DCS

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DUKE POWER

March 16, 1992

Director, Office of Enforcement
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Catawba Nuclear Station
Docket Nos. 50-413 and 50-414
NRC Inspection Report Nos. 50-413/91-27 and 50-414/91-27
Reply to a Notice of Violation

Attached is Duke Power's response to the Level IV violation concerning configuration control problems cited in the Notice of Violation and Proposed Imposition of Civil Penalty dated February 14, 1992. Duke admits the violation occurred and submitted the payment of the civil penalty on March 12, 1992.

Also attached is Duke's response to two additional examples of configuration control problems that are documented in NRC Inspection Report Nos. 50-413/91-28 and 50-414/91-28 dated February 5, 1992.

Attachment 1 contains copies of two LERs regarding breakers 1EKPG #22 and 2EKPH #22, Attachment 2 contains letters from Operations management to Operations personnel on component mispositionings and valve positioning basics, and Attachment 3 contains information pertaining to the Component Positioning Team.

As requested in the Notice of Violation, Attachment 4 contains Duke Power's corporate directive on independent verification, and Catawba's plans for implementation of the directive.

Catawba is very concerned about the trend that has developed with respect to mispositioning events. We are dedicating considerable management attention towards the goal of reversing this trend. Duke Power is currently implementing a company-wide program which is centered on achieving excellence in the way we do business. The implementation of this program comes at an opportune time to assist us in solving our component positioning problem. We will be using the program of "managing for excellence" as our approach in dealing with this problem. Attachment 5 describes this program and provides the direction we are taking towards achieving excellence.

Very truly yours,

M S Tuckman

M. S. Tuckman

RKS/VIOL91.27

Attachments

xc: S. D. Ebneter
Regional Administrator, Region II

R. E. Martin, ONRR

W. T. Orders
Senior Resident Inspector

DUKE POWER COMPANY
REPLY TO NOTICE OF VIOLATION
413, 414/91-27

Technical Specification 6.8.1 requires that written procedures be established, implemented and maintained covering the operation of the control room area ventilation system, maintaining containment integrity and performing surveillance tests on safety-related equipment.

Contrary to the above, procedures were not adequately implemented as evidenced by the following examples:

A) Breaker 1EKPG #22

On September 13, 1991, at approximately 5:00 a.m., operators failed to follow Operations Management Procedure OMP 2-18, "Tagout Removal and Restoration (R&R)," when R&R 01-2764 was implemented on breaker 1EKPG-21 as opposed to the intended breaker 1EKPG-22. This resulted in both trains of the Control Room Ventilation (VC) System being inoperable for a period of approximately one and a half hours.

B) 2NI-118A & 2NI-150B

On November 17, 1991, at approximately 4:00 a.m., an operator failed to follow procedure PT/1(2)/A/4200/13H, "NI/NV Check Valve Movement Test," when he was aligning valves to support system testing and signed-off two valves 2NI-118A and 2NI-150B as being closed when they were actually open. This resulted in the Train "A" Safety Injection (NI) Pump experiencing runout flow on startup for the test.

C) 2SV-66

On November 16, 1991, a non-licensed operator, when completing performance test PT/2/A/4200/02E, "Verification of Refueling Containment Integrity," verified with a sign-off that valve 2SV-66, a 2B steam generator power operated relief valve (PORV) drain line valve, was closed when it was actually open.

D) 2SM-103

On November 18, 1991, a non-licensed operator, when completing performance test PT/2/A/4200/02E, "Verification of Refueling Containment Integrity," verified with a sign-off that valve 2SM-103, a 2C steam generator outlet header drain valve was closed when it was actually open.

E) Containment Isolation Verification

On November 18, 1991, operations personnel verified that the "inside" containment isolation lineup was correct instead of the "outside" containment isolation lineup as required by the operations support worksheet.

The following two examples of configuration control problems are documented in Inspection Report 50-413/91-28 and 50-414/91-28. However, they are being addressed in this response as requested in the subject Inspection Reports (91-27 and 91-28).

F) NS Pump 2B

On December 10, 1991 with Unit 2 in Mode 5, Cold Shutdown, Performance Department technicians were in the process of conducting inservice testing (IST) of the Train B Containment Spray (NS) pump. Due to an improper valve alignment, the pump was started without a suction source, and ran for approximately 4-5 minutes before being secured.

G) Unit 2 Main Turbine

On December 16, 1991, at approximately 7:35 a.m., Unit 2 was in Mode 4 in the process of starting up from the 2EOC4 refueling outage. Instrumentation and Electrical (IAE) personnel were performing post-modification testing of a new main turbine control system installed during the outage when an inadvertent main turbine roll occurred.

This is a Severity Level IV Violation (Supplement I).

RESPONSE:

1. Admission or Denial of Violation

Duke Power admits the violation.

2. Reason for Violation

A) Breaker 1EKPG #22

This incident is attributed to a lack of attention to detail by the operator when tagout 01-2764 was prepared. The operator failed to correctly implement the

information given in Technical Memorandum 21-07 when he listed the wrong breaker on this tagout. This incident is described in LER 413/91-20. A copy of this LER can be found in Attachment 1.

B) 2NI-118A & 2NI-150B

This incident is attributed to a lack of attention to detail in that the operator inappropriately signed-off the two valves as being closed when in fact they were open. In addition, there were two other factors that contributed to this incident. One factor was procedural complexity and lack of clarity. The second factor involved miscommunication between the test coordinator and the operator. The operator was given two valve checklists which were part of the test procedure. The operator did not understand that the two checklists were to be implemented separately. As a result, the operator discovered that the checklists contained conflicting valve positions. This misunderstanding added confusion and contributed to the operator's mistake of signing off the valve positions incorrectly.

C) 2SV-66

This incident was caused by a poor work practice and a lack of attention to detail by the operator involved. The operator failed to follow the required practice of signing off valves individually as they are verified. In this instance, the operator verified the position of several valves and then signed them off.

D) 2SM-103

This incident occurred because the operator failed to check the two tags hung on the valve. Both of these tags indicated that the valve was open. This error is also attributed to a management deficiency. Operations management did not clearly define their expectations to the operators with respect to valve verifications involving red tags. Operations management expected that an operator would use both red tags and manual manipulation to verify valve position. The operator believed that the verification was to be carried out without any dependence on the red tags. The operator did try to close the valve to verify its position. However,

the operator assumed the valve was closed because he could not move it in the closed direction.

E) Containment Isolation Verification

This incident is attributed to an inappropriate action taken by the on-shift Control Room SRO. The shift was instructed by the worklist to document "outside" containment isolation when performing PT/2/A/4200/02E. Instead, the on-shift Control Room SRO chose to document "inside" containment isolation. He failed to recognize that this created a conflict with the required penetration alignment for scheduled maintenance work.

F) NS PUMP 2B

This incident is attributed to inappropriate actions taken during the implementation of the procedure. The procedure available for use had not been written for the existing plant condition (i.e. Mode 5). The Control Room supervision N/A'd the procedure alignment requirement without recognizing the need to ensure a suction source via other means. In addition, the balance of plant operator who started the pump failed to self-verify that the expected discharge flow was achieved or that a suction/discharge path existed.

G) Unit 2 Main Turbine

This incident is attributed to inadequate scheduling and planning during preparations for the turbine control system test. A change in plant conditions (i.e., Main Steam isolation valves opened) was not recognized when testing resumed. In addition, inadequate group communications was a contributing factor. The Control Room operators were not fully aware of the extent of the testing and this limited their ability to evaluate the potential impact on plant operations.

3. **Corrective Actions Taken and Results Achieved**

A) Breaker 1EKPG #22

The corrective actions taken in response to the incident involving breaker 1EKPG #22 are listed in LER 413/91-20 which is given in Attachment 1. Subsequent to this

event, another mispositioning event occurred which involved breaker 2EKPH #22. This breaker is related to 1EKPG #22 in that it performs the same function but on the opposite train. This incident was reported in LER 413/92-02. A copy of this LER can be found in Attachment 1 and it covers the corrective actions taken in response to this event.

The following items given in LERs 91-20 and 92-02 as a planned action have been completed:

1) Planning has added a note to predefined work orders for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 identifying the need for a tagout for 1EKPG #22 (2EKPH #22) when working in these components. This provides further assurance of proper configuration control.

2) Operations has revised Operations Management Procedure (OMP) 2-5 to strengthen the management controls over the process of using Technical Memorandums.

B) 2NI-118A & 2NI-150B

The following actions were taken in response to the incident involving 2NI-118A and 2NI-150B:

1) The 2A NI Pump was secured after 20 seconds of operation.

2) 2NI-118A and 2NI-150B were closed following verification of their proper position.

3) The individual involved received appropriate corrective discipline per DPC Management Procedure 101.05.

4) Performance conducted an IWP test on 2A NI Pump on December 14, 1991. Pump performance was verified to be unaffected by this occurrence.

C) 2SV-66

The following actions were taken in response to the incident involving 2SV-66:

1) Core alterations were immediately halted by the Shift Supervisor upon discovery of the discrepancy.

2) 2SV-66 was closed following verification of its proper position.

3) All Containment refueling activities were suspended for two days while a double verification of each containment penetration was performed. This verification identified no other alignment errors.

4) An individual was designated to coordinate and monitor the status of containment integrity for the remainder of the refueling outage. No other instances occurred during the remainder of the outage.

5) The individual involved received appropriate corrective discipline per DPC Management Procedure 101.05.

6) The Shift Operations Manager (SOM) provided verbal and written guidance on component mispositioning and position verification to each shift on the following dates:

A Shift - 11/20/91
B Shift - 11/22/91
C Shift - 11/20/91
D Shift - 11/27/91
E Shift - 11/21/91

A copy of this written guidance is given in Attachment 2.

7) A letter from the Shift Operating Manager on management's expectations with respect to Valve Positioning Basics was issued to each shift on November 25, 1991. A copy of this letter is given in Attachment 2.

8) The continuous Improvement Action Team reviewed this and other valve related component mispositioning incidents. Basic methods and expectations concerning operator manipulation of valves were developed. These basics were reiterated to each shift in person by the Shift Operations Manager. These basics have been incorporated into OMP 2-33, Valve and Breaker Position Verification and Valve Operation.

D) 2SM-103

The following actions were taken in response to the incident involving 2SM-103:

1) Core alterations were immediately halted by the Shift Supervisor upon discovery of the discrepancy.

2) Operations verified and documented that proper containment integrity was already in place for this penetration using an alternate isolation alignment.

3) All Containment refueling activities were suspended for two days while a double verification of each containment penetration was performed. This verification identified no other alignment errors.

4) An individual was designated to coordinate and monitor the status of containment integrity for the remainder of the refueling outage. No other instances occurred during the remainder of the outage.

5) The individual involved received appropriate corrective discipline per DPC Management Procedure 101.05 concerning his failure to use all the information available (i.e., tags) to determine the position of the valve he was verifying.

6) The Shift Operations Manager (SOM) provided verbal and written guidance on component mispositioning and position verification to each shift on the following dates:

A Shift - 11/20/91
B Shift - 11/22/91
C Shift - 11/20/91
D Shift - 11/27/91
E Shift - 11/21/91

A copy of this written guidance is given in Attachment 2.

7) A letter from the Shift Operating Manager on management's expectations with respect to Valve Positioning Basics was issued to each shift on November 25, 1991. A copy of this letter is given in Attachment 2.

8) The continuous Improvement Action Team reviewed this and other valve related component mispositioning incidents. Basic methods and expectations concerning operator manipulation of valves were developed. These basics were reiterated to each shift in person by the Shift Operations Manager. These basics have been incorporated into OMP 2-33, Valve and Breaker Position Verification and Valve Operation.

E) Containment Isolation Verification

The following actions were taken in response to the incident involving the verification of containment isolation:

1) Core alterations were immediately halted by the Shift Supervisor upon discovery of the discrepancy.

2) Proper containment integrity was verified to exist. It was determined that "outside" containment isolation was maintained during the entire incident.

3) A review of Westinghouse as-built drawings for both units' steam generators was performed to determine if any secondary side access holes were omitted from the Containment Closure Verification PTs. No discrepancies were found on Unit 1. We discovered that two 2.5 inch access holes were omitted from the procedures for each steam generator on Unit 2. Procedure changes were initiated to add these holes to the containment integrity checklists for the SM (Main Steam) piping and the CA (Auxiliary Feedwater) piping for which both holes are isolation boundaries. In addition, the steam generator water level required to take credit for these holes being closed was raised from 15% wide range to 60% wide range. It should be noted that these items on Unit 2 never caused an integrity problem. They were found as a result of our investigation into potential problems.

