

Arizona Nuclear Power Project

SPEER 07-02-019
MODIFICATIONS TO VALVES SGA UV134 AND SGA UV138
RENDER 2AFA-P01 ON 11/27/87

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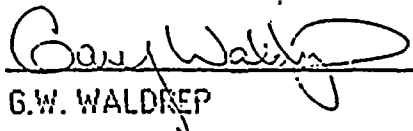


SPEER 87-02-019
MODIFICATIONS TO VALVES SGA UY134 AND SGA UY138
RENDER 2AFA-P01 ON 11/27/87

ON THURSDAY, JANUARY 28, 1988, THE FOLLOWING PEOPLE MET AND DISCUSSED THIS REPORT WITH PARTICULAR EMPHASIS ON THE CONCERNS AND CORRECTIVE ACTIONS.

• J.G. HAYNES
• J.D. DRISCOLL
• J.M. ALLEN
• J. MINNICKS (for O.J. ZERINGUE)
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• J.E. ALLEN
• R.J. ADNEY (for R.M. BUTLER)
• K.M. JOHNSON
• G.W. WALDREP

✓ ALL PRESENT CONCURRED WITH THE REPORT WITH MINOR REVISIONS. THESE HAVE BEEN INCORPORATED INTO THE REPORT.


G.W. WALDREP 2/12/88
DATE



**SPECIAL PLANT EVENT EVALUATION REPORT #87-02-019
MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87**

EVENT DESCRIPTION:

On November 27, 1987, 2AFA-P01 (Essential Turbine-Driven Auxiliary Feedpump "A") failed to reach the required speed during performance of the monthly surveillance test 42ST-2AF02 (STWO 259054). At 0220, the pump was declared inoperable, and T.S. LCO 3.7.1.2 entered. LCO 3.6.3 was also applicable but was not entered (Concern #5). Since the initial test utilized the steam supply from #1 S/G, valve SGA UV134, a second test was performed using the #2 S/G steam supply valve SGA UV138. The turbine attained full speed as required which indicated that the problem was associated with steam supply valve SGA UV134. During subsequent troubleshooting, it was also discovered that the solenoid bypass valve SGA UV134A, which also supplies steam to the feedpump turbine would not actuate. Work Orders were written to troubleshoot SGA UV134 and to rework SGA UV134A.

During the troubleshooting of SG-UV134, it was discovered that the limit switch rotor in the Limitorque operator controlling the AFA P01 turbine ramp-up circuit was positioned such that it would not make up as required when the valve was opened (Concern #1). The pump was again restarted using SGA UV138, but on this attempt, the pump failed to reach the required speed. It was determined that SGA UV138 had the same improper limit switch setting causing inconsistent actuation of the ramp circuit in the turbine control system. The System Engineer was consulted and indicated that the open limit switch rotor of SGA UV134 and SGA UV138 had been recently adjusted (lowered) per EER 87-SG-117 in all three units. After troubleshooting which included raising the #1 rotor up 53, the Shift Supervisor requested that the electricians lower the Rotor #3 setting to equal or below the setting of Rotor #1. The electricians lowered the Rotor #3 setting on both valves, but did not lower them to the Rotor #1 position (Concern #3). The electricians observed several tests of the valves and the ramp circuit contact was made up in every case with the valve drifting past the Rotor #1 setting. They then notified the Shift Supervisor that all work was complete. The Shift Supervisor apprised the other two Unit's of the potential problem with the turbine-driven auxiliary feedpumps, since the EER 87-SG-117 addressed all three units.

On November 29, 1987, EER 87-SG-200 was dispositioned which required the Rotor #3 setting to be slightly lower than the Rotor #1 setting.



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RENDER 2AFA-P01 INOPERABLE ON 11/27/87

EVENT DESCRIPTION (Continued)

The Shift Supervisor believed this adjustment had already been accomplished under W.O. 262065 on 11/27/87 and instructed that another 42ST-2AF02 be performed.

Based on the successful completion of the ST and the EER, which justified the changes he thought had occurred, the Shift Supervisor declared AFA-P01 operable at approximately 1500 on 11/29/87. The work order which adjusted the limit switch rotors was not reviewed by the Control Room, nor did the Shift Supervisor request to review the package at that time (Concern #7).

On December 16, 1987, while investigating the initial event, it was discovered upon review of the work packages, that Unit 2 still had the Rotor #3 set higher than Rotor #1 for both valves. Plant management determined that another 42ST-2AF02 should be run to assure that the pump was operable and this was completed satisfactorily. Work Order 265620 was written to verify limit switch rotor positions and adjust the Rotor #3 settings for both valves per EER 87-SG-200. This was accomplished on 12/16/87 and Section XI retests and 42ST-2AF02 were performed satisfactorily following this adjustment.

