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April 15, 1982

WILLIAM CAVANAUGH, III
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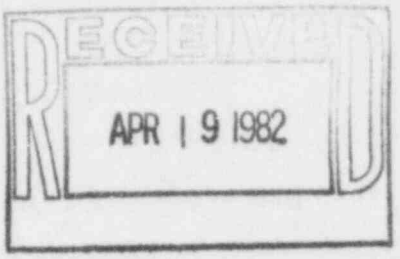

2CAN048208

Mr. John T. Collins
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Confirmatory Action Letter on
IE Bulletin 80-06

Gentlemen:

On April 9, 1982, in a conversation with you and your staff, AP&L outlined a plan of action for performing a re-evaluation of our response to IE Bulletin 80-06. Your letter of April 9, 1982, (0CNA048203) confirmed your concurrence with our plan of action on this matter. As we agreed, we have re-evaluated our response to IE Bulletin 80-06 and have completed actions in the following areas:

A. An engineering review of all ANO-2 electrical schematics to identify all ESFAS components has been conducted and a listing of all safety related components receiving an ESFAS signal compiled.

B. An identification and listing of all ESFAS components which have not been tested as specified in Action Statement 2 of IE Bulletin 80-06 has been completed.

C. An evaluation of the potential safety implications of failing to test/failing to modify all applicable ESFAS components has been completed.

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D. All ESFAS components requiring modification not previously identified and modified have been identified.

E. Documentation confirming that testing of all previously modified ESFAS components was conducted has been reviewed and verified.

A listing of active ANO-2 components receiving an ESFAS signal to perform a safety function has been compiled and evaluated against the concerns stated in IE Bulletin 80-06. Non-safety components which receive ESFAS signals (e.g., load shedding through interposing relays) were not further evaluated. ANO-2 safety analyses do not take credit for any function performed by these non-safety components. In addition, ANO-2 design criteria preclude the operation/mis-operation/failure of any non-safety component from affecting safety related ESFAS components.

During the review of the safety related ESFAS component schematics, we found the components to comply with the Bulletin in varying degrees. Accordingly, we divided the components into five categories, depending on their degree of compliance, as follows:

	Safety Related	Flyback Feature	Modification Required	Modification Complete	Documented Testing
CATEGORY 1	Yes	Yes	Yes	Yes	Yes
CATEGORY 2	Yes	Yes	No	No	No*
CATEGORY 3	Yes	No	No	No	No*
CATEGORY 4	Yes	Yes	Yes	No	No*
CATEGORY 5	No	NA	NA	NA	Not Required

*Existing documentation does not provide reasonable assurance that testing was performed.

Attachment 1 is a listing of all CATEGORY 1 components. These components were previously modified. Existing documentation provides reasonable assurance that testing has been conducted to verify effective correction. Many of these components were modified before Bulletin 80-06 due to operational problems identified with flyback.

Attachment 2 is a listing of all CATEGORY 2 components followed by a component by component evaluation/justification for allowing these components to continue to flyback.

Attachment 3 is a listing of all CATEGORY 3 components followed by a component by component evaluation of the potential safety implications of the possible lack of previous testing. Our detailed review of the

component schematics and system engineering evaluations provide a high degree of assurance that these components will not flyback. During the four years of operation of ANO-2, several various ESFAS actuations have occurred. No reports of flyback of any of these components have been made by the operators following reset of these signals, thus providing further assurance of the validity of our engineering review and conclusion.

Attachment 4 is a listing of all CATEGORY 4 components. These components have been determined to flyback and modifications are proposed. We do not believe flyback of any of these components presents a safety concern; however, their modification will increase safety margins. Also included in Attachment 4 is a component by component evaluation of the potential safety implications used to support this conclusion. As requested in the confirmatory action letter, these items were discussed with your Mr. Bill Johnson by our Mr. Jim Levine on April 14, 1982.