F) NS Pump 2B

The following actions were taken in response to the incident involving Containment Spray (NS) Pump 2B:

1) NS Pump 2B was secured after about four to five minutes of operation.

2) NS Pump 2B was properly aligned to its suction source and successfully tested for operability.

3) The involved personnel were counseled on their actions and judgements.

G) Unit 2 Main Turbine

The following actions were taken in response to the incident involving the inadvertent roll of the Unit 2 Turbine:

1) When the operators recognized the transient, they immediately tripped the Unit 2 Turbine.

2) All Turbine testing was immediately suspended and a proper isolation boundary was established.

4. Corrective Actions to be Taken to Avoid Further Violations

A) Breaker 1EKPG #22

The following actions will be taken in response to the incident involving 1EKPG #22:

1) Operations management will emphasize the need for proper use of the tagout system for all components, and the need for attention to detail while preparing tagouts. This information will be communicated to the appropriate personnel by June 1, 1992.

2) A Nuclear Station Modification (NSM) to eliminate the requirement of opening 1EKPG #22 (2EKPH #22) during work on 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 will be implemented following approval of a proposed Technical Specification change submitted to the NRC on August 12, 1991.

3) Station management, in conjunction with the Continuous Improvement Action Team (CIA), established the Component Positioning Team (CPT), with representatives from Operations and other station groups with responsibilities for component operation. This team will study component mispositioning events at Catawba and will make recommendations to prevent these types of incidents. See Attachment 3 for additional details on CPT activities. This attachment describes the mission and work of the CPT, a copy of the conclusions and recommendations made by this team, and a summary of the minutes from past meetings.

4) The Component Positioning Team will review the need for a method to identify the correct positions of low voltage breakers within panelboards in the plant so that, when working in a panel, it is apparent which breakers are required to be open or closed. This review will be completed by June 1, 1992.

As mentioned earlier, PIR 92-02 involved a similar incident to that discussed above. The investigation into this incident resulted in further actions being proposed

to prevent reoccurrence. The following actions will be taken in response to this incident:

5) This incident will be discussed with Operations shift personnel during requalification training. This will be accomplished by June 1, 1992.

6) A programming change will be made to the Operations red tag computer program so that Special Instructions will appear on the screen. This will be accomplished by October 1, 1992.

B) 2NI-118A and 2NI-150B

The following actions will be taken in response to the incident involving 2NI-118A and 2NI-150B:

1) Operations management will make clear to the Unit Supervisors its expectations concerning the information that should be obtained prior to allowing work to begin on the unit. This information will be communicated to the appropriate personnel by June 1, 1992.

2) Enhancements to the NI and NV Check Valve procedure will be made prior to its use during the Unit 1 EOC6 outage.

C) 2SV-66

The following actions will be taken in response to the incident involving 2SV-66:

1) The Continuous Improvement Action Team is reviewing the method for controlling Containment Closure/Integrity status and its interface with tagouts for maintenance. Based on the results of this review, corrective actions will be taken. Changes will be implemented for the Unit 1 EOC6 refueling outage.

2) The Component Positioning Team has publicized the concern for component positioning. Employees have been encouraged to report all component mispositions through the lower tier problem reporting and resolution process. Component Position Team members are on call, through a duty

rotation, to investigate events as soon as they have been identified to the Shift Manager. Root Cause determinations will be made, corrective actions will be taken and tracking/trending analysis will be used to determine appropriate process/generic corrective actions.

D) 2SM-103

The following actions will be taken in response to the incident involving 2SM-103:

1) The Continuous Improvement Action Team is reviewing the method for controlling Containment Closure/Integrity status and its interface with tagouts for maintenance. Based on the results of this review, corrective actions will be taken. Changes will be implemented for the Unit 1 EOC6 refueling outage.

2) The Component Positioning Team has publicized the concern for component positioning. Employees have been encouraged to report all component mispositions through the lower tier problem reporting and resolution process. Component Position Team members are on call, through a duty rotation, to investigate events as soon as they have been identified to the Shift Manager. Root Cause determinations will be made, corrective actions will be taken and tracking/trending analysis will be used to determine appropriate process/generic corrective actions.

E) Containment Isolation Verification

The following actions will be taken in response to the incident involving the verification of containment isolation:

1) The Continuous Improvement Action Team is reviewing the method for controlling Containment Closure/Integrity status and its interface with tagouts for maintenance. Based on the results of this review, corrective actions will be taken. Changes will be implemented for the Unit 1 EOC6 refueling outage.

2) The Component Positioning Team has publicized the concern for component positioning. Employees have been encouraged to report all component mispositions through the lower tier problem reporting and resolution process. Component Position Team members are on call, through a duty rotation, to investigate events as soon as they have been identified to the Shift Manager. Root Cause determinations will be made, corrective actions will be taken and tracking/trending analysis will be used to determine appropriate process/generic corrective actions.

F) NS Pump 2B

The need for additional procedural guidance will be evaluated, and if determined necessary, will be implemented for the Unit 1 EOC6 refueling outage.

G) Unit 2 Main Turbine

A procedure for each unit will be written to provide guidance on testing and troubleshooting the Main Turbine Control System. This will take the place of the general troubleshooting procedure used during this incident. The Unit 1 procedure will be validated during the Unit 1 EOC6 refueling outage and will be approved by October 1, 1992. The Unit 2 procedure will be written from the Unit 1 procedure and will be approved by November 1, 1992.

5. **Date of Full Compliance**

Duke Power is now in full compliance.

ATTACHMENT 1

Catawba Nuclear Station
CSRG
ST Rose

DUKE POWER

December 12, 1991

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/91-20

Gentlemen:

Attached is Licensee Event Report 413/91-20, concerning TECHNICAL SPECIFICATION 3.0.3 ENTRY DUE TO TWO INOPERABLE TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM.

This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

W. R. McCollum
Station Manager

ken:LER-NRC.WRM

xc: Mr. S. D. Ebneter
Regional Administrator, Region II
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NRC FORM 366
(5-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)
Catawba Nuclear Station, Unit 1

DOCKET NUMBER (2): 0 5 0 0 0 4 1 3

PAGE (3): 1 OF 0 8

TITLE (4): Technical Specification 3.0.3 Entry Due To Two Inoperable Trains Of The Control Room Ventilation System

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR
0 9	1 5	9 1	9 1	— 0 2 0	— 0 0	1 2	1 2	9 1

OTHER FACILITIES INVOLVED (8)	
FACILITY NAMES	DOCKET NUMBER(S)
CNS, Unit 2	0 5 0 0 0 4 1 4
	0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 9 8

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(a)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.35(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
R. C. Futrell, Compliance Manager	8 0 3 — 8 3 1 - 3 6 6 5

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On September 15, 1991, at 1300 hours, with Unit 1 in Mode 1, Power Operation, at 98 percent power and Unit 2 in Mode 5, Cold Shutdown, Operations attempted to swap to Train A of the Control Room Area Ventilation and Chilled Water (VC/YC) System. During this activity, it was discovered that breaker 1EKPG #22, Train A VC/YC System Controls, was open. The breaker was last functionally demonstrated to be closed on September 11 at 2210 hours. A review of all activities between September 11 at 2210 hours and September 15 at 1300 hours did not clearly reveal how/when 1EKPG #22 was opened. However, it is considered most probable that 1EKPG #22 was opened between 0930 and 1520 hours on September 13. Train A VC/YC had been declared inoperable on September 13 from 0455 hours to 2340 hours for work on various Train A components. Prior to this work, a tagout was placed to open 1EKPG #21 instead of #22. It is considered probable that Technical Specification 3.0.3 was entered on September 13 from 0810 to 0930 hours because neither train of VC/YC would have been capable of adequately pressurizing the Control Room. This incident is attributed to Inappropriate Actions. Corrective actions include formation of a task force to study component mispositioning events and discussion of this incident with Operations personnel.

BACKGROUND

The Control Room Area Ventilation [EIIS:UC] (VC) and Chilled Water [EIIS:UE] (YC) Systems combine to form one system which is designed to maintain a suitable environment in the following plant areas at all tim : Control Room (C/R), Cable Room, Battery [EIIS:BTRY] Rooms, Switchgear Rooms, Motor [EIIS:MO] Control Center (MCC) Rooms, and the Electrical Penetration Rooms at elevation 594 + 0. The VC/YC System is shared between both Units and consists of two 100% redundant trains of equipment. Each is capable of being powered by Unit 1 or Unit 2 Essential Auxiliary Power, but under normal conditions both trains are aligned to Unit 1. Two Diesel Generators [EIIS:GEN] (D/Gs) are provided per Unit to energize the Essential Auxiliary Power buses during emergency conditions.

The portion of the VC/YC System serving the C/R includes two 100% capacity air handling units (1CR-AHU-1 for Train A and 2CR-AHU-1 for Train B), two 100% capacity smoke purge fans [EIIS:BLO], and two 100% capacity outside air pressurizing filter [EIIS:FLT] trains (1CRA-PFT-1 for Train A and 2CRA-PFT-1 for Train B).

Breakers [EIIS:BRK] 1EKPG #22 (Train A) and 2EKPH #22 (Train B) provide control power for permissives to VC/YC System components including CR-AHUs, CRA-PFTs, and system dampers. With either of these breakers open, the respective train related components would be unable to start/align in response to a safety injection signal.

Operations Technical Memorandum 21-07 states that in the event that a C/R AHU or Pressurizing Filter Train is taken out of service, the pressurization of the C/R may be degraded unless certain steps are taken. With no action taken, the dampers on the out of service train will align upon receipt of a safety injection signal but the associated fans will not start due to their being out of service. This results in the in service train recirculating air through the out of service train which may degrade the pressure in the C/R. In order to prevent this from happening, the out of service train dampers must remain in place to prevent the air from recirculating. This can be accomplished by removing the control power to the permissives for the dampers and fans on the out of service train. Therefore, the Technical Memorandum requires that breaker 1EKPG #22 be tagged opened when taking 1CR-AHU-1 or 1CRA-PFT-1 (Train A) out of service, and that 2EKPH #22 be tagged opened when taking 2CR-AHU-1 or 2CRA-PFT-1 (Train B) out of service. These actions would not allow the train related dampers to reposition upon receipt of a safety injection signal, thus maintaining opposite train C/R pressurization capability.

Technical Specification (T/S) 3.7.6 specities that two independent trains of VC YC shall be operable during all operational modes. If one train becomes inoperable while either Unit is in Mode 4, Hot Shutdown, or above, the inoperable train must be restored to operability within seven days or be in at

least Mode 3, Hot Standby, within the next six hours and in Mode 5, Cold Shutdown, within the following 30 hours. Surveillance 4.7.6.e.3 requires that at least once per 18 months the system demonstrates the ability to maintain the C/R at a positive pressure of greater than or equal to 1/8 in wc relative to adjacent areas.

T/S 3.0.3 is required to be entered when the Unit is operating in a condition prohibited by T/Ss. This condition exists when a Limiting Condition for Operation (LCO) is not met except as provided in the associated Action Requirements. It requires that within one hour action shall be initiated to place the Unit in a Mode in which the specification does not apply by placing it, as applicable, in:

a) At least Hot Standby in the next 6 hours,
b) At least Hot Shutdown within the following 6 hours, and
c) At least Cold Shutdown within the subsequent 24 hours.

T/S 3.0.4 states that entry into an Operational Mode shall not be made when the conditions for the LCO are not met and the associated action requires a shutdown if they are not met within a specified time interval.

EVENT DESCRIPTION

On September 7, 1991, at 0105 hours, VC/YC Train B was placed in service per OP/0/A/6450/11, Control Room Area Ventilation/Chilled Water System.

On September 11, at 0855 hours, with both Units in Mode 1, Power Operation, VC/YC Train A was declared inoperable for Maintenance to investigate and repair a Freon leak on YC Chiller A. VC/YC Train B remained in service. Work was completed on the YC chiller and at approximately 2210 hours VC/YC Train A was placed in service to verify operability of breaker 1ETA17, which had been opened during maintenance work. The Train A chiller started normally and the breaker passed the operability test. At this time, due to the successful start of the chiller, breaker 1EKPG #22 was known to be closed. Following the startup/shutdown of Train A, VC/YC Train B was placed back in service at approximately 2235 hours. At this time, per OP/0/A/6450/11 Enclosure 4.7, breaker 2EKPH #22 was verified closed, and step 2.1.16 of the procedure was NA'd. (Step 2.1.16 indicates that if 1CR-AHU-1 or 1CRA-PFT-1 is taken out of service, 1EKPG #22 is required to be opened and tagged.)