Following notification of the limit switch rotor problem, Unit 1 initiated PRO 1-87-204 since the modification was done to SGA UV136 on 9/28/87 when the Unit was in Mode 1 and bound by LCO 3.7.1.2. The adjustment of SGA UV134 was made after the unit was shutdown and in a mode where LCO 3.7.1.2 is not applicable. Work requests were initiated on 11/29/87 to reset the limit switches for both valves in Unit 1 per EER 87-SG-200.

Upon notification of the potential problem on 11/29/87, Unit 3 determined that 3AFA-P01 was operable based on successful performance of 43ST-3AF02 on 11/6/87 and 11/19/87 (Concern #2). On 11/30/87, a review was made of the work packages which adjusted the open limit switch rotors. Based on this review, it was shown that SGA UV136 had the correct contact development for the ramp circuit due to additional

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EVENT DESCRIPTION (Continued)

guidance which was provided in the work package via EER 85-SI-119 (Concern #3). The ramp circuit limit switch rotor of SGA UV134 was out of adjustment by 4% and was corrected on 12/1/87 based on the guidance provided by EER 87-SG-200.

The retest requirements for the work orders in all three units which initially adjusted the open limit switch rotors per EER 87-SG-117 did not include a requirement to perform the surveillance test on the auxiliary feedpump. The only retests performed were the Section XI tests on the valves (Concern #4).



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

PERSONNEL PERFORMANCE EVALUATION:

Main Steam (SG) System Engineer

The Main Steam System Engineer did not perform adequate research regarding the effect of changing just the Rotor #1 contact. Since these valves are a boundary between Auxiliary Feedwater and Main Steam systems, a cross discipline review by the AF System Engineer would have been prudent and may have caught the discrepancy.

Operations Department Personnel

The Shift Supervisor did not follow 73PR-92204 regarding control of Limitorque Operator limit switch changes. Additionally, AFA-P01 was subsequently declared operable without ensuring that CER 87-SG-200 had been implemented. The Assistant Shift Supervisors failed to ensure adequate retests were performed following original adjustments per EER-SG-117. All retest specified by the work order were performed but not all necessary retests per the Section XI Valve Program were completed. In addition, when the valves were declared inoperable following initial identification of the limit switch rotor problem in Unit 2, T.S. 3.6.3 was not entered as required.

Shift Technical Advisors

The Shift Technical Advisor should have notified Work Control, either via a work request, or verbally, to ensure that corrective actions specified in EER 87-SG-200 were implemented in Unit 2 prior to declaring the pump operable. The STAs should have caught the retest discrepancies during their review of the applicable TSCCRs for the original setpoint modification. In addition, when the valves were declared inoperable following initial identification of the limit switch rotor problem in Unit 2, the STA did not determine that T.S. 3.6.3 was not entered as required.



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Work Control Personnel

The Planner/Coordinators did not technically review the work packages to ensure that there was not any impact to the plant due to the work performed. Additionally, the Planner/Coordinators did not specify the proper retests for the work performed. The packages to perform the same adjustments to identical valves in all three Units were not consistent in including information on the #3 Rotor.

U-2 Electrical Maintenance

Electrical Maintenance personnel did not set the rotor switches as directed by the Shift Supervisor and failed to ensure that the work package was amended to direct what adjustments should be made following troubleshooting of the problem.



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MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

SEQUENCE OF EVENTS SUMMARY

DATE	DESCRIPTION
6/24/87	During MOVATS testing of SGA UV134 and SGA UV138, it was found that valves were seating against backseat. EER 87-SG-117 initiated.
6/31/87	Evaluations Engineering determined, based on the Vendor's recommendation, that valve should not strike backseat and Rotor #1 should be adjusted to accomplish this. EER 87-SG-117 dispositioned and work request written for all three Units.
9/4/87	Unit 3 valve SGA UV136 Rotor #1 and Rotor #3 adjusted with "as left" position of both Rotors set at 90.1% open (WO 246494). Section XI retests completed satisfactorily.
9/4/87	Unit 3 valve SGA UV134 Rotor #1 adjusted with "as left" position set at 95% open. Rotor #3 was not changed and left set at 97% open (WO 246461). Section XI retests completed satisfactorily.
9/17/87	43ST-3AF02 passed utilizing both valves (STWO 248692). (For initial Mode 4 entry).
9/23/87	Unit 1 valve SGA UV138 Rotor #1 adjusted with "as left" position set at 86.2% open. Rotor #3 was not changed and left set at 97.2% open (WO 206013). Section XI retests completed satisfactorily.
10/05/87	Unit 1 enters Mode 5.