CATEGORY 5 components are non-safety components which receive ESFAS signals. As discussed above, these components were identified during this re-review but were not further evaluated or tested within the scope of this re-review as the ANO-2 design precludes them from having adverse effects on safety components and systems. These non-safety components are listed in Attachment 5 with component by component evaluations justifying this conclusion.

We also stated that we would provide a definition of testing and additional modifications necessary as a result of this re-evaluation. Re-testing of CATEGORY 1 components and testing of CATEGORIES 2, 3 and 4 components will be conducted in accordance with Work Plan No. 2409.14. As ANO-2 is currently in a Mode 5 cold shutdown, all testing and re-testing will be completed before entering Mode 2 following this current outage.

Safety evaluations have been completed on all CATEGORY 4 items that have been identified as a result of our re-review, and we have concluded that justification for continued operation until the next scheduled refueling exists. However, modifications to the CATEGORY 4 components and to any additional components requiring modification as a result of the above testing will be completed and tested before entering Mode 2 following this current outage provided qualified parts, etc. are available. Those components not modified during this current outage will be modified and tested no later than the next refueling outage. In the interim, instructions will be provided to the operators where appropriate to accommodate potential flybacks. We will keep your Senior Resident Inspector, Mr. Bill Johnson, informed of our progress on the testing and modifications during this outage.

Also, as we indicated, we will complete a re-evaluation of our previous actions on ANO-1 for response to IE Bulletin 80-06 to identify any potential need for additional action as a result of the re-evaluation on ANO-2 by May 30, 1982. You will be informed of the results of that re-evaluation and any corrective actions required as a result, if any.

Very truly yours,

William Cavanaugh III

WC:JTE:cmc

Attachments

cc: NRC-NRR

ATTACHMENT 1

CATEGORY 1 COMPONENTS

COMPONENT	DESCRIPTION
2CV-0798-1	EFW Flush Line Isolation Valve
2CV-0714-1	EFW Flush Line Isolation Valve
2SV-5833-1	RCS Sample Containment Isolation
2SV-5878-1	Quench Tank Containment Isolation
2SV-5843-2	Quench Tank Containment Isolation
2SV-5871-2	RCS Containment Isolation
2CV-5628-2	Containment Spray Recirc. Isolation
2CV-5126-1	Safety Injection Recirc.
2CV-5127-1	Safety Injection Recirc.
2CV-5128-1	Safety Injection Recirc.
2CV-5672-1	Containment Spray Recirc. Isolation
2CV-5673-1	Containment Spray Recirc. Isolation
2CV-5123-1*	Safety Injection Recirc.
2CV-5124-1*	Safety Injection Recirc.
2CV-5649-1	Cont. Spray Recirc. Isolation
2CV-5650-2	Cont. Spray Recirc. Isolation
2SV-5001-1	Safety Injection Tank Drain
2SV-5021-1	Safety Injection Tank Drain
2SV-5041-2	Safety Injection Tank Drain
2SV-5061-2	Safety Injection Tank Drain
2CV-1010	Main Steam Isolation Valve
2CV-1060	Main Steam Isolation Valve
2SV-5876-2	SI Tank Sample Isolation

ATTACHMENT 1

CATEGORY 1 COMPONENTS

COMPONENT	DESCRIPTION
2CV-1024-1	Main Feedwater Isolation Valve
2CV-1074-1	Main Feedwater Isolation Valve
2CV-6207-2	N_2 Isolation Valve
2CV-6213-2	N_2 Isolation Valve
2SV-8231-2	H_2 Purge Sample Isolation Valve
2SV-8261-2	H_2 Purge Sample Isolation Valve
2SV-8273-1	H_2 Purge Sample Isolation Valve
2SV-8265-1	H_2 Purge Sample Isolation Valve
2SV-8271-2	H_2 Purge Sample Isolation Valve
2SV-8263-2	H_2 Purge Sample Isolation Valve