On September 13, at 0022 hours, Unit 1 entered Mode 2 and at 0038 hours, entered Mode 1.

On September 13, at 0455 hours, VC/YC Train A was declared inoperable for Preventive Maintenance (PM) on several Train A components. This included PMs on the Control Room (1CR-AHU-1) and Control Room Area (1CRA-AHU-1) air handling units. The worklist from the Operations Unit Manager group noted

that Technical Memorandum 21-0[illegible] should be reviewed and that it requires breaker 1EKPG #22 to be open and tagged. At approximately 0500 hours tagout number 01-2764 was issued and placed breaker 1EKPG #21 (instead of 1EKPG #22) in the OPEN position. As noted in the Technical Specification Action Item Log (TSAIL) and on the tagout sheet, this tagout was placed to maintain VC/YC Train B operability. Independent Verification (IV) of the tagout for 1EKPG #21 was performed by [illegible] Operations Unit Supervisor. Also at approximately 0500 hours, tagouts were placed on the Control Room and Control Room Area Air Handling Unit breakers, as well as the Switchgear AHU breakers.

On September 13, at 0810 hours, Maintenance performed the "correct component verification" on 1CR-AHU-1 prior to beginning the PM per Work Order Task 91072728-0[illegible] Following this verification, the required PM was performed on this unit. This included removal of the 1CR-AHU-1 access doors. The PM results indicated that the filter, drive belts, and other required inspections were satisfactory; therefore, no corrective maintenance was performed. At 0930 hours, the red tag stubs were signed by Maintenance and returned to Operations, indicating all work was complete on 1CR-AHU-1.

On September 13, at 1520 hours, the correct component verification was performed on 1CRA-PFT-1 prior to obtaining a carbon sample per Work Order Task 91071711-01 (which did not specify the use of red tags). The Work Order was stamped "Consult Control Room SRO Prior to Starting Work". The Bahnson personnel involved recalled contacting the C/R as required. The access panel was then removed and the carbon sample was taken. At 1600 hours, the Job Supervisor signed the Work Order indicating the task was completed.

On September 13, at approximately 2340 hours, the tagout placed on 1EKPG #21 was removed and the breaker was closed. Subsequently, VC/YC Train A was declared operable and removed from TSAIL.

On September 15, at 1300 hours, Operations attempted to swap VC/YC from Train B to Train A per OP/0/A/6450/11. At this time, breaker 1EKPG #22 was found open. Operations immediately began investigating why the breaker was open. At approximately 1310 hours, tagout 01-2764 was found to be in error (1EKPG #21 tagged instead of 1EKPG #22). At this time breaker 1EKPG #22 was closed.

CONCLUSION

When this incident was initially documented and reviewed as a problem on September 15 and 16, no reportable concerns were identified as a result of finding 1EKPG #22 open. Subsequent investigation did conclude that a reportable event had occurred.

On September 15, at 1300 hours, breaker 1EKPG #22 was found open when VC/YC Train A was thought to be operable. With this breaker open, Train A is inoperable because the train will not run or start in response to a safety

signal. On September 11, at 2210 hours, 1EKPG #22 was known to be closed due to the successful startup of the Train A chiller when verifying operability of breaker 1ETA-17. All activities between these two times that could have involved manipulation of 1EKPG #22 were reviewed. During the investigation, the Unit Supervisor that performed the IV on tagout 01-2764 for 1EKPG #21 indicated that he is confident that 1EKPG #22 was closed at that time (September 13 at 0300 hours).

Extensive interviews with Operations personnel did not reveal any recollection of a request to open 1EKPG #22 or any action taken to open the breaker. Discussions with the day shift on September 13 also did not reveal any actions taken to open 1EKPG #22. Bahnson personnel that obtained the carbon sample from 1CRA-PFT-1 did not know of the need to open 1EKPG #22 when working in the filter train.

No conclusive evidence was found that would indicate when 1EKPG #22 was opened. Therefore, the work activities during the time period in question were reviewed in an effort to determine the most probable point at which the breaker was opened. The conclusion drawn is that 1EKPG #22 was probably opened on September 13 just prior to the carbon sample being taken from 1CRA-PFT-1 to prevent startup of the component during this activity. With this conclusion, breaker 1EKPG #22 would have been closed on September 13 from 0810 hours to 0930 hours during the time the access doors were removed from 1CR-AHU-1. If an SI signal would have been received during this time, VC/YC would not have been able to pressurize the Control Room to 1/8 in wc as required by T/S due to the resulting Train A damper realignment and air flow escape path through the open access doors. Therefore, during this time both trains of VC/YC would have been rendered inoperable requiring entry into T/S 3.0.3. Normally, this concern is eliminated by tagging out (opening) 1EKPG #22 per Technical Memorandum 21-07. However, this tagout was improperly prepared and was placed on 1EKPG #21 instead. Another concern associated with 1EKPG #22 being opened at this time is that VC/YC Train A would have been inoperable during a period when it was thought to have been operable, specifically from September 13 at approximately 2340 hours until the breaker was closed on September 15 at 1310 hours. During this time Train B was operable and the T/S Action Statement for T/S 3.7.6 (one train inoperable for less than seven days) was met.

The most conservative assumption (with respect to length of time) is that 1EKPG #22 was opened just after September 11 at 2210 hours when it was functionally demonstrated to be closed. With this assumption, a concern would exist in that Unit 1 changed operating Modes on September 13 at 0022 hours (entered Mode 2) and 0038 hours (entered Mode 1) with one VC/YC Train inoperable. In this case, the requirements of T/S 3.0.4 would not have been met. Another concern would exist in that from September 11 at 2210 hours to September 13 at 0455 hours, and again from September 13 at approximately 2340 hours to September 15 at 1310 hours, Train A would have been inoperable when

it was thought to have been operable. During these periods Train B was operable and the T/S Action Statement was met. The concern associated with the inability to pressurize the Control Room to 1/8 in wc with the access doors for 1CR-AHU-1 off would not exist since 1EKPG #22 would have been open (as required) at this time.

This incident is attributed to Inappropriate Actions. An Inappropriate Action, failure to adhere to policies, directives, or management procedures, occurred when breaker 1EKPG #22 was apparently opened without the proper use of an Operations tagout (R&R). The person(s) or work group responsible could not be determined. Another Inappropriate Action, action taken was incorrect due to lack of attention to detail, occurred when tagout 01-2764 was prepared listing breaker 1EKPG #21 instead of 1EKPG #22 as required by Technical Memorandum 21-07. If this tagout had been properly prepared, the concern associated with the inability to pressurize the Control Room to 1/8 in wc with the 1CR-AHU-1 access doors off would not exist.

Component mispositioning events are a recurring problem at Catawba. Station Management has formed a task force, with representatives from Operations and other station groups with responsibilities for component operation, to study this problem and make recommendations to reduce/eliminate these types of incidents.

CORRECTIVE ACTIONS

SUBSEQUENT

1) Breaker 1EKPG #22 was closed.

2) Station Management has established a task force, with representatives from Operations and other station groups with responsibilities for component operation. This task force will study component mispositioning events at Catawba. This group will make recommendations to reduce/eliminate these types of incidents.

3) OP/0/A/6450/11 Enclosure 4.7 has been revised to clarify that 1EKPG #22 (2EKPH #22) is required to be tagged open when 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 is rendered "inoperable" rather than "taken out of service".

PLANNED

1) Operations management will emphasize the need for proper use of the Operations tagout system for all components, and the need for attention to detail while preparing Operations tagouts.

2) The need for a Nuclear Station Modification (NSM) to eliminate the requirement of opening 1EKPG #22 (2EKPH #22) during work on 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 will be evaluated.

3) The component mispositioning events task group will review the need for a method to identify the correct positions of low voltage breakers within panelboards in the plant so that, when working in a panel, it is apparent which breakers are required to be open/closed.

4) Planning will add a note to Predefined Work Orders for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 identifying the need for a tagout for 1EKPG #22 (2EKPH #22) when working in these components.

SAFETY ANALYSIS

Assuming that breaker 1EKPG #22 was opened at the most probable time, the safety significance of this condition can be assessed as follows.

Both Trains A & B of VC/YC were operable during the Mode changes early in the morning of September 13.

During the time period from 0810 to 0930, Train A had been declared inoperable but not fully removed from service because Breaker #22 was (most probably) still closed. Dampers associated with Train A would have re-positioned in response to a safety signal.

For this period of time 1CR-AHU-1 is assumed to be open for filter PMs. In this alignment it is unlikely the Control Room would be pressurized to greater than 1/8 in wc even with the Pressurizing Filter Train able to run due to the amount of flow escaping through the open AHU doors. Therefore, VC/YC is unknowingly in T/S 3.0.3 due to two inoperable trains of VC/YC.

However, the time period for this T/S 3.0.3 is less than the amount allowed in the ACTION for T/S 3.0.3 which allows for one hour to fix the problem then six to shutdown. Per Operations Technical Memorandum, VC/YC Train A would be reset within one hour. Note that this time frame is a conservative bounding of the time period that 1CR-AHU-1 was breached. It includes any time spent exiting the RCA, time the paperwork spent in getting written up by the craft people, and time spent waiting for the work crew supervisor review.

Due to the construction of the Control Room at Catawba it is not likely that being pressurized to less than 1/8 in wc would significantly affect Operator Dose. The 1/8 in wc is required to compensate for wind and thermal effects along the Control Room pressure boundary which could locally affect inleakage. At Catawba only a small section of the Control Room west wall is exposed to the wind and this is solid concrete with no penetrations. Therefore, wind is

an insignificant contributor to Control Room inleakage. Furthermore, of the areas adjacent to the Control Room all the areas receive some sort of HVAC and therefore are not thermally stratified to any significant degree because of the mixing action of the HVAC systems. Additionally, because of the relatively small height of the Control Room, thermal column effects will be minimal.

An analysis of Control Room pressurization during an accident shows that a positive pressure of approximately 0.015 in wc will exist with respect to all adjacent areas except those across the Auxiliary Building wall (OAC Room, Service Building and outside). The Control Room will be very slightly negative (approximately .007 in wc) with respect to these areas. This wall and the two doors in it by nature of their construction are very low leakage. Due to the low differential pressure across this wall it appears that the upper limit of 10 cfm unfiltered inleakage into the Control Room would still be satisfied and Control Room Operator doses would not exceed those stated in the FSAR Dose Analysis. Per Operations Technical Memorandum, VC/YC Train A would be reset within one hour, thus restoring Control Room pressurization capability and eliminating the minor leakage across the "AA" wall.

Prior to September 13 at 1520 hours, Breaker #22 is presumed to have been opened, isolating power to the Train A dampers. Thus, when the A Pressurizing Filter Train (PFT) unit cover was opened from 1520 to 1600 hours to obtain a carbon sample, no impact on Train B operability existed.

If, on the other hand, Breaker #22 is assumed to have been opened shortly after it was last confirmed closed (at 2210 hours on September 11), the safety significance changes. In this scenario, the opening of Breaker #22 renders Train A of VC/YC inoperable, but for a length of time within the seven day limit permitted by T/Ss. Train A would have been unknowingly inoperable when Unit 1 changed modes early on the morning of September 13. Thus, T/S 3.0.4 was unknowingly violated. Train B was fully operable and capable of fulfilling the required safety function.

During the two maintenance periods on September 13, from 0810 to 0930 and from 1520 to 1600 hours, Train A was properly removed from service with Breaker #22 open. Thus, these maintenance activities had no impact on the operable VC/YC Train B.

The health and safety of the public were not affected by this incident.