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 MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
 RENDER 2AFA-PC1 INOPERABLE ON 11/27/87

SEQUENCE OF EVENTS SUMMARY (Continued)

DATE	DESCRIPTION
10/14/87	Unit 2 valve SGA UV138 Rotor #1 adjusted with "as left" position set at 76% open. Rotor #3 was not changed and left set at 88.8% open (WO 253586). Section XI retests completed satisfactorily.
10/15/87	Unit 2 valve SGA UV134 Rotor #1 adjusted with an "as left" position set at 65% open. Rotor #3 was not adjusted and left set at 80% open (WO 253587). Section XI retests completed satisfactorily.
10/31/87	42ST-2AF02 passed utilizing valve SGA UV138 (STWO 254701).
11/6/87	43ST-3AF02 passed utilizing valve SGA UV134 (STWO 256719).
11/9/87	Unit 1 valve SGA UV134 Rotor #1 adjusted with "as left" position set at 90% open. Rotor #3 was not changed and left set at 93% open (WO 206012). Section XI retests completed satisfactorily.
11/19/87	43ST-3AF02 passed utilizing valve SGA-134 (STWO 259103).
11/27/87	42ST-2AF02 fails utilizing SGA UV134. Operation utilizing SGA UV138 inconsistent. PRO generated and LCO 3.7.1.2 entered at 0220. Both valves limit switches adjusted per Shift Supervisor's direction and 42ST-2AF02 passes for each valve following adjustment.



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MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

SEQUENCE OF EVENTS SUMMARY (Continued)

DATE	DESCRIPTION
11/29/87	Based on resolution of EER 87-SG-200, and successful Section XI testing on the valves and 42ST-2AF02 (STWO 262026), AFA-P01 declared operable at approximately 1500 and the LCO exited at that time.
11/30/87	Unit 2 valve SGA UV134 Rotor #3 set per EER 87-SG-200 (WO 262667).
12/1/87	Unit 3 Section XI retests completed satisfactorily and 43ST-3AF02 passed utilizing each valve (STWO 261225).
12/2/87	Unit 1 adjust SGA UV134 and SGA UV138 (WO 262246) and schedules Section XI retests. 41ST-1AF02 unable to be performed in Mode 5.
12/16/87	Discovery that SGA UV134 and SGA UV138 still have Rotor #3 set higher than Rotor #1. WO 265620 corrected per EER 87-SG-200 and 42ST-2AF02 reperfomed using both valves.



SPECIAL PLANT EVENT EVALUATION REPORT #87-02-019
MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

CONCERN SUMMARY:

- 1.) EER 87-SG-117 did not contain any guidance regarding the setting of the #3 Rotor which was necessary to ensure correct operation of the AFA-P01 turbine.
- 2.) Although the problem was identified as applicable to Unit 3, no action was taken to declare AFA-P01 or SGA UV134 and SGA UV138 inoperable.
- 3.) The work packages for Unit 1 and Unit 2 did not contain instructions regarding the #3 Rotor. Only the work packages for Unit 3 provided an EER addressing the #3 Rotor. No steps were placed in any of the work packages to specifically address methodology and setpoints for the #3 Rotor.
- 4.) The proper retests were not done to ensure that the valves functioned as designed following the modification to limit switches per EER 87-SG-177.
- 5.) The valves SGA UV134 and SGA UV138 were not declared inoperable pursuant to LCO 3.6.3 as required.
- 6.) The Shift Supervisor requested the electricians to lower the Rotor #3 setting to equal or below the setting of the #1 Rotor for both SGA UV134 and SGA UV138. The electricians lowered the Rotor #3 for both valves but did not lower them to the Rotor #1 setting and documented in WD 262025 Amendment 6A. This resulted in the correct implementation of EER 87-SG-200 being delayed until 12/16/87.
- 7.) Based on the successful completion of 42ST-2AF02 (STWD 262028) and the disposition to EER 87-SG-200, the Shift Supervisor declared AFA-P01 operable at approximately 1500 on 11/29/87 without reviewing the Work Package which changed the #3 Rotor.

8.)



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

CONCERN #1:

EER 87-SG-117 did not include any guidance regarding the setting of the #3 Rotor which is necessary to ensure correct operation of the AFA-P01 turbine.

ACTION PLAN:

Determine the conditions which allowed the valve stop limit switch rotor to be adjusted without changing the ramp-circuit limit switch rotor.