ATTACHMENT 2

CATEGORY 2 COMPONENTS

ATTACHMENT 2

CATEGORY 2 COMPONENTS

ATTACHMENT 2

CATEGORY 2 COMPONENTS

COMPONENT	DESCRIPTION	PAGE
2RE-8231-1	Rad Monitor	16
2RE-8271-2	Rad Monitor	16
2VCC-2A/B	Low Flow Alarm	17
2VCC-2C/D	Low Flow Alarm	17

COMPONENTS

2-CV-4873-1	2-CV-4903-2
2-CV-4941-2	2-CV-4915-2
2-CV-4920-1	2-CV-4916-2
2-CV-4921-1	

ESFAS: SIAS

COMPONENT FUNCTION

2-CV-4873-1 - VCT Outlet Valve (normally open, SIAS to close)
2-CV-4941-2 - CVCS Blend Control (normally closed, SIAS to open)
2-CV-4920-1 - BAMT 2T6A Outlet (normally closed, SIAS to open)
2-CV-4921-1 - BAMT 2T6B Outlet (normally closed, SIAS to open)
2-CV-4903-1 - BAMT 2T6A Recirc. (normally closed, SIAS to open)
2-CV-4915-2 - BAMT 2T6B Recirc. (normally closed, SIAS to open)
2-CV-4916-2 - BA Pump Discharge to Charging Pumps (normally closed, SIAS to open)

QF: YES CATEGORY: 2

SAFETY IMPLICATION

No credit was taken for the boration function of the charging system in SIAS events. Boration is accomplished from the RWT.

Repositioning of the CVCS and boration system valves on SIAS reset does not constitute an improper operational event, since the boration function would be terminated following SIAS by operator action as required by current procedures because of boron precipitation concerns.

Following a reset of SIAS, the CVCS boration system would return to the operating configuration which existed at the time of the SIAS which would return the RCS volume control to either automatic or operator control as selected by the operator. The CVCS and boration system valves are routinely automatically operated for makeup functions, and as such changes in CVCS alignment such as VCT makeup, makeup termination and increases and decreases in number of operating charging pumps would be considered no different following SIAS reset than in normal automatic operating mode.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-5647-1, 2CV-5648-2

ESFAS: RAS

COMPONENT FUNCTION

Containment sump valves (normally open, RAS to open).

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

These valves are the inside containment reactor building sump valves which serve as a water suction source for the safety injection and containment spray pumps when a recirculation actuation signal (RAS) is received.

Due to the location of these valves (i.e. in containment and submerged) therefore being completely inaccessable post accident, they are maintained in the open position (ESFAS position) at all times with key locked switches in the Control Room and verified open at least once each shift.

CONCLUSION

As these valves are locked open, no flyback upon reset of a RAS can occur, thus the margin of safety as it relates to the public health and safety is not reduced.

COMPONENTS

2E-35A - 62/1453-1
2E-35B - 62/1456-2

ESFAS: RAS

COMPONENT FUNCTION

Contacts close on a RAS to permit a low service water flow alarm on the shutdown cooling heat exchangers to come in if needed.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

These relays are designed to flyback upon reset of the RAS. Service water does not flow through the shutdown cooling heat exchangers except when in the shutdown cooling mode of operation or the RAS mode. If the relays did not flyback (open), a continuous low flow alarm would come in when service water was not flowing through the coolers. The only effect of relay flyback failure would be an unnecessary alarm.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

186-2DG1 - Diesel Generator Lockout Device
186-2DG2 - Diesel Generator Lockout Device

ESFAS: SIAS

COMPONENT FUNCTION

Diesel Generator Protective Relaying

QF: No CATEGORY: 2

SAFETY IMPLICATION

The diesel generator lockout device is provided to prevent damage to the diesel generator in the event of a fault. Upon safety injection actuation, the diesel generators receive a start signal and at the same time the lockout device is bypassed.

Upon reset of an ESFAS signal, the protective feature is reinstated, however, the diesel generator would continue to operate uninterrupted, provided no fault existed.