ENCLOSURE 8.1

Safety Review Group Signatures

Prepared by: G. T. Ford Date: December 6, 1991

Reviewed By: G T Ford Date: 12/6/91

W R Bravy Date: 12/6/91

M C Crowe Date: 12/6/91

R. Derrick D. Miller Date: 12/9/91

P.C. Rompaldo Date: 12/9/91

N/A SM Date:

Approved By: S Mose Date: 12/9/91
Chairman, CSRG

ENCLOSURE 8.2

Listing of Enclosures

#	Title
8.1	Safety Review Group Signatures
8.2	Listing of Enclosures
8.3	Cause Code Assignments
8.4	Corrective Action Schedule
8.5	References
8.6	Potential Problem/Activity Areas
8.7	Safety Review Group Consideration of Part 21 Reportability
8.8	Personnel Referenced

ENCLOSURE B.3

Cause Code Assignments

Root Cause

A5 Failure to adhere to policies, directives, or management procedures

A3b6 Action taken was incorrect due to lack of attention to detail

Contributing Cause

None

ENCLOSURE B.4

Corrective Action Schedule

Corrective Action	Assigned To	Due Date
1	Operations	4/1/92
2	System Engineering	4/1/92
3	Safety Review	4/1/92
4	Planning/Operations	4/1/92

ENCLOSURE 8.5

References

OP/0/A/6450/11, Control Room Area Ventilation/Chilled Water System
TSAIL
Work Order Tasks 91071711 01, 91072728 01, 91072729 01, 91073875 01
Operations Tagout Numbers 01-2764, 01-2744, 11-2569, 01-2757
VC/YC System Description
Technical Specifications
Control Room Logbooks

ENCLOSURE 8.6

Potential Problem/Activity Areas

#	Description
20	Valve/Breaker Mispositioning

ENCLOSURE 8.7

Safety Review Group Consideration of Part 21 Reportability

	Yes	No
I. Has a "Defect" or "Deviation" been identified in a "Basic Component"?	___	X
II. Is the "Defect" or "Deviation" present in a "Basic Component", that is a plant structure, system, component or part thereof necessary to ensure:		
1. The integrity of the reactor coolant boundary?	___	X
2. The capability to shutdown reactor and maintain it in a safe shutdown condition?	___	X
3. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposure comparable to those referred to in 10CFR100.11?	___	X
Including design, inspection, testing, or consulting services related thereto.		
III. Is the "Basic Component" one that has been accepted for ownership or installed for use or operation?	___	X
If a yes in I, II and III above, could defect create a substantial safety hazard or contribute to exceeding of a safety limit as defined in Tech Specs?	___	X

Comments _____

Prepared By: _____ Date: 12/6/91
Safety Review Group

Reviewed By: _____ Date: 12-10-91
Compliance

Duke Power Company
Catawba Nuclear Station
4800 Concord Rd.
York, S.C. 29745

DUKE POWER

February 13, 1992

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/92-002

Gentlemen:

Attached is Licensee Event Report 413/92-002 concerning TECHNICAL SPECIFICATION 3.0.3 ENTRY DUE TO TWO INOPERABLE TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM.

This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

M. R. McCollum
Station Manager

/lhe

Attachment

xc: Mr. S. D. Ebneter
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
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Atlanta, GA 30323

R. E. Martin
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
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NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Catawba Nuclear Station, Unit 1	0 5 0 0 0 4 1 3	1 OF 0 8

TITLE (4): TECHNICAL SPECIFICATION 3.0.3 ENTRY DUE TO TWO INOPERABLE TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 1	1 6	9 2	9 2	- 0 0 2 -	0 0	0 2	1 3	9 2	CNS, Unit 2	0 5 0 0 0 4 1 4
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
R. C. Futrell, Compliance Manager	8 0 3 8 3 1 - 3 6 6 5

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On January 16, 1992, at 2000 hours, with Units 1 and 2 in Mode 1, Power Operation, Operations personnel were reviewing activities associated with startup of the Train B Control Room Area Ventilation and Chilled Water (VC/YC) System following maintenance. It was discovered that breaker 2EKPH #22, Train B VC/YC System Controls, had not been opened during preceding maintenance activities as required by Operations Technical Memorandums. VC/YC Train B had been inoperable on January 16 from 0353 to 1725 hours. During this time, the Train B Control Room Air Handling Unit was removed from service and associated access doors were opened to allow for equipment inspections. With these access panels open and 2EKPH #22 closed, VC/YC Train B dampers would have repositioned upon receipt of a safety signal, thus allowing air flow to escape through the openings in the system. VC/YC Train A, which was operable and in service, would not have been capable of adequately pressurizing the Control Room. Therefore, both VC/YC Trains were inoperable while the access panels were open and Technical Specification 3.0.3 was unknowingly entered. This incident is attributed to Inappropriate Actions, Control Room Operators did not recognize the need to open 2EKPH #22. Corrective actions include red tag computer program enhancements and a Technical Memorandum program review.

BACKGROUND

The Control Room Area Ventilation [EIIS:UC] (VC) and Chilled Water [EIIS:UE] (YC) Systems combine to form one system which is designed to maintain a suitable environment in the following plant areas at all times: Control Room (C/R), Cable Room, Battery [EIIS:BTRY] Rooms, Switchgear Rooms, Motor [EIIS:MO] Control Center (MCC) Rooms, and the Electrical Penetration Rooms at elevation 594 + 0. The VC/YC System is shared between both Units and consists of two 100% redundant trains of equipment. Each is capable of being powered by Unit 1 or Unit 2 Essential Auxiliary Power, but under normal conditions both trains are aligned to Unit 1. Two Diesel Generators [EIIS:GEN] (D/Gs) are provided per Unit to energize the Essential Auxiliary Power buses during emergency conditions.

The portion of the VC/YC System serving the C/R includes two 100% capacity air handling units (1CR-AHU-1 for Train A and 2CR-AHU-1 for Train B), two 100% capacity smoke purge fans [EIIS:BLO], and two 100% capacity outside air pressurizing filter [EIIS:FLT] trains (1CRA-PFT-1 for Train A and 2CRA-PFT-1 for Train B).

Breakers [EIIS:BRK] 1EKPG #22 (Train A) and 2EKPH #22 (Train B) provide control power for permissives to VC/YC System components including CR-AHUs, CRA-PFTs, and system dampers. With either of these breakers open, the respective train related components would be unable to start/align in response to a safety injection signal.

Operations Technical Memorandums (T/Ms) 11-05 (Unit 1) and 21-07 (Unit 2) state that in the event that a C/R AHU or Pressurizing Filter Train is taken out of service, the pressurization of the C/R may be degraded unless certain steps are taken. With no action taken, the dampers on the out of service train will align upon receipt of a safety injection signal but the associated fans will not start due to their being out of service. This results in the in service train recirculating air through the out of service train which may degrade the pressure in the C/R. In order to prevent this from happening, the out of service train dampers must remain in place to prevent the air from recirculating. This can be accomplished by removing the control power to the permissives for the dampers and fans on the out of service train. Therefore, the T/Ms require that breaker 1EKPG #22 be tagged opened when taking 1CR-AHU-1 or 1CRA-PFT-1 (Train A) out of service, and that 2EKPH #22 be tagged opened when taking 2CR-AHU-1 or 2CRA-PFT-1 (Train B) out of service. These actions would not allow the train related dampers to reposition upon receipt of a safety injection signal, thus maintaining opposite train C/R pressurization capability.

The T/M program, as specified in Operations Management Procedure (OMP) 2-5, is used by Operations (OPS) to provide enhancements to an existing procedure or provide temporary instructions in the absence of a procedure; however, they

shall not conflict with or be used as a permanent replacement for operating procedures. A T/M must not prevent an existing procedure from being followed, and when being used as a supplement to a procedure, it must not be in the non-conservative direction. T/Ms are temporary in nature and shall have an expiration date assigned. The Operations Unit Manager is normally responsible for writing and issuing T/Ms, and reviewing them to ensure they are deleted or reissued prior to the expiration date.

OMP 2-22, Shift Turnover, requires Shift Supervisors, Control Room Senior Reactor Operators (C/R SRO), Assistant Shift Supervisors, Operator at the Controls (OATC), Balance of Plant (BOP) Operators, and Non-Licensed Operators (NLO) to review the T/M logbook during each shift change.

OP/0/A/6450/11, Control Room Area Ventilation/Chilled Water System, Enclosure 4.7, Shifting the Operating VC/YC Train, is used when switching from one VC/YC Train to the other. Procedure steps 2.1.17/2.2.17 require 1EKPG #22/2EKPH #22 to be tagged OFF when tagging out 1(2)CR-AHU-1 and/or 1(2)CRA-PFT-1.

Technical Specification (T/S) 3.7.6 specifies that two independent trains of VC/YC shall be operable during all operational modes. If one train becomes inoperable while either Unit is in Mode 4, Hot Shutdown, or above, the inoperable train must be restored to operability within seven days or be in at least Mode 3, Hot Standby, within the next six hours and in Mode 5, Cold Shutdown, within the following 30 hours. Surveillance 4.7.6.e.3 requires that at least once per 18 months the system demonstrates the ability to maintain the C/R at a positive pressure of greater than or equal to 1/8 in wc relative to adjacent areas.

T/S 3.0.3 is required to be entered when the Unit is operating in a condition prohibited by T/Ss. This condition exists when a Limiting Condition for Operation (LCO) is not met except as provided in the associated Action Requirements. It requires that within one hour action shall be initiated to place the Unit in a Mode in which the specification does not apply by placing it, as applicable, in:

a) At least Hot Standby in the next 6 hours,
b) At least Hot Shutdown within the following 6 hours, and
c) At least Cold Shutdown within the subsequent 24 hours.

EVENT DESCRIPTION

On January 3, 1992, at 0239 hours, VC/YC Train A was placed in service per OP/0/A/6450/11.

On January 15, 1992, the Operations Unit Manager group generated a worklist item for night shift to make and hang tags for seven Work Orders (W/Os) on VC/YC Train B. Included in these W/Os were 92001717-01, Preventive

Maintenance (PM) on 2CR-AHU-1, and 92001733-01, inspection of 2CR-D-4 (2CR-AHU-1 discharge damper). Both of these W/Os required 2EMXH-F07B, 2CR-AHU-1 power supply, to be tagged open during each respective work activity.

On January 15, 1992 during night shift, the Work Control Center (WCC) Senior Reactor Operator (SRO) reviewed the VC/YC Train B worklist item and all associated W/Os. He then gave them to Nuclear Operation Specialist (NOS) A to prepare the required tagouts. From approximately 2200 to 2230 hours, NOS A prepared the tagouts using the correct preplanned tagouts in place on the Operations red tag computer program. Tagouts 02-115 and 22-61 were prepared for W/Os 92001717-01 and 92001734-01, respectively. Each tagout required only 2EMXH-F07B to be tagged open; therefore, no tags were issued for 2EKPH #22. The work package was then forwarded to Assistant Shift Supervisor A for review. After his review, he signed the "tagout ordered by" section of the tagout sheet.

On January 16, at 0353 hours, with Units 1 and 2 in Mode 1, Power Operation, the C/R SRO reviewed the work package and VC/YC Train B was declared inoperable. Since VC/YC Train A was operable and already in service, VC/YC Trains did not have to be swapped per OP/0/A/6450/11, Enclosure 4.7. This enclosure contains guidance on opening breaker 2EKPH #22 (1EKPG #22) to ensure opposite train operability is maintained. The work package was subsequently taken to the "horseshoe" area of the C/R. Unit 1 and 2 Nuclear Control Operators (NCOs) A and B reviewed and initialed the "Control Room Acknowledge" section of tagouts 02-115 and 22-61. At 0425 hours, NCO C opened 2EMXH-F07B and placed both red tags on the breaker. NOS B performed Independent Verification of this action.

On January 16, at 0800 hours, the Correct Component Verification was performed on 2CR-AHU-1 per W/O 92001717-01. The AHU access panels were then removed to inspect the condition of the unit's filters and belts and other PM requirements. The results of the inspection indicated all items were satisfactory; therefore, no replacements were necessary and no work was performed. Maintenance personnel involved indicated that the total time the access panels were removed was less than five minutes. At 0845 hours, the "Task Completion Comments" section of the W/O was completed indicating all inspections were satisfactory.

At 0900 hours, the "Placement Verified By" section was signed on the red tag for tagout 22-61 prior to inspection of damper 2CR-D-4 per W/O 92001733-01. Bahnson personnel then entered the duct to perform the inspection. The results of the inspection were satisfactory, and the personnel then exited the ductwork. Bahnson personnel indicated that the total time the access door was open was less than three minutes. At 0915 hours, the red tag stub was signed indicating work was complete.

On January 16, at 1640 hours, red tags for tagouts 02-115 and 22-61 were removed from 2EMXH-F07B and the breaker was closed. VC/YC was subsequently swapped from Train A to Train B per OP/0/A/6450/11, Enclosure 4.7. At 1725 hours, VC/YC Train B was declared operable. At 2000 hours, while reviewing activities associated with startup of VC/YC Train B, Assistant Shift Supervisor A discovered that breaker 2EKPH #22 was not tagged open as required while 2CR-AHU-1 was tagged out.

CONCLUSION

This incident is attributed to Inappropriate Actions, CROs did not recognize the need to open breaker 2EKPH #22 per T/Ms 11-05 and 21-07 when 2CR-AHU-1 was removed from service. During preparations to tag out 2CR-AHU-1 (breaker 2EMXH-F07B), Assistant Shift Supervisor A, the C/R SRO, and NCOs A and B reviewed tagouts 02-115 and 22-61 but did not identify the need to open 2EKPH #22. Each operator had reviewed the T/M logbook during shift turnover, and during subsequent interviews each operator indicated that he was aware of the requirements of the T/Ms. This incident was discussed with all Operations personnel involved, and was discussed during the next Shift Supervisor's meeting. In addition, this incident will be discussed with all shift personnel during upcoming shift meetings.