REFERENCE DOCUMENT NUMBERS:

EER 87-SG-117, IEB 85-03

RESOLUTION/ANALYSIS:

During the MOVATS testing of these valves per IEB 85-03, it was observed that these valves were seating on the backseat. Engineering was notified via EER 87-SG-117 to evaluate this condition. After reviewing the valve design and through discussions with the Vendor (Anchor-Darling) it was determined that it was not advisable to allow the valve to strike the backseat. Due to the fast acting nature of the valve operator (Limitorque), backseating the valve could cause cracking of the stellite seat. Several methods were reviewed to determine the best way to prevent the backseating from occurring, including adjusting the stop limit switch, installing special packing for even loading, and modifying the operator for double compensation to absorb the shock in the outward direction. However, since the Vendor recommended no backseating, the limit switch adjustment was determined to be the best option.

An evaluation was performed indicating that 50% open on the steam supply valve was sufficient to provide 100% of the required steam flow (see EER 87-SG-117). The EER specified to set the stop limit switch to 60% open initially and stroke the valve to ensure that it did not strike the backseat. It also specified that the settin be as far open as possible while ensuring that it did not impact the backseat. The EER ws applicable to SG valves

134 and 138 in all three units.



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MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

RESOLUTION/ANALYSIS:(Continued)

In summary, the EER addressed the problem of backseating and specified the fix, to change the open limit switch setting. The EER ensured the valve would not be damaged during operation and that it would pass sufficient steam to ensure Auxiliary Feedwater Turbine Operability. Calculations were included which showed that at any valve position greater than 60% open, 100% of the required steam flow would pass through the turbine.

However, the EER did not address the effect of this limit switch setpoint change on any of the other limit switches within the Limitorque operator. Thus, the valves' interface with ERFDADS and the auxiliary feedwater turbine ramp circuitry was effectively disabled.

RECOMMENDED CORRECTIVE ACTION:

- 1.) Evaluations Engineering System Engineer to determine proper setpoints for Rotor #3 for SG valves UV134 and UV138 and incorporate these into all three Units as applicable.
- 2.) Evaluations Engineering to implement additional controls as stated below to insure proper level of review is performed on modifications to settings within Limitorque operators.
 - 2a. Develop an Engineering Evaluations Department Instruction to address the specific use of the EER process in addressing changes to setpoints within motor operators. This instruction should be applicable to all safety related motor operated valves.

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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87**

- All MOV changes will be documented in an EER as rework.
- Cross-discipline review (Engineering Evaluations-Electrical) is required for all changes to MOV settings.
- All EER's utilized to change or specify MOV setpoints must include any required retests.

The following requirements are specifically for those 33 valves currently in the MOVOT's program.

- 50.59 Reviews will be required for all changes to MOV's setpoints.
- A modified technical review checklist will be completed for all MOV setpoint changes.

- 2b. The process implemented in Item #1 above should be expanded to include all safety related valves, as well as other limit switch settings.
- 2c. Develop a procedure to control the motor operator database. This should be similar to the procedure for controlling the Authorized Material List.
- 2d. When all necessary MOV data is obtained and included into the motor operator database, the database should be incorporated into a design type document. After that, all changes to MOV settings will then be performed via the site mod process.
- 3.) Engineering should determine and specify the criteria for utilizing EERs in both repair and accept-as-is dispositions.
- 4.) Provide additional training to the Mechanical Systems Engineers regarding controls over changes within Limitorque operators.



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

RESPONSIBLE ORGANIZATION:

- 1.) Eval. Eng./G. Sowers; Work Control/J. Dennis, J. Scott, C. Churchman
- 2.) Eval. Eng. Manager/G.W. Sowers
 - 2a. Eval. Eng. Manager/G.W. Sowers
 - 2b. Eval. Eng. Manager/G.W. Sowers
 - 2c. Eval. Eng. Manager/G.W. Sowers
 - 2d. Eval. Eng. Manager/G.W. Sowers
- 3.) Eval. Eng. Manager/G.W. Sowers
- 4.) Eval. Eng. Manager/G.W. Sowers

DUE DATE/MODE RESTRAINT:

- 1.) Work complete in all 3 Units, retests complete in Unit 2 and Unit 3.
Unit 1 will perform retests when plant conditions allow.
- 2.)
 - 2a. 30 days following report approval/NONE
 - 2b. 90 days following report approval/NONE
 - 2c. 60 days following report approval/NONE
 - 2d. 180 days following report approval/NONE
- 3.) 30 days following report approval/NONE
- 4.) 30 days following report approval/NONE



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MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

CONCERN #2

Although the problem was identified as applicable to Unit 3, no action was taken to declare AFA-P01 or SGA UV134 and SGA UV138 inoperable.