Reinstatement of the lockout device would not impair operator response to the initiating event.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2SV-0744, 2SV-0740 D&E, 2SV-0748 D&E, 2SV-0753

ESFAS: MSIS

COMPONENT FUNCTION

Actuating solenoid valves for main feedwater regulating valves and startup (bypass), (normally open) also provide feedwater isolation upon MSIS.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

Sufficient redundancy is provided for feedwater isolation on MSIS by the addition of the second (redundant) qualified main feedwater isolation valve in each MFW train.

Resetting MSIS would not now result in re-feeding a steam generator even if this valve re-opens and one of the redundant MFW isolation valve fails to close.

Since the main feed pumps and heater drain pumps would not restart in the event an actuation signal cleared, the function of these valves is no longer important since isolation would not be necessary without flow.

CONCLUSION

No significant reduction of the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2P36A, 2P36B, 2P36C

ESFAS: SIAS

COMPONENT FUNCTION

Reactor coolant system charging pumps are used for normal RCS inventory makeup and are started upon SIAS.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

The charging pumps control circuits are designed to flyback upon reset of the SIAS unless pressurizer level control and the charging pump suction pressure are sufficient to require the pumps to run, in which case the pumps would not stop. If charging pump header flow fell below 25 GPM, this condition would be alarmed on 2K12.

No credit was taken for the boration function of the charging system in SIAS events, boration being accomplished from the RWT.

SIAS reset does not constitute an improper operational event, since the boration function would be terminated following SIAS by operator action as required by current procedures because of boron precipitation concerns.

CONCLUSION

No significant reduction of the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2-CV-1036-1	2-CV-1025-1
2-CV-1038-1	2-CV-1075-1
2-CV-1037-2	2-CV-1026-2
2-CV-1039-2	2-CV-1076-2

ESFAS: EFAS

COMPONENT FUNCTION

Emergency Feedwater Discharge Valves

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

The actuation signals also serve as control signals to these valves. These valves have the capability to feed only the unaffected steam generator following an MSIS event, and have been designed to modulate EFW feed through auto-resetting the EFW actuation system.

The auto-resetting feature of the EFW system was reviewed during the original licensing process of Unit 2.

Removing the auto-reset feature from the system could result in creating a new class of steam generator over-feed accidents and would require operator action to prevent over-feed following EFW actuation, such action now being automatic until purposefully made manual by operator action.

CONCLUSION

Therefore, the margin of safety as it relates to the public health and safety is maintained without modifications.

COMPONENTS

2P60A, 2P60B

ESFAS: SIAS, RAS

COMPONENT FUNCTION

Low Pressure Safety Injection Pumps (SIAS, RAS to start)

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

The LPSI pumps receive two ESFAS signals, SIAS and RAS. The SIAS will start the LPSI pumps. Resetting of the SIAS signal will not stop these pumps. This flyback would not de-energize the LPSI pumps.

The RAS signal will stop the low pressure safety injection. Resetting of the RAS signal will not start the LPSI pumps, provided that the SIAS signal is not present.

There is no evidence that the LPSI pumps would revert to a non-actuated status on reset of either SIAS or RAS.

If SIAS and RAS are considered independently, then there is no flyback. Resetting of RAS with an SIAS signal still present would result in re-start of the LPSI pump and re-injection of water into the RCS. Such an event is unlikely since resetting of RAS would occur only after plant recovery, as this requires refill of the RWT.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-8475-2	2CV-8471-1
2CV-8497-2	2CV-8472-1
2CV-8498-2	2SV-8476
2SV-8477	2CV-8474-2

ESFAS: SIAS

COMPONENT FUNCTION

ECCS Pump Room Ventilation Dampers
2CV-8475-2, 2CV-8497-2, 2CV-8498-2, 2CV-8471-1, 2CV-8472-1, and 2CV-8474-2 normally closed, SIAS to close.
2-SV-8477 and 2SV-8476 normally open, SIAS to close.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

The ECCS pump room ventilation supplied by the penetration room ventilation system was not assumed to function in the ANO-2 accident analysis.