The 600V power supply breakers for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 have had white Removal and Restoration (R&R) tags placed with the breakers ON. Before these breakers can be opened, the white R&R tags must be cleared which requires SRO approval. This will provide the SRO with another opportunity to ensure 1EKPG #22 (2EKPH #22) is opened when required. This action was taken so that a physical barrier would be in place prior to opening the 600V breaker.

The OPS red tag computer program is used by operators to initiate and print tagout sheets and red/white tags. An enhancement has been made to the program so that when the 600V breakers for 1(2)CR-AHU-1 or 1(2)CRA-PFT-1 are tagged out, a prompt automatically appears to allow the operator to also print a red tag for 1EKPG #22 (2EKPH #22). In addition, a note has been added to the "Special Instructions" section identifying the need to open 1EKPG #22 (2EKPH #22) when removing 1(2)CR-AHU-1 or 1(2)CRA-PFT-1 from service. This note will automatically print out on the tagout sheet at the line item for each required 600V breaker. A further enhancement will be made in the program with respect to Special Instructions. During interviews, operators expressed concerns that Special Instructions do no always appear on the computer screen level from which tagout sheets are printed. Therefore, the operator preparing the tagout may not see the Special Instructions on the screen. To provide another level of defense to prevent further incidents from occurring, the red tag computer program will be enhanced so that Special Instructions appear at the screen level from which tagouts are printed. In addition, a change has been made to the Technical Specification Action Item Logbook (TSAIL) computer program so

that when either VC/YC train is declared inoperable, a special note is automatically placed in TSAIL referencing 1EKPG #22 (2EKPH #22) and this Problem Investigation Report (PIR).

Preplanned W/Os for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 have had notes added in the Special Instructions section identifying the need to open 1EKPG #22 (2EKPH #22) when working on these components. This action was taken on January 14, 1992 in response to LER 413/91-020, Technical Specification 3.0.3 Entry Due To Two Inoperable Trains of the Control Room Ventilation System. However, the W/Os used on January 16 were printed before this date and did not contain the Special Instructions. Future W/Os for these components will have the notes automatically printed on them, providing another means to alert operators of the need to open 1EKPG #22 (2EKPH #22).

Incidents involving missed T/M requirements are recurring at Catawba. LER 413/91-020 involved a T/S 3.0.3 entry because 1EKPG #22 was not properly tagged out during Train A VC/YC work. Corrective action was taken after this incident to clarify in OP/0/A/6450/11, Enclosure 4.7 when 1EKPG #22 (2EKPH #22) is required to be open. The corrective action did not address situations in which the procedure was not needed. LER 413/92-001 involved a T/S violation due to an improperly performed T/S surveillance because an action was not taken per a T/M. OPS management will review OMP 2-5 and make revisions to strengthen the management controls over the process of using T/Ms. Proposed changes include plans to reduce the overall number of T/Ms, strict requirements for setting expiration dates, and higher levels of management approval for extension of expiration dates. This planned corrective action is also documented in LER 413/92-001.

CORRECTIVE ACTION

SUBSEQUENT

1) The 600V power supply breakers for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1 have been white tagged "ON".

2) Enhancements have been made to the OPS red tag computer program so that when a tagout is made for the 600V breakers for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1, a prompt appears allowing the operator to also print a red tag for 1EKPG #22 (2EKPH #22).

3) A note was added to the "Special Instructions" section of the OPS red tag computer program identifying the need to open 1EKPG #22 (2EKPH #22) when tagging out the 600V breakers for 1(2)CR-AHU-1 and 1(2)CRA-PFT-1.

4) This incident has been discussed with all operators associated with this event.

5) A change has been made to the TSAIL computer program so that when either VC/YC train is declared inoperable, a special note is automatically placed in TSAIL referencing 1EKPG #22 (2EKPH #22) and this PIR.

PLANNED

1) This incident will be discussed with OPS shift personnel.

2) An enhancement will be made to the OPS red tag computer program so that Special Instructions will appear on the screen level from which tagouts are printed.

3) OPS management will review OMP 2-5 and make revisions to strengthen the management controls over the process of using T/Ms.

SAFETY ANALYSIS

VC/YC Train B was inoperable on January 16 from 0353 to 1725 hours. During this time period, 2CRA-PFT-1 was not removed from service. However, 2CR-AHU-1 was removed from service and air flow escape paths were present when its associated access panels were removed. During PM activities per W/O 92001717-01, the Correct Component Verification was performed at 0800 hours prior to beginning work. The W/O "Task Completion Comments" were recorded at 0845 hours. The PM results were documented as satisfactory, and no filters or belts were changed out. Maintenance personnel involved estimated the total time the access panels were removed was less than five minutes. During the 2CR-D-4 damper inspection per W/O 92001733-01, the "Placement Verified By" section of the red tag was signed at 0900 hours prior to beginning work. Bahnson personnel indicated that, in order to perform the inspection, the duct access door is opened, a person enters the ductwork, the access door is closed, the inspection is performed, then the access door is opened to allow the person to exit the ductwork. Involved personnel estimated the total time the access door was opened to be less than three minutes. At 0915 hours, the red tag stubs were signed indicating work was complete.

During the time periods that the Train B access panels were open, it is unlikely the C/R would be pressurized to greater than 1/8 in wc by VC/YC Train A even with the Pressurizing Filter Train able to run due to the amount of flow escaping the system through access doors. With 2EKPH #22 closed, dampers associated with Tra B would have repositioned in response to a safety signal. Therefore, VC/YC was unknowingly in T/S 3.0.3 during two short time intervals due to two inoperable trains (unable to pressurize the C/R).

However, the time period for this T/S 3.0.3 is less than the amount allowed in the ACTION for T/S 3.0.3 which allows for one hour to fix the problem then six to shutdown. Per Operations Technical Memorandum, VC/YC Train B would be reset within one hour.

Due to the construction of the Control Room at Catawba it is not likely that being pressurized to less than 1/8 in wc would significantly affect Operator Dose. The 1/8 in wc is required to compensate for wind and thermal effects along the Control Room pressure boundary which could locally affect inleakage. At Catawba only a small section of the Control Room west wall is exposed to the wind and this is solid concrete with no penetrations. Therefore, wind is an insignificant contributor to Control Room inleakage. Furthermore, of the areas adjacent to the Control Room all the areas receive some sort of HVAC and therefore are not thermally stratified to any significant degree because of the mixing action of the HVAC systems. Additionally, because of the relatively small height of the Control Room, thermal column effects will be minimal.

An analysis of Control Room pressures during a postulated accident shows that a positive pressure of approximately 0.015 in wc will exist with respect to all adjacent areas except those across the Auxiliary Building "AA" wall (OAC Room, Service Building and outside). The Control Room will be very slightly negative (approximately .007 in wc) with respect to these areas. This wall and the two doors in it by nature of their construction are very low leakage. Due to the low differential pressure across this wall it appears that the upper limit of 10 cfm unfiltered inleakage into the Control Room would still be satisfied and Control Room Operator doses would not exceed those stated in the FSAR Dose Analysis. Per Operations Technical Memorandum, VC/YC Train B would be reset within one hour, thus restoring Control Room pressurization capability and eliminating the minor leakage across the "AA" wall.

It has been concluded that, although the T/S required 1/8 in wc pressurization requirement may not have been achieved under all conditions, the consequences to C/R habitability and Operator Dose would not be significant.

The health and safety of the public were not affected by this incident.

ENCLOSURE 8.1

Safety Review Group Signatures

Prepared By: G. T. Ford Date: February .., 1992

Reviewed By: [signature] Date: 2/10/92
[signature] Date: 2/10/92
[signature] Date: 2/10/92
[signature] Date: 2/10/92
MCCrimmges/SRG Date: 2/10/92
N/A Date:

Approved By: [signature] Date: 2/10/92
Chairman, SRG

ENCLOSURE 8.2

Listing of Enclosures

#	Title
8.1	Safety Review Group Signatures
8.2	Listing of Enclosures
8.3	Cause Code Assignments
8.4	Corrective Action Schedule
8.5	References
8.6	Safety Review Group Consideration of Part 21 Reportability
8.7	Personnel Referenced

ENCLOSURE 8.3

Cause Code Assignments

Root Causes

A3a1 Inappropriate Action, no action taken when required because the need was not recognized

Contributing Causes

None

ENCLOSURE 8.4

Corrective Action Schedule

Corrective Action #	Assigned To	Due Date
1	Operations	4/30/92
2	Operations	7/31/92
3	Operations	4/1/92

(This C/A also appears on LER 413/92-001)

ENCLOSURE 8.5

References

CNSD 1211.00-06
OP/0/A/6450/11, Control Room Area Ventilation/Chilled Water System
ONP 2-5, Operations Work List and Technical Memorandums
OMP 2-22, Shift Turnover
Catawba Technical Specifications
Operations Technical Memorandums 11-05, 21-07
TSAIL

ENCLOSURE 8.6

Safety Review Group Consideration of Part 21 Reportability

	Yes	No
I. Has a "Defect" or "Deviation" been identified in a "Basic Component"?	___	X
II. Is the "Defect" or "Deviation" present in a "Basic Component", that is a plant structure, system, component or part thereof necessary to ensure:		
1. The integrity of the reactor coolant boundary?	___	X
2. The capability to shutdown reactor and maintain it in a safe shutdown condition?	___	X
3. The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposure comparable to those referred to in 10CFR100.11?	___	X
Including design, inspection, testing, or consulting services related thereto.		
III. Is the "Basic Component" one that has been accepted for ownership or installed for use or operation?	___	X
If a yes in I, II and III above, could defect create a substantial safety hazard or contribute to exceeding of a safety limit as defined in Tech Specs?	___	X

Comments _____

Prepared By: _____ Date: 2/10/92
Safety Review Group

Reviewed By: M H Hazeltine Date: 2/12/92
Compliance

ATTACHMENT 2

****** SHIFT OPERATIONS MANAGERS BRIEFING *****

COMPONENT MISPOSITIONINGS

We have recently had several events to occur in the plant involving component mispositionings. Two incidents involved 2SM-103 and 2SV-66 which were signed off as "CLOSED" in the containment integrity PT but were actually "OPEN" (one was red tagged open on the backseat, the other was white tagged open). We also had a problem with 2NV-291 being signed off in the lineup as "LOCKED CLOSED" when it was actually partially open causing the run out of the NV pump during testing. 2NV-291 had been backseated on an R&R and was very hard to operate. 2NI-118 and 2NI-150 were signed off in the control room as being "CLOSED" when they were actually "OPEN" resulting in NI pump runout.

The containment integrity problems caused a significant delay in the refueling activities as we rechecked our PT's and the NI and NV incidents could have resulted in pump damage. The NRC has been very concerned about these incidents. Tuesday night an emergency meeting of the CIAT (Continuous Improvement Action Team) was called and they recommended a two-phase approach:

A. Establish a Component Mispositioning Team to evaluate, investigate, and trend component mispositionings. This team would consist of personnel from OPS, IAE, Maint., Performance, Chemistry, HPET (Human Performance Excellence Team), and others as appropriate.

B. Short-term suggestions:

1. Establish a Containment Integrity Coordinator (Parallel position to Containment Closure RO)

2. Caution people on backseated and hard to operate valves.
   a. Define backseat and proper way to open valves
   b. Ask for help on valve positioning (to break free or double verify)
      1. Keep a list of problem valves for NLO use
      2. Be careful with valve wrenches (personnel safety and valve damage)

3. For the remainder of the outage list the position of all valves that are backseated as "BACKSEATED" on the Red (or White) tag and R&R.

4. As a part of verifying valve position (especially closure/integrity), read and evaluate all tags on valves. (This sounds like a simple item but is definitely an aid in determining final valve position).

In our jobs we must take the time to "do it right the first time" while working efficiently to return the unit to service. You have done an excellent job this outage processing a tremendous amount of work correctly - let's learn from our mistakes and continue to get

even better.

If you have items you would like to be considered by the Component Mispositioning Team, please submit them to your shift CIA team member.

