 RCEs and 109 corrective actions. 9 corrective actions were found to have incorrect priorities. 3 of these were related to RCEs that had been revised and the action items had not been reviewed for correctness following the revisions. The other 6 instances involved CATPRs that were not given a priority of 2 because the personnel establishing the priorities were unaware of that requirement. Problems with prioritization and due date establishment had also occurred previous to implementation of the t-track process while the NUTRK system was being used (Reference QCR 00-0004/CAP028123). The extent of this condition is not a Significant Condition Adverse to Quality as defined by NP 5.3.1.

**Required Corrective Actions:**

The priority for CA003702 was changed back to a 3 on 9/3/02 and the due date was established as 9/13/02, as approved by the Engineering Director. These changes are part of the record for CA003702.

**Corrective Action to Prevent Recurrence (Optional):**

Establish a programmatic control for adding terminology to corrective actions from RCEs stating: "This is a corrective action from a RCE and the due date and priority have already been established. Any changes must be made in accordance with NP 5.3.1." (CA026356)

Establish a protocol for processing activities that have inappropriate prefix designators. (CA026357)

Ensure that personnel assigning priorities and due dates for corrective actions to prevent recurrence from RCEs understand the procedural requirements. (CA026359)

**Apparent Cause Statement:**

The incorrect assignment of the due date and priority by the Design Mechanical Group Lead was a rule-based error (misapplication of rule) due to inadequate verification. The Group Lead applied the rules for ACE corrective action prioritization and due date setting based on the observation of the ACE prefix associated with the corrective action item. The Group Lead did not verify the accuracy of the information being used by going back to the ACE record and confirming the activity was in fact an ACE. The communication normally established between a RCE investigator and a corrective action owner did not occur because the activity was reassigned after that communication took place. The inability to change the corrective action prefix designator contributed to this event.

**Activity Completed:**

9/18/2002 1:05:38 PM - RICHARD FLESSNER:

The investigation has been completed and the ACE information entered above. Corrective action items have been initiated in t-track.

SECTION 4

1

QA Supervisor:	(None)	Licensing Supervisor:	(None)
ACE Event Description Grade:	0	ACE Extent of Condition Grade:	0
ACE Corrective Actions Grade:	0	ACE CATPR Grade:	0
ACE Apparent Cause Grade:	0		

SECTION 5

Project: Apparent Cause Evaluation (ACE)

State: Quality Check      Active/Inactive: Active

Owner: PBNP CAP Admin      AR Type: Parent

Submitter: JULIE KREIL      Assigned Date: 9/10/2002

Last Modified Date: 9/18/2002 1:06:23 PM      Last Modifier: RICHARD FLESSNER

Last State Change Date: 9/18/2002 1:06:23 PM      Last State Changer: RICHARD FLESSNER

Close Date:

One Line Description: Inappropriate priority associated with CA003702

NUTRK ID:

Child Number: 0

References:

Update:

Import Memo Field:

CAP Admin: PBNP CAP Admin      Site: Point Beach

OLD\_ACTION\_NUM:

Cartridge and Frame:

ATTACHMENTS AND PARENT/CHILD LINKS

-  [Subtask from CAP029091: Inappropriate priority associated with CA003702](#)
-    [Linked from CA026356: Inappropriate priority associated with CA003702](#)
-    [Linked from CA026357: Inappropriate priority associated with CA003702](#)
-    [Linked from CA026359: Inappropriate priority associated with CA003702](#)

**STATE CHANGE HISTORY**

Initiate  Assign Work  
 9/18/2002 11:00:40 AM  
 Owner LORI ARMSTRONG  
 by JULIE KREIL 

**SECTION 1**

Activity Request Id: CA026346  
 Activity Type: Corrective Action Submit Date: 9/18/2002 11:00:40 AM  
 Site/Unit: Point Beach - Common  
 Activity Requested: Review CAP029344 Significance Level C, and implement the Recommendations.  
 CATPR: N Initiator: FLESSNER, RICHARD    
 Initiator Department: EX Engineering Processes Responsible Group Code: ED Engineering Design  
 PB  PB   
 Responsible Department: Engineering Activity Supervisor: LORI ARMSTRONG   
 Activity Performer: (None)

**SECTION 2**

Priority: (None) Due Date:  
 Mode Change Restraint: (None) Management Exception From PI?: N  
 QA/Nuclear Oversight?: N Licensing Review?: N  
 NRC Commitment?: N NRC Commitment Date:

**SECTION 3**

Activity Completed:

**SECTION 4**

QA Supervisor: (None) Licensing Supervisor: (None)

**SECTION 5**

Project: CAP Activities & Actions   
 State: Assign Work Active/Inactive: Active  
 Owner: LORI ARMSTRONG  AR Type: Parent  
 Submitter: JULIE KREIL  Assigned Date:  
 Last Modified Date: 9/18/2002 11:00:43 AM Last Modifier: JULIE KREIL   
 Last State Change Date: 9/18/2002 11:00:40 AM Last State Changer: JULIE KREIL   
 Close Date:  
 One Line Description: Expanded Extent of Condition Review for AFW Red Finding

NUTRK ID:

Child Number: 0

References:

Update:

Import Memo Field:

CAP Admin: (None) Site: Point Beach

OLD\_ACTION\_NUM:

Cartridge and Frame:

**ATTACHMENTS AND PARENT/CHILD LINKS**

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 [Subtask from CAP029344: Expanded Extent of Condition Review for AFW Red Finding](#)