ACTION PLAN:

Review decision making process in Unit 3 regarding OPERABILITY determination.

REFERENCE DOCUMENT NUMBERS:

WO's 246461, 246494, Unit Log 11/29/87, 43ST-#AF02

RESOLUTION/ANALYSIS:

The Unit 3 Shift Supervisor was notified by the Unit 2 Shift Supervisor on November 25 at 10:00 of a potential problem with SGA UV134 and SGA UV138. A review of past ST's was completed, identifying that both valves had been utilized in successful tests of AFA P01 per 43ST-3AF02 since the modification. Based on the results of these tests, it was determined that the valves were OPERABLE. The Operations staff also began a search for the work packages which modified the limit switch settings of the Unit 3 valves per EER 87-SG-117. The work package for SGA UV138 was found on November 29, 1987. It showed that both of the affected rotors had been adjusted correctly. It was also noted that the work package for 3JSGA-UV138 contained EER 85-SI-139 which specified the resetting of the #3 Rotor containing the ERFDADS contact whenever the stop switch was lowered. Although the work package for SGA UV134 could not be initially located, the decision was made that the valves remained operable. This was based on the ST's and the SGA UV138 work package, and on the assumption that the work package for SGA UV134 would be the same as SGA UV138. This was discussed with the Resident NRC Inspector and he stressed the need to find the package for SGA UV134 as soon as possible.

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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

RESOLUTION/ANALYSIS:(Continued)

The work package for SG-134 was located on Monday, November 30, 1987 and was found to be inconsistent with EER 87-SG-200, which had been dispositioned after the event in Unit 2. It was noted however, that although Rotor #3 was set higher than Rotor #2, the difference was approximately 4%. The limit switch rotor was adjusted per EER 87-SG-200 on November 30, and all retests completed on December 1 (WO 262887).

SUMMARY

Although efforts to locate the associated work packages for Unit 3 were slow due to it being a Holiday weekend, the actions taken were both reasonable and prudent based on the data available.

In this case, the operability of valve SGA UV134 was based on the successful completion of the Section XI and 435T-3AF02 as well as the assumption that the Rotor #3 would be made up consistently due to the close proximity of Rotor #3 setting to the valve stop setting on Rotor #1. As further assurance that the valve would perform as designed and be consistent with EER 87-SG-200, Rotor #3 was reset expediently following discovery of the Rotor #3 offset.

RECOMMENDED CORRECTIVE ACTION:

None

RESPONSIBLE ORGANIZATIONS:

None

MODE RESTRAINT/DUE DATE:

N/A

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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

CONCERN #3:

The work packages for Unit 1 and 2 did not contain any guidance regarding setting of Rotor #3. In addition, only the work packages for the valves in Unit 3 contained EER 85-SI-189 addressing the #3 Rotor. No steps were provided in the body of the work packages addressing where to set the #3 Rotor.

ACTION PLAN:

Determine method of ensuring Limitorque rotor and torque switch settings are controlled.

REFERENCE DOCUMENT NUMBERS:

73PR-92Z04 (MOV Program), 73AC-02Z29 (EER Procedure)

RESOLUTION/ANALYSIS:

Currently, no overall program exists to control the settings within Limitorque operators. The Motor Operator Program, 73PR-92Z04, offers some guidance and states that the responsibility for determining the settings rests with the associated System Engineer via an EER. In many cases, the Mechanical System Engineer does not have the knowledge with respect to Limitorque operators to properly evaluate and specify rotor setpoints. The Motor Operator Program only controls the settings of the specific valves tested per IEB 85-03. However, it is not broad enough in scope to insure that all valves with Limitorque operators are controlled. No database exists for the Planner/Coordinator to utilize regarding specific settings for specific operators. Currently, the only method to access this information is to search all EER's for systems with Limitorque Operators. This is very inefficient, incomplete, and time consuming. Thus, the amount of guidance provided in the Work Order is dependent on the PC's knowledge of past EER dispositions. The electrician performing the work on SGA UV 138 in Unit 3 noticed EER 85-SI-189 in the package and changed Rotor #3 accordingly. There is no administrative program in place to ensure these settings are controlled consistently.