Bob Ferguson

Bob Ferguson
Shift Operation Manager

/tr

******* SHIFT OPERATIONS MANAGERS BRIEFING *******

November 25, 1991

TO: All Operations Shift Personnel

SUBJECT: Valve Positioning Basics

In the process of looking into our recent incidents it was suggested that we may need to write down a basic process for properly verifying valve position. We do have a broad spectrum of experience levels across Operations and this may be more useful to some than others, but at least we can be assured that we are all performing this task consistently. This process is intended to apply to aligning valves per a valve checklist in a procedure or by an R&R.

1) Maintain the checklist, procedure, R&R (or a copy) in your possession at all times.
2) Locate the valve to be aligned or verified - use the valve book, R&R computer, tag stubs, or procedure checklist to obtain the coordinates and elevation of the valve.
3) Self-verify (or allow the IV'er if required) to verify that the valve number in the controlling document matches the label on the valve - Unit - System - Valve Number - Train.
4) Read and evaluate any red or white tags hanging on a valve - Don't assume a tag on a valve means it is open or closed - read the tag - look out for backseated valves! (referencing other R&R's in the affected procedures will help here too).
5) Place your "hands on" the valve and move it toward the required position. Be sure to self-verify here! If you believe the valve is in the desired position - still attempt to move it in the open or closed direction to ensure its position is correct. (Note this does not apply to valves in the "throttled" position). If you opened a valve and you hear flow, is this expected? If not, close the valve and notify your supervisor.
6) If a valve is too hard for you to turn or you need a second opinion, ask for help! - don't hesitate to ask for help. Others are more than willing to help you out, and chances are you'll be able to return the favor someday.
7) Once you have positioned a valve or verified its position - sign its position off on the controlling document (checklist, procedure or R&R in your possession) immediately. Self-verify that you are signing off the valve you have just manipulated. Be sure to sign them off <u>one at a time.</u> Do not rely on memory to sign several valves off at once. This is a dangerous practice and has caused many errors in the past.
8) If IV is required have the IV'er repeat these steps to

verify the valve position and then sign off the valve position for that valve (again signing them off one at a time).

As with any successful team, the ones that really excel are those who execute the basic elements of a game or job the most effectively. Let's make these basic steps a part of our everyday routine when verifying valve positions(note that the same principles can be applied to electrical breaker positions). By practicing these steps we will take Operations a step closer to becoming the excellent team we all are striving to become.

Bob Ferguson

Bob Ferguson
Shift Operations Manager

/tr

cc: E. M. Geddie
Ops Section Managers

ATTACHMENT 3

DUKE POWER COMPANY
REPLY TO NOTICE OF VIOLATION 413,414/91-027

ATTACHMENT 3

COMPONENT POSITIONING TEAM - ACTIVITIES AND RESULTS

Station management, in conjunction with the Continuous Improvement Action Team established the Component Positioning Team (CPT) with representatives from Operations, Performance, Chemistry, Instrument and Electrical (IAE), Training, Safety Review, and the Human Performance Excellence Team. The mission of the CPT is to help achieve a goal of maintaining all components in their correct position at all times. In carrying out its mission, the CPT is accountable for accomplishing the following objectives.

1. To apply a broad perspective that encompasses all work groups involved in achieving the goal.

2. To work with all affected work groups, communicating and involving them in the CPT's activities, to forge a consensus action plan.

3. To encourage and support employees in candid reporting of component mispositioning events.

4. To analyze past and present component mispositioning events to determine root causes and contributing factors.

5. To evaluate alternative courses of action and recommend the best for implementation.

6. To develop a method for measuring progress toward the stated goal.

Significant progress has been made toward accomplishing these objectives. A Charter for the CPT has been established and is attached. The team meets weekly as well as devoting additional time to the investigation and analysis of mispositioning events. The CPT members are being assigned to investigate all mispositioning events at Catawba. All team members have received training in Root Cause Analysis techniques. A duty rotation and call-out process has been established to support investigations outside normal work hours. A list of mispositioning event attributes or categories has been established to help focus analysis and promote thorough, consistent evaluations.

Since implementation of Catawba's Lower Tier Event Reporting Program on October 1, 1991, 38 mispositioning events have been reported. This high number of reported events is both expected and encouraged, for unless problems are identified and reported they cannot be corrected. Thirty (30) past and current mispositioning events have already been analyzed in detail. Investigations are continuing into recent events.

Considerable effort is being expended to communicate with site staff and employees. It is clearly understood that unless every person working at Catawba accepts accountability for correctly positioning every component they work with, achievement of our goal will not occur. The significance of this problem and the need for improved performance has been discussed in the Site

Vice-President's "Team Notes" on several occasions. The Station Manager issued a letter to all employees explaining the issue and their role in resolving it. This letter was covered by supervisors with all employees. An article has appeared in the site Newsletter. The CPT is preparing monthly summary reports and issuing weekly bulletins to keep employees abreast of mispositioning events.

In the mispositioning events analyzed to date, six recurring problem areas/issues have been identified.

- inadequate verification of methods
- inadequate or deficient procedures
- poor work practices
- outage-activity planning/scheduling
- events involving equipment removal and restoration
- events involving hardware/equipment problems

With respect to the first problem area, inadequate verification methods, six out of 14 mispositioning events could have been prevented by thorough "self-verification" by the individual(s) involved. This problem area, and the associated events, was discussed by CPT members with the plant staff during a broad (but unstructured) survey. Feedback from the staff confirmed the importance of self-verification as the first line of defense against mispositioning events. (The team also received considerable feedback on the subject of Independent Verification which the team provided to station management. See Attachment ".) The CPT has initiated an effort to emphasize and promote good self-verification by all employees. The CPT will work with station management to continue this effort.

With respect to the second problem area, inadequate or deficient procedures, the team concluded that 8 out of 14 events were directly attributable to deficient procedures being used, and that 6 of these events involved procedures with missing or incomplete work guidance. Based on its broad experience, the CPT concluded that some procedure deficiencies have gone uncorrected because the effort required was perceived to be too great or too lengthy. The CPT has recommended that the procedure change process, within all work groups, be examined and wherever possible made simpler, more responsive, and not burdensome on the person who identifies the need for a procedure change. The CPT has also recommended a close working partnership between procedure users and procedure writers. Finally, the CPT has recommended that an effective procedure validation and verification process be established within all work groups.

The Component Positioning Team is continuing to work diligently to help achieve the goal of "zero mispositionings". See Attached CPT Conclusions and Recommendations dated March 11, 1992. A significant amount of effort has been expended with tangible results thus far; however, much remains to be done. More mispositioning events will be investigated. Additional data will be compiled and analyzed. Additional recurring problems/issues will likely be found and further recommendations developed. A measurement tool will be developed. And most importantly, ongoing discussion and communication of the CPT's activities and results will take place.

CATAWBA COMPONENT POSITIONING TEAM

CHARTER

GOAL: We are committed to operating our plant safely and efficiently with all components correctly positioned at all times.

MISSION: The Component Position Team (CPT) has been established to help achieve the above goal by communicating the importance of this goal, by identifying barriers or obstacles to its achievement, by recommending effective means to overcome obstacles and barriers, and by establishing a means to measure progress toward this goal.

OBJECTIVES: In carrying out its mission, the CPT is accountable for accomplishing the following objectives.

1) To apply a broad perspective that encompasses all work groups involved in achieving this goal.

2) To work with all affected groups, communicating and involving them in the CPT's activities, to forge a consensus action plan.

3) To encourage and support employees in candid reporting of component mispositioning events.

4) To analyze past and present component mispositioning events to determine root causes and contributing factors.

5) To evaluate alternative courses of action and recommend the best for implementation.

6) To develop a method for measuring progress toward the stated goal.

COMPOSITION: The team will be composed of members of the site staff and management representing the principle work groups who position components. Members of the team will be appointed by site management with their commitment to making sufficient time available for team members to actively participate.

DURATION: The CPT will remain in existence until its mission and objectives are achieved.

Management may continue the CPT in an ongoing role to measure progress toward the goal. The CPT may be tasked to assess the effectiveness of implemented solutions.

It is expected that the CPT will, over time, evolve into an element of the Managing for Excellence effort with the responsibility of pursuing continuous improvement in component position activities.

PROCESS: The CPT, and various sub-committees as needed, will meet regularly to carryout their work. Team members will carryout assignments between meetings. Support from outside the team will be used as needed.

Minutes of team meetings will be distributed promptly. Site management will be kept advised of the team's progress through monthly briefings.

Component Positioning Team - Conclusions and Recommendations

March 11, 1992

CONCLUSION

Information and insight gained from analyzing old mispositioning event PIRs is minimal due to missing information; too many assumptions had to be made to fill in the gaps. Therefore, the CPT will concentrate current and future events.

CONCLUSION

It is important to investigate mispositioning events quickly after they occur, before information is forgotten, or the people involved "over-analyze" their actions.

CONCLUSION

Based on detailed analysis of 14 recent events and 16 older events, the following recurring problem areas/issues have been identified. Each area will be analyzed further.

- inadequate verification methods
- inadequate or deficient procedures
- poor work practices
- outage activity planning/scheduling
- R&R discrepancies
- hardware problems

CONCLUSIONS - Inadequate Verification Methods

A. Ineffective self-verification was a contributing factor in 6 out of 14 events. Effective self-verification could have prevented all 6 events.

B. Effective self-verification by all employees is the first-line of defense against mispositioning events. Self-verification is a very important element of verification, as important to safe operation as double or separate verification.

C. Emphasis on self-verification reinforces employee ownership; emphasis on I/V can dilute ownership.

D. Based on feedback from employees, self-verification is not widely understood, nor widely practiced. Many personnel have not heard of "self-checking". "PLEASE LISTEN" as a self-check concept has failed; it is seen as too complex/cumbersome. Classroom training alone was insufficient to ingrain the concept in employees.

E. Achieving effective, wide spread self-verification will require behavior modification much more than skill development.

RECOMMENDATIONS - Self-Verification

A. The effort to build self-verification should stay out of the classroom. It should be taught, coached, and promoted by management and supervision.

B. The "STAR" concept (stop, think, act, review) should be incorporated in place of "PLEASE LISTEN".

C. Employees should hear about the consequences of not using self-verification, i.e., what can happen. The CPT will be communicating mispositioning events that involve poor self-verification.

D. Self-verification should be covered in crew tailgate meetings as another element of the expected work evolution.

CONCLUSIONS - Independent Verification Policy

A. The current Independent Verification (I/V) policy is inconsistently implemented between station work groups. There is little common understanding of either the philosophy of or method of verification.

B. Varying interpretation of I/V requirements and expectations by station groups has led to inconsistent implementation and confusion among personnel.

C. Continuous communication of the intent of and expectations for I/V has not taken place.

RECOMMENDATIONS - I/V Policy

A. A revised Catawba Site I/V policy should be in place by 6/1/92.

B. Management should establish an I/V Implementation Team by 3/15/92 with representatives from all station work groups involved in I/V, including Operations, Instrument and Electrical, Chemistry, System Engineering, Training Services, and Mechanical Maintenance. The CPT should be represented on the team. The I/V team should be charged with developing a implementation plan by 5/1/92 and carrying it out.

C. The Catawba I/V policy should be consistent with the technical guidance set forth in the Department Directive.

D. Catawba policy should always call for self-verification but only impose DV or SV when required by regulation or safety significance.

E. The team should determine the most effective way to train on the techniques of "separate" and "double" verification, including classroom, task lists, qualification standards, etc.

F. The implementation plan should ensure consistency in when, where, and how DV and SV are performed at Catawba, both within work groups and between work groups.

C. The I/V team should determine how SV and DV will be implemented in procedures and should include representative procedure writers and users.

CONCLUSIONS - Problem Awareness

A. During the survey, very few people were aware of mispositioning events occurring; however, many said that they wanted to hear about the events in a concise manner.

B. Many work groups believed that they did not have a problem with mispositioning events, they believed that other work groups had a problem.

RECOMMENDATIONS - Problem Awareness

CPT will continue to emphasize broad awareness within the plant staff of the significance of this problem and the occurrence of mispositioning events. Management and supervision should reinforce this effort at every opportunity.

CONCLUSIONS - Procedure Deficiencies

A. Eight (8) out of 14 events involved a procedure deficiency. Six (6) of the 8 had missing guidance/information.

B. Previously identified procedure deficiencies have gone uncorrected because the change process is perceived to be too burdensome on the initiator, take too long, and often not effective.

C. Procedure validation and verification is not widely implemented but could help identify and eliminate the type of procedure deficiencies that lead to mispositioning events, i.e., due to missing information.

RECOMMENDATIONS - Procedure Deficiencies

A. The procedure change process, within all work groups, should be effective - it should encourage reporting of deficiencies and should promptly respond to reported problems.