There are no operational concerns with these dampers repositioning, since their repositioning will not, in itself, restore the radwaste ventilation system to an operating mode, and will not terminate penetration room ventilation. The radwaste area exhaust fans must be manually restarted following the resulting interlocking shutdown after SIAS actuation.

CONCLUSION

There are no significant safety implications associated with the flyback feature of these valves.

COMPONENTS

Diesel Generator Start Failure Relay

ESFAS: SIAS

COMPONENT FUNCTION

Prevent overcrank of the diesel generator.

QF: No CATEGORY: 2

SAFETY IMPLICATION

The diesel generator start failure relays are provided to prevent overcranking of a diesel generator. Upon safety injection actuation, the diesel generators receive a start signal and at the same time the start failure protective relays are bypassed.

Upon reset of an ESFAS signal, the protective features of this relay would be reinstated; however, the diesel generator if running would continue to run uninterrupted and if not running would be protected from overcranking permitting a refill of starting air tanks and the potential for additional start attempts if an ESFAS signal is repeated.

CONCLUSION

There are no significant safety implications associated with flyback of this relay.

COMPONENTS

2CV-5003, 2CV-5023, 2CV-5043, 2CV-5063

ESFAS: SIAS

COMPONENT FUNCTION

Safety Injection Tank Isolation Valves (Normally Open)

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

These valves are the safety injection tank discharge MOV's and serve to isolate the safety injection tanks during shutdown periods when the RCS pressure is below the pre-charge pressure on the safety injection tanks. These valves are interlocked to automatically open any time the RCS pressure is above 700 psia. The open position is the position they assume on receipt of a safety injection signal. The breakers for these valves are de-energized and locked and the valves are verified open during normal operation. Power is restored to the valves only during plant heatup and cooldown evolutions. These manipulations are administratively controlled and breakers are de-energized and locked upon completion of these operations. In addition, these valves are verified to be open periodically per plant procedures.

CONCLUSION

As these valves are locked open (with power removed) in their ESFAS position, no flyback is possible. Therefore, the margin of safety as it relates to the public health and safety is not reduced.

COMPONENTS

2CV-5630-1, 2CV-5631-2

ESFAS: RAS, SIAS

COMPONENT FUNCTION

RWT outlet valves (normally open), SIAS to open, RAS to close.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

These valves receive two signals (SIAS and RAS). Upon receipt of a safety injection signal, these valves would open (verified open once per shift per Operating procedures) and would allow suction from the RWT for HPSI, LPSI and containment spray pumps, when the refueling water tank level reaches five feet, these valves receive a recirculation actuation signal initiating closure and realignment of the containment spray system to the containment sump. These valves additionally are interlocked with the containment sump valves (2CV-5647-1, 2CV-5649-1, 2CV-5648-2 and 2CV-5650-2) to ensure that a water source is always available.

Resetting of RAS could only occur after a refill of the RWT and would be by direct operator action in accordance with Emergency Operating procedures. If upon reset of RAS an SIAS signal was still present, this valve would return to its SIAS position, shifting suction source to the RWT. Flow delivery to the RCS would not be interrupted. In no known case will the valves flyback to a non-actuated position. It is extremely unlikely that an SIAS signal would still be present since resetting of RAS would occur only after plant recovery.

CONCLUSION

As these valves are interlocked in such a manner to assure a continuous supply of suction water, flyback cannot interrupt the supply. Therefore, the margin to safety as it relates to the public health and safety is not involved.

COMPONENTS

2RE-8231-1, 2RE-8271-2

ESFAS: CIS

COMPONENT FUNCTION

Monitor containment radiation during sampling and H_2 purge operations.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

The containment atmosphere radiation monitors would be tripped on receipt of a containment isolation signal. Upon reset of containment isolation, the sample pumps would be enabled