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AGA-P01 INOPERABLE ON 11/27/87**

RECOMMENDED CORRECTIVE ACTION:

- 1.) Engineering Evaluations to review/identify EERs and SFRs which specify setpoints or methods of setting rotors and torque switches within Motor Operators for each safety related system containing Limitorques. Data to be put into the Motor Operator database. This database should include nameplate data as well as specific settings (or ranges) of limit switch rotors and torque switch settings for each operator. This should be a controlled document and provisions included for updating as necessary.
- 2.) Plant Standards to develop model work orders for Limitorque MOVs to ensure all settings are addressed.
- 3.)
 - a. A synopsis of this event should be developed stressing the causes and concerns associated with this event (specifically the setting of rotor switch positions).
 - b. The Planner/Coordinators should be briefed on the causes and concerns as identified in item 3a above.
 - c. General Training to develop and present training to Planner/Coordinators and Maintenance Supervisors on Motor Operator design and operation.
- 4.) Detailed system training for both SG and AF should be provided in License Training via regular lectures.



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-PO1 INOPERABLE ON 11/27/87

RESPONSIBLE ORGANIZATIONS:

- 1.) Evaluations Engineering/Sowers
- 2.) Plant Standards/Adney
- 3.) a. STA Group/M.L. Clyde
b. Work Control/J. Scott, J. Dennis, C. Churchman
c. General Training/Nichols
- 4.) License Training/D. Craig

MODE RESTRAINT/DUE DATE

- 1.) As specific questions on Motor Operators arise (EERs).
- 2.) 60 days following report approval
- 3.) a. 2 weeks following report approval
b. 30 days following report approval
c. 60 days to develop training package and 30 days after that to begin implementation
- 4.) 90 days following report approval

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RENDER 2AFA-P01 INOPERABLE ON 11/27/87

CONCERN #4

The proper retests were not done to ensure that the valves functioned as designed after the modification to the limit switches per EER 87-SG-117.

ACTION PLAN:

Determine reason correct retests were not specified. Research methods of changing existing programs to enhance consistency of determining correct retest requirements.

REFERENCE DOCUMENT NUMBERS:

WCC Directive # 10, 30AC-9ZZ01 (Work Control)

RESOLUTION/ANALYSIS:

The Work Control Procedure, 30AC-9ZZ01 specifies that the Planner/Coordinator (with STA/SE assistance as required), should determine the applicable retest required. The retests should be based on any potential impact that the work may have had on operability. In this case, the Assistant Shift Supervisor questioned whether 42ST-2AF02 should be done as a retest and received input that it was not necessary in this case.

To aid the P.C. in performing the retest determination, Maintenance Directive WCC-10 should be utilized as guidance. The directive requires the performance of additional sections of 32MT-9ZZ47 following limit switch adjustments. It also specifies the use of PVNGS Section XI Pump and Valve Inservice Testing Program Manual for determining applicable retests for components covered under the Section XI program.

In this case, the work packages did not specify the use of 32MT-9ZZ47 as required by WCC-10. However, the use of this procedure would not have provided applicable guidance for the modification performed per EER 87-SG-117. The Section XI Program Manual for all three Units lists 4XST-XAF02 (AFA-P01), 7XST-XZZ02 and 7XST-XZZ10 as retests for SGA UY134 and SGA UY138. A review of the work packages indicated that 4XST-XAF02 was not specified for any of the packages and only some of the packages specified the other Section XI valve tests.



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RENDER 2AFA-P01 INOPERABLE ON 11/27/87

RESOLUTION/ANALYSIS:(Continued)

The Work Control Procedure also specifies that the Shift Supervisor will concur with all operability tests contained in the work order. Thus, the Shift Supervisor has the final responsibility of ensuring that all required tests are completed and operability restored. All of the packages were reviewed by the S.S. and in all cases, the need to perform 4XST-XAF02 was not identified. It should be noted that a Section XI manual is available in the Control Room for determining applicable retests. In this case, the manual clearly lists 4XST-XAF02 as a retest for valves SG-136 and -134.

RECOMMENDED CORRECTIVE ACTIONS:

- 1.) Provide additional instructions for the Planner Coordinators and Shift Supervisor for determining appropriate retest requirements following maintenance to insure consistent application in restoring component operability.
- 2.) Modify WCC-10 (Retest Instruction) to ensure MOV database is utilized for work orders involving Limitorque operators.
- 3.) Operations and Shift Technical Advisors to review this document to re-enforce need to concur with retest requirements and availability of resources available to determine retest requirements.
- 4.) Proceduralize Tech. Spec. Component Condition Reports (TSCCRs) and expand/modify the form to be more useful in verifying/tracking retests.
- 5.) Training to Planner/Coordinators should be provided on all additional instructions identified in #1 above.
- 6.) Incorporate the Pump and Valve Program (listing of valves vs. surveillance test) into the Station Manual format, either via "AC" procedure or within the retest guidelines.