B. A formal procedure and procedure change validation and verification process should be widely and consistently implemented.

C. Strong partnerships should be established between procedure writers and users.

D. Procedure problems identified in mispositioning events should be assigned priority for resolution before the procedure is used next.

E. The following recommendations result from the CPT's investigations of recent events and address the immediate and broader implications of these problems.

1. Revise the Performance NI and NV check valve test procedures to improve clarity and reduce complexity in the valve alignments.

Other procedures that include multiple but conflicting valve alignments should also be reviewed and improved as needed.

2. Revise the operations procedure for re-alignment of the Cation Bed demineralizer to include needed guidance.

3. Revise the IAE procedure which calls for closure of 2SB-14 to specifically include confirmation from the execution group (operations) that the valve is closed.

   Review other, similar procedures to identify where action is needed by other work groups to accomplish a step so that positive confirmation of the step is obtained.

4. Develop procedural guidance for ensuring proper system alignment when operating the NS pump in Modes 5 and 6.

   Review other, similar procedures to ensure that adequate guidance is provided for system/equipment operation for all plant conditions in which it occurs.

5. Develop appropriate procedure guidance to ensure opening of EKPH and EKPG breaker #22 as needed during maintenance on VC AHUs.

6. Revise Containment Isolation procedures to include the Unit 2 S/G accessways.

7. Revise the chemistry procedure for BB demineralizer to include guidance for hopper removal and flange installation.

   Evaluate the need for and incorporate as needed individual procedure step signoffs in chemistry procedures.

COMPONENT POSITIONING TEAM
SUMMARY OF PAST MEETINGS

December 2: Discussed teams mission, list of customers, those involved inmispcsiting events: doers, tellers, inadvertent doers, etc. Four objectives defined: increased awareness of the problem, develop measurement tool, analyze mispositioning events, both past and present.

December 12: Discussed communication/awareness efforts - develop letter over station manager's signature; discuss issue with each shift manager. Developed definition of Component Mispositioning". Schedules team training. Established investigation duty rotation.

January 15, 1992: Noted several recent mispositioning events: turbine roll, NS pump start, 2SV-66, 2SM-103, breaker 1EKPH 22, SG accessway, NI pump runout. Charged Investigation sub-committee with analyzing these events. Established purpose of Investigation and Analysis sub-committees. Distribute new department IV directive for review.

January 22: ROADMAP problem solving training.

January 27, 28: Root Cause Analysis training.

February 3 (all day): Investigation and Analysis subcommittees met to complete event packages.

February 4 (all day): Full team met to review and analyze 14 recent events and 16 older events.

February 5 (all day): team met to identify recurring problems/issues from 30 events. Identified 6 recurring issues: poor work practices, verification inadequacies, procedure deficiencies, outage related events, R&R events, hardware problems. Team members dispersed to survey plant staff on conclusions.

February 6 (all day): Discussed results of survey, captured feedback. Evaluated results and developed conclusions on "Ineffective Verification" issue. Developed conclusions and recommendations on department directive on IV.

February 11: Discussed pros and cons of measuring mispositionings vs correct positionings. Defined success as Zero Mispositionings. Discussed "Procedure deficiencies" issue and developed conclusions and recommendations.

February 19: Discussed and refined recommendations for self-verification promotion campaign and IV implementation.

February 26: Discussed IV implementation plan milestones. Discussed ways to disseminate information o mispositioning events.

March 4: Team viewed video tape of NRC management meeting at Oconee. Reviewed draft "CPT Activities and Results" and "CPT Conclusions and Recommendations" to-date.

March 11: Discussed daily review of PIP log and assigned work groups to CPT members. Discussed and refined recommendations on "Procedure Deficiencies". Heard management's request for CPT to lead IV implementation effort.

ATTACHMENT 4

DUKE POWER COMPANY
REPLY TO NOTICE OF VIOLATION 413,414/91-027

ATTACHMENT 4

IMPLEMENTATION OF REVISED INDEPENDENT VERIFICATION POLICY

The Nuclear Generation Department has recently issued new guidance for performing Independent Verification (I/V) at all three Duke Power Company nuclear stations. (See attached Department Directive.) Implementation of this guidance at Catawba is the responsibility of the I/V Implementation Team created by station management. The objectives of the team are to define and carry out an effective plan that maximizes clarity, consistency, understanding, and effectiveness across the Catawba site. Adherence to the provisions of the Department Directive is to be ensured as well.

As a result of its investigations into recent mispositioning events and discussions with many employees, the Component Positioning Team (CPT) has made the following recommendations to station management:

RECOMMENDATIONS - Self-Verification

A. The effort to build self-verification should stay out of the classroom. It should be taught, coached, and promoted by management and supervision.

B. The "STAR" concept (stop, think, act, review) should be incorporated in place of "PLEASE LISTEN".

C. Employees should hear about the consequences of not using self-verification, i.e., what can happen. The CPT will be communicating mispositioning events that involve poor self-verification.

D. Self-verification should be covered in crew tailgate meetings as another element of the expected work evolution.

RECOMMENDATIONS - I/V Policy

A. A revised Catawba Site I/V policy should be in place by 6/1/92.

B. Management should establish an I/V Implementation Team by 3/15/92 with representatives from all station work groups involved in I/V, including Operations, Instrument and Electrical, Chemistry, System Engineering, Training Services, and Mechanical Maintenance. The CPT should be

represented on the team. The I/V team should be charged with developing a implementation plan by 5/1/92 and carrying it out.

C. The Catawba I/V policy should be consistent with the technical guidance set forth in the Department Directive.

D. Catawba policy should always call for self-verification but only impose DV or SV when required by regulation or safety significance.

E. The team should determine the most effective way to train on the techniques of "separate" and "double" verification, including classroom, task lists, qualification standards, etc.

F. The implementation plan should ensure consistency in when, where, and how SV and DV are performed at Catawba, both within work groups and between work groups.

G. The I/V team should determine how SV and DV will be implemented in procedures and should include representative procedure writers and users.

Action Taken on Recommendations

Catawba Nuclear Station management has accepted these recommendations and has established an implementation date of 5/1/92.

Nuclear Generation Department Directive 3.1.1(O)

Revision 6 Date 12/19/91

Approved: _____
General Manager, Nuclear Services

DUKE POWER COMPANY
NUCLEAR GENERATION DEPARTMENT
INDEPENDENT VERIFICATION

1.0 Purpose

To provide instructions for the use of Independent Verification (IV) at Duke Power Company nuclear stations in establishing a consistent verification program. Independent Verification recognizes the human element of component operation; that is, any individual, no matter how proficient and conscientious, can make a mistake. Self-checking techniques should be promoted to ensure an ingrained work ethic where a worker independently and positively identifies the correct unit, train, and/or component, reviews the intended action and expected response before performing the task, and then, verifies the action performed was correct. Independent Verification will help reduce human error by ensuring that:

(1) An applicable system or component being Removed From or Returned To operability is the correct one and is in the position or condition required by the procedure or work order.

(2) An applicable system or component being positioned or verified per station procedure or work order is the correct one and is in the correct position or condition.

2.0 References

2.1 INPO Good Practice OP-214, Independent Verification Rev 2

2.2 IE Information Notice 84-51, Independent Verification

3.0 Definitions

3.1 Independent Verification

In general, the Independent Verification process is a documented check by a second person which helps to ensure the correct condition or position of plant components. Included in the Independent Verification process are the following two techniques:

3.1.1 Separate Verification

A verification process which requires some time interval between the actions of the 'Doer' and the verification process of the 'Verifier'.The time interval ensures individuals act separately and independently. The 'Doer' performs specific actions per station procedures and the 'Verifier' checks the actions of the 'Doer'and verifies the actions were correct.

3.1.2 Double Verification

A verification process in which the 'Doer' and 'Verifier' must independently decide that an action is correct prior to the 'Doer' performing any action. Once an agreement is reached that the action is proper and that it is to be done, the 'Doer' performs the specific action per station procedures. The decisions reached independently concur that:

(a) The correct component is identified.

(b) The action to be taken is correct.

(c) The action performed was correct.

3.2 Self Verification

An ingrained work practice where a worker independently and positively identifies the correct unit, train, and/or component, reviews the intended action and expected response before performing the task, and then, verifies the action performed was correct.

3.3 Operable

A system, subsystem, train, component or device shall be considered OPERABLE when it is capable of performing its intended functions.

3.4 Supervisor

Individual directing the work activity. May include the following:

(1) Crew supervisor/relief supervisor
(2) Responsible system/component engineer or engineer with specific assignment
(3) Technician temporarily working in a supervisory position.

4.0 Responsibilities

4.1 Station Manager

4.1.1 Provides overall direction of the Independent Verification Program.

4.2 Superintendents and Managers

4.2.1 Have overall responsibility for determining those systems and/or components requiring Separate or Double Verification.

4.2.2 Have final responsibility for determination of procedure steps requiring Separate or Double Verification.

4.3 Supervision

4.3.1 Ensure that only qualified personnel perform Independent Verification as per Section 8.0.

4.3.2 Authorize deviations from normal verification practices as per Section 10.0.

4.3.3 Convey the importance of using self checking techniques. Periodically monitor personnel to ensure that self checking techniques are being practiced.

4.3.4 Resolve any discrepancies discovered in component status or alignment and ensure that the affected components are properly aligned or in the proper state.

4.3.5 Establish and provide training as necessary to plant and vendor personnel engaged in Independent Verification activities.

4.4 Training

4.4.1 Develop and conduct training of plant and vendor personnel engaged in Independent Verification activities under the guidance supplied from the Group Superintendents/Managers.

4.5 Individuals

4.5.1 Recognize the importance of the Independent Verification program and accept the responsibilities associated with performing Independent Verification.

4.5.2 Utilize self checking techniques in performing their Independent Verification tasks.

4.5.3 Properly maintain any required documentation of Independent Verification activities.

4.5.4 Identify and report labeling and/or procedural and/or component status discrepancies.

5.0 Applicability

5.1 All breakers, valves, and other components which meet the criteria established in Section 5.2 will be independently verified to be in the correct position/condition utilizing Separate or Double verification techniques as described in Sections 5.3 and 5.4.

5.2 Independent Verification applies to the following:

(1) Removal from and restoration to operability of all systems or components which affect the ability of a system to perform a safety related function.

(2) Systems and equipment which if improperly aligned, could result in the release of radioactive liquids or gases from the site.

(3) Valves, breakers, and other components in fire protection system major flow paths, including fire fighting water supply and storage, halon and carbon dioxide storage systems, fire detection systems, and components necessary for the system to function and supply the extinguishing media to the fire.

5.3 The following are suggestions as to when Separate Verification should be used. Actual practice may vary depending upon Site Management discretion.

(1) Initial system lineups conducted following an outage where the system status was not maintained in the normal operating lineup. Specific lists of applicable systems should be developed.

(2) Normal system lineup periodic checks during operating conditions. In this case, the individual performing the check of the original lineup is considered to be the Separate Verifier and a single check of valve position is sufficient.

(3) Supervision, or in the case of NSMs the responsible Engineer, may choose to use Separate Verification techniques when personnel are not available to perform a Double Verification. This decision will be:

(a) Documented in the affected procedure or work order.

(b) Approved by a supervisor, temporary supervisor, or higher.

5.4 The following are suggestions as to when Double Verification should be used. Actual practice may vary depending upon Site Management discretion.

(1) If the system or component is being removed from service for the placement of safety tags.

(2) If the system or component is being returned to service or restored to a standby lineup, and safety tags are being removed.

(3) To ensure the correct installation and removal of temporary modifications to systems and components.

(4) Whenever locked valves and breakers are manipulated.

(5) When directed by specific procedures.

(6) Prior to the operation, removal, or installation of wires, jumpers, switches,or other connections or components.

(7) Prior to the operation of valves, breakers, and other components where the inappropriate positioning could:

(a) Adversely affect system operation or containment integrity.

(b) Result in an uncontrolled radioactive material release to the environment.

(8) On removal or restoration actions performed as an integral part of the following procedures:

(a) Chemistry
(b) Radiation Protection
(c) Operating
(d) Instrument and Electrical
(e) Mechanical Maintenance
(f) Periodic Tests
(g) Removal and Restoration
(h) Power Delivery Department
(i) All Temporary Procedures (TO, TN, TM, TI, etc.)

(9) Removal or restoration actions performed on applicable equipment using a station work order where this method is chosen to document the performance of the Independent Verification process.

(10) Planned releases of radioactive liquids or gases.

5.5 Independent Verification is not required if work is performed while the component(s) are isolated (not capable of causing adverse plant conditions) and functionally verified prior to restoration.