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RESPONSIBLE ORGANIZATIONS:

- 1.) Plant Standards/Adney
- 2.) Plant Standards/Adney
- 3.) Ops Standards/Pollard, STA Group/Clyde
- 4.) Plant Standards/Adney
- 5.) Work Control/Dennis, Scott, Churchman
- 6.) Engineering Evaluations/Plant Standards - Sowers/Adney

MODE RESTRAINT/DATE DUE

- 1.) NONE/120 days following report approval
- 2.) NONE/60 days following report approval
- 3.) NONE/60 days following report approval
- 4.) NONE/60 days following report approval
- 5.) NONE/60 days following completion of #1 above.
- 6.) NONE/120 days following report approval

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CONCERN #5

The valves SG-UV134 and SGA UV138 were not declared inoperable pursuant to LCO 3.6.3 as required.

ACTION PLAN

Investigate non-conformance and submit required documentation.
Investigate changing Technical Specifications to eliminate confusion with containment isolation valves normally open during accidents.

REFERENCE DOCUMENTS:

PRO 2-87-153, Letter W. Garrett to R. Bernier, File # 87-119-419

RESOLUTION/ANALYSIS:

SGA UV138 and SGA UV134 are listed in Appendix G of LCO 3.6.3. These valves are required open during accident conditions and special provisions are provided in Surveillance Requirement 4.6.3.5 regarding operability of these valves pursuant to LCO 3.6.3. These valves are considered OPERABLE per 3.6.3 if they are secured in their actuated position. The actuated position for SGA UV138 and SGA UV134 is open. Following the failure of 425T-2AF02, it was determined that limit switch rotor settings were preventing the valves from performing their design function of opening and starting the ramp circuit for the AFA-P01 turbine. In order to be operable pursuant to 3.6.3, these valves should have been "locked, sealed or otherwise prevented from unintentional operation" in the open position. If they are not secured in the open position, ACTION 3.6.3 1a and 1d must be followed. Although currently required, this action is somewhat contradictory to the concept of Containment Isolation and sufficient technical justification is present to request a Technical Specification change.



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RECOMMENDED CORRECTIVE ACTION:

- 1.) Prepare PRO in Unit 2 regarding failure to comply with an LCO.
- 2.) Request Licensing to submit Tech Spec change to 3.6.3 regarding Appendices D, E, F, and G of LCO 3.6.3.
- 3.) Through review of this document, re-enforce applicability to T.S. 3.6.3 to Operators and STA's.
- 4.) Review Section XI requirements to determine if 4XST-XAF02 is required for valves to be operable pursuant to T.S. 3.6.3.

RESPONSIBLE ORGANIZATIONS:

- 1.) STA Group/Clyde
- 2.) STA Group/Clyde
- 3.) Operations Mgr/STA Supervisor
- 4.) STA Group/Clyde

DATE DUE/MODE RESTRAINT

- 1.) Complete/NONE
- 2.) Complete/NONE
- 3.) 30 days following report approval
- 4.) Complete/NONE



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CONCERN #6

The Unit 2 Shift Supervisor requested the electricians to lower the Rotor #3 setting to equal or below the setting of the #1 Rotor for both SGA UV134 and SGA UV138. The electricians lowered the Rotor #3 for both valves but did not lower them to the Rotor #1 setting and documented the change in WO 262025 Amendment 8A. This resulted in the correct implementation of EER 87-SG-200 being delayed until 12/16/87.

ACTION PLAN:

Ensure that Work Control and Operations in all Units are aware of procedural requirements regarding settings within Limitorque Operators.

REFERENCE DOCUMENTS:

73PR-92204, EER 87-SG-200, WO 262025 Amendment 8A

RESOLUTION/ANALYSIS:

The Valve Motor Operator Monitoring and Test Procedure, 73PR-92204, states, "An EER is required to change a limit switch or torque switch within a Limitorque Operator". The change authorized by the Shift Supervisor and partially implemented by the electricians was contrary to the Administrative Controls in place. Had the EER 87-SG-200 been dispositioned prior to the work initiated, the correct settings of the limit switch rotors could have been assured and completed in a timely manner. There was a miscommunication between the Shift Supervisor and the electricians which resulted in the valves not being set per EER 87-SG-200 (see Concern #7).



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

RECOMMENDED CORRECTIVE ACTION:

Through review of this incident, re-enforce Administrative Controls in place regarding changes to Limitorque Rotors. Required for Work Control, Evaluations Engineering and Operations. (NOTE: Covered by Corrective Action #3a of Concern #3 and Corrective Action #3 of Concern #4 with same Responsible Organizations and Due Dates).

RESPONSIBLE ORGANIZATION:

N/A

DATE DUE/MODE RESTRAINT:

N/A



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MODIFICATIONS TO VALVES SGA-UV-134 AND SGA-UV-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

CONCERN #7

Based on the successful completion of 42ST-2AF02 (STWO 262028) and the disposition to EER 87-SG-200, the Unit 2 Shift Supervisor declared AFA-P01 operable at approximately 1500 on 11/29/87 without verifying that the requirements of EER 87-SG-200 had been implemented.

ACTION PLAN:

See Resolution/Analysis

REFERENCE DOCUMENTS:

EER 87-SG-200

RESOLUTION/ANALYSIS:

The Shift Supervisor believed that the guidelines set forth in EER 87-SG-200 were implemented on 11/27/87 per his verbal instructions to the electricians. ON 11/29/87, with approximately 11 hours left in the 72 hour Action Statement, the Shift Supervisor requested the Duty STA to resolve EER 87-SG-200 which justified the changes that he thought had occurred to the #3 Rotor position of both valves. The EER was resolved, and 42ST-2AF02 was performed satisfactorily at 1320 and AFA-P01 was then declared operable. There was no review performed on WO 262025 which would have caught that EER 87-SG-200 had not been correctly implemented. The TSCCR block for WO closure verification was signed off, but no verification of the actual work package was performed. When the STA dispositioned EER 87-SG-200, he specified that the correction to the problem would be accomplished per WO 262025. No Work Request was written to implement the EER and Work Control was not notified about the EER, so the corrective actions specified were not accomplished until the discrepancy was discovered on 12/16/87.



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CORRECTIVE ACTION PLAN:

- 1.) Review incident with a.) Operations staff and b.) Shift Technical Advisors in all three units stressing importance of verifying work complete before declaring systems operable as per the Work Control Procedure. (NOTE: Covered by Corrective Action #3 of Concern #4, with same Responsible Organization and Due Date).
- 2.) Evaluate the Work Control Procedure for clarification in determining what work order status (back end closure) is required prior to declaring systems operable.

RESPONSIBLE ORGANIZATIONS:

- 1.) N/A
- 2.) Plant Standards/Adney

MODE RESTRAINT/DATE DUE:

- 1.) N/A
- 2.) NONE/120 days
Should be incorporated in major rewrite effort of Work Control procedure.

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ATTACHMENTS

-EER 87-SG-117

-EER 87-SG-200

-UNIT 1 41ST-1AF02 PERFORMANCE LOG

-UNIT 2 42ST-2AF02 PERFORMANCE LOG

-UNIT 3 43ST-3AF02 PERFORMANCE LOG

-UNIT 2 SHIFT SUPERVISOR STATEMENT

-UNIT 3 OPERATIONS SUPPORT SUPERVISOR STATEMENT

11/15/54



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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

Executive Summary

On November 27, 1987 the Essential Turbine-Driven Auxiliary Feedpump failed to reach the required speed during performance of the monthly surveillance test. During the troubleshooting of SG-UY134, (the steam supply valve) it was discovered that the limit switch rotor in the Limitorque operator controlling the AFA P01 turbine ramp-up circuit was positioned such that it would not make up as required when the valve was opened. It was determined that SGA UY138 had the same improper limit switch setting causing inconsistent actuation of the ramp circuit in the turbine control system. The open limit switch rotors of SGA UY134 and SGA UY138 had been recently adjusted (lowered) per EER 87-SG-117 in all three units.

In the evaluation of this event, several factors were identified as contributors to this event. In additional checks, which could have identified the problem, were ineffective.

- A) To address the Engineering Evaluation (EER) deficiency, additional controls are being established to insure cross-discipline reviews for all evaluations involving motor operators.
- B) The work packages to implement the change did not contain sufficient guidance for consistently setting the limit switches. In the future, generic work packages will be prepared to insure complete work packages for all work activities, specifically for motor operators.
- C) The proper retests were not identified by the Planner nor by Operations. Additional retest guidelines are being developed to aid in the retest evaluation. Personnel must insure that the post maintenance testing verifies proper operation of all affected equipment.

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MODIFICATIONS TO VALVES SGA-UY-134 AND SGA-UY-138
RENDER 2AFA-P01 INOPERABLE ON 11/27/87

Executive Summary (Continued)

- D) Due to improper communication between Operations and the Electrical Maintenance staff, the actual work performed was not specifically as Operations intended. This results in valves being declared OPERABLE without the work being completed.

In addition, it should be noted that a program (73PR-9ZZ04) exists for controlling all changes and testing related to motor operators that have been MOVAT tested. This program was not utilized in the evaluation nor in the retesting of these valves.

10/10/10