6.0 Verification Process

6.1 Self Verification

In performing Independent Verifications utilizing either Separate or Double Verification, Self Checking Techniques (i.e. PLEASE) shall be utilized as necessary. The techniques consist of:

(1)	**P repare**	Have all materials needed to locate the equipment. Take time to pause and consider the intended action. Be aggressively suspicious.
(2)	**L ocate**	Identify the correct component/train/unit using visual, audible, and tactile senses.
(3)	**E xamine**	Touch, or in the case of energized electrical wires or circuits, point to the component/train/unit, but do not operate. Reconfirm the components identity.
(4)	**A nticipate**	Consider the expected responses from the actions about to be taken (e.g., indications, alarms, noise, heat, vibration, etc.). Consider what actions to take if the expected responses are not received.
(5)	**S tart**	Lift the electrical wire, place the jumper, manipulate the component, etc.
(6)	**E valuate**	Ensure that the action taken has resulted in the expected response. Be ready to react to unexpected results.

6.2 **Separate Verification** - Requires some time interval between the actions of the 'Doer' and the verification process of the 'Verifier'. Refer to step 3.1.1 for complete definition. The following are correct ways of performing Separate Verification.

6.2.1 After identifying the correct component, the 'Doer' checks the component position locally and, as necessary, places the component in the required position. The 'Verifier' then checks the component position locally and verifies the action of the 'Doer' was correct.

6.2.2 After identifying the correct component, the 'Doer' checks the component position locally and, as necessary, places the component in the required position. The 'Verifier' then checks a remote indication and verifies the action of the 'Doer' was correct.

6.2.3 After identifying the correct component, the 'Doer' checks the component position using remote indication and, as necessary, places the component in the required position. The 'Verifier' then checks the remote (or local) indication and verifies the action of the 'Doer' was correct.

6.3 **Double Verification** - The 'Doer' and the 'Verifier' must decide and agree that an action is correct prior to the 'Doer' performing any manipulations. Refer to step 3.1.2 for complete definition.

6.3.1 If the 'Doer' and 'Verifier' are unable to reach an agreement, then they will stop at that point and request assistance from their supervisor.

6.3.2 After agreement has been reached identifying the the correct component **AND** that the action about to be taken is correct, the 'Doer' checks the component and positions as required while the 'Verifier' watches (or helps if the component is hard to operate) and verifies the actions of the 'Doer' are correct.

6.4 When performing Independent Verification using either Separate or Double Verification techniques, the 'Verifier' should use a hands on approach where appropriate to verify the action taken by the 'Doer' was correct.

6.5 For procedure steps requiring documented Independent Verification, the affected portions of the procedure are to be in the possession of the individuals while performing or observing the actions. In special cases, it may be necessary for a copy of the affected portions of the procedure to be in the posession of the individual with the signature copy residing elsewhere as dicussed in section 9.4 (2).

6.6 If a discrepancy is discovered while verifying a condition, the individual discovering the discrepancy will immediately contact his/her supervisor for resolution.

6.7 During the performance of verifications, positionings, and Independent Verifications, all components will be checked to ensure the component identification label is attached properly and in good condition. The individual discovering a labeling deficiency will initiate actions to correct the condition in accordance with labeling directives.

7.0 Implementation

The following guidelines should be taken into consideration when performing Independent Verifications:

7.1 When Double Verification of a component/condition is required and the two individuals performing the task must physically work together, the thought process of the 'Doer' and 'Verifier' must be completely separate and independent. The individual performing the 'verification' must not rely upon the observed actions of the other individual to determine the correct component identification, position, or condition. Verifier independence must be maintained to ensure the integrity or the Independent Verification process by not relying on the actions or statements of each other.

7.2 When a Separate Verification is required, the time interval should be less than one shift to reduce the possibility of component mispositioning errors and facilitate the smooth transfer of plant status during shift turnover.

7.3 When using remote indicators to determine component status, station personnel must ensure through means, such as periodic testing, that the device being used provides a positive and definite indication of the component's status and functional ability. (i.e., Performance and/or I&E testing proves indications are correct within normal limits.)

7.4 If a system operating condition prohibits closing a throttled component to verify its position and the act of fully opening the component would not unduly upset the system, the number of turns throttled closed from full open may be used in lieu of the normal method of counting the turns open from fully closed.

7.5 When the operation of a throttled component is necessary to determine its position, having a verifier observe the initial component operator's action is preferable to having both persons individually operate the component. This second component operation would effectively nullify the first and would therefore serve no purpose.

7.6 If a system operating condition prohibits moving a component to verify its position, the operating system parameters may be used to perform the verification. Care must be exercised when using process parameters as a second check of a component's position due to possible alternate flow paths or other conditions that could make this method unreliable.

7.7 The Technical Specification requirements relating to the required open or closed positions of certain components must be considered on all component manipulations. If the act of verifying the position of a component violates the Technical Specification's designated position for the plant operating condition, positive control of the operability of the component must be maintained at all times during the component manipulation. Technical Specification requirements should be reviewed for applicability prior to component manipulation.

7.8 Alternate verification techniques may be used if specified by approved procedures or approved by supervisory personnel. Examples include the following and are subject to normal limitations and precautions:

(1) Use of process parameters (i.e., flow, pressure, flow vibrations, current, voltage, potential lamps, etc.)

(2) Observation of an acceptably marked valve stem to aid in the determination of valve position.

(3) Authorized scribe marks on valve stems, properly labeled with the throttled position.

(4) Functional mechanical position indicators.

7.9 Verification techniques for valve position will vary depending on the particular valve type, make, or model.

(1) The position of many valves cannot be determined visually and may require movement of the valve to verify position.

(2) Valve orientation must be considered when visually establishing the position of the valve.

(3) Butterfly valves may require the use of position indication in conjunction with the physical reposition to ensure that it has not moved past the seat.

(4) Observation of the relative height of a valve stem will NOT be used as the sole determinant of a valve's position.

(5) Position indicators are subject to equipment failures that could result in display of the incorrect status of a valve or breaker.

(a) If possible, one check should be performed locally at the component to avoid common failure problems.

(b) The use of remote position indicators is acceptable for both verifications because periodic testing proves the remote indicators are accurate.

(c) If remote position indicators are used, personnel should agree to use different remote indicators if available.

(6) If remote position indication is being used to verify the position of one or more valves, the position will be verified prior to deenergizing the control power or motor power because of the possible loss of remote position indication when deenergized.

7.10 Verification of Unlocked Valves.

(1) Valves verified open will be manipulated in the closed direction only as necesaary to remove any slack from the operating mechanism and verify valve stem movement. The valve will then be fully opened, subject to normal precautions on backseating valves.

(2) Valves verified closed should be manipulated in the closed direction only. If necessary, to verify the valve is fully closed and not binding or difficult to operate, open direction may be used. Care must be exercised to avoid overtorquing the valve operator and damaging the valve seat. If any doubt exists, supervision should be contacted for resolution.

(3) Valves verified in a throttled position normally will be manipulated in the closed direction, with the operator counting the number of turns required to fully close the valve. The operator will then reopen the valve to its properly throttled position.

7.11 Verification of locked valves will be performed as in Section 7.10 (Unlocked Valves). In addition the following guidance is provided:

(1) Locking mechanisms are to be removed if necessary to determine the position of the valve. Perform an Independent Verification of the re-installation of the locking device.

(2) On initial valve lineups the locking device will be installed properly and documented on the appropriate locked valve addendum in accordance with the locked valve/breaker program. Perform an Independent Verification of the installation of the locking device.

7.12 Electrical switches and breakers often have several positions. Assure that the specified position has been obtained.

7.13 When deactivating a power source, a thorough review to determine all equipment that will be affected must be performed.

7.14 Station specific components that require special attention to determine the operational status because of design or installation factors should be identified to station personnel through training or within applicable procedures. Reverse acting valve actuators are one example of this type component.

7.15 Many components will require special attention when using visual means to determine status. Precautionary instructions and appropriate training are to be given to station personnel for these instances.

7.16 Circuit breaker verifications will include a local inspection of the breaker, control power switches or fuses, and other equipment as outlined below.

(1) To verify a breaker is removed from service, the operator will:

(a) Ensure the control power is isolated, if required, by inspecting the appropriate switches and fuses or fuse blocks.

(b) Ensure the breaker is fully racked out, as applicable.

(2) To verify a breaker is restored to service the operator will:

(a) Ensure the control power is energized by inspecting the appropriate switches, indicating lights, and fuses or fuse blocks.

(b) Ensure the breaker is fully racked in.

(c) Ensure the closing springs charged and the recharging motor on, as applicable.

(d) Ensure the cubicle door is in good condition with all fasteners tight.

7.17 Locked circuit breakers will be verified independently by inspection of the locking device for proper installation. The position will be documented on the appropriate locked breaker list in accordance with the Locked Breaker Program.

7.18 Removal and Restoration procedures shall:

(1) Give consideration to the sequence of required actions so as to preclude undesirable effects during the process.

(2) Clearly indicate the affected valves that require Independent Verification.

7.19 The following are additional general methods to help in identifying components while performing IV:

(1) Comparison of equipment identification name/number on a work order with that on the equipment.

(2) Key control, issuance and return, where the key is specific to a unit and to a system.

(3) Use caution in the use of plant drawings and valve location books. All plant drawings do NOT show the physical layout of the system.

(4) Comparison of unit, train, or component designations to the designations in the applicable procedure.

8.0 Personnel

8.1 For the purposes of this directive, a qualified individual is one who possesses the knowledge to determine:

(1) The correct system or component is properly identified and properly removed from operability according to approved procedures,

OR

(2) The system or component is properly aligned for the desired operating mode according to approved procedures.

8.2 Independent Verification (IV) must be performed by individuals who are qualified to perform IV. These individuals may be from the same work group or another section who have completed approved Independent Verification training (ETQS or other means).

(1) In addition to IV Qualification, the 'Doer' must be qualified, or in the case of training, be under the direction of an individual qualified on the job task/component/system.

(2) The 'Verifier' will be IV Qualified but may or may not be qualified on the job task/component/system.

9.0 Procedures

9.1 Written procedures or documentation sheets are required when conducting activities where Independent Verification is applied.

9.2 The requirement for a procedure step(s), procedure valve checklist or other procedure attachments, and work orders to receive Independent Verification must be clearly identified in the affected document by means such as:

(1) Provisions for double sign off of the affected procedure steps, procedure attachments, or work orders. The step may be identified by the use of "SV" for Separate Verification or a "DV" for Double Verification.

(2) Supplementing valve checklists which are labeled "Verification Checklist". In most cases this would indicate Separate Verification was to be used.

(3) Appropriate footnoting of procedure steps or specific valves within a checklist which receive Independent Verification.

9.3 Station specific directives are to clearly define the methods utilized to all personnel using the procedures or work orders.

9.4 Personnel signing the documentation for Independent Verification must have:

(1) Either performed or verified the action required by the specific procedure step, valve checklists, or work request.

OR

(2) Been designated by station management to sign the documentation in the absence of the individual actually performing or observing the action.(e.g., A Control Room Operator (CRO) may sign a procedure step upon receiving the status of the affected component verbally from a Non-Licensed Operator (NLO) who is performing or observing the action at a remote location).

When this method is used to document Independent Verification, both of the individuals are to be indicated in the signature. For the above example, this would be accomplished in a manner such as NLO by CRO, NLO/CRO, or other appropriate means. Station specific directives are to clearly define the acceptable alternatives to all personnel signing the Independent Verification document.

10.0 Exceptions

Independent Verification may be waived under any of the following situations with appropriate supervisory approval and documentation:

(1) If it would result in a significant personnel radiation exposure as defined below:

(a) Individual radiation exposure of greater than 10 mrem for a single Independent Verification.

(b) Access to an area with a dose rate equal to or greater than 1 rem/hour.

(c) Procedures containing several single Independent Verification steps, each with high exposures but less than the above exposure limits should be considered for being waived if exposure from Independent Verification would exceed 100 mrem per week.

(2) In situations that present a significant personnel safety risk. Station management is to evaluate and determine these situations.

(3) If valves perform a safety function which receive an automatic signal to move to their proper safety position, unless these valves are removed from operability in a manner that would prevent automatic actuation.

(4) On general vent and drain valves which would NOT prevent a safety related system from performing its safety function.

(5) Under emergency conditions.

ATTACHMENT 5

Managing For Excellence

An Introduction To
Duke Power's
Process for Improvement

The introducion for *Managing Total Quality* was written
by 3M Quality Management Services and edited
by Duke Power for *Managing For Excellence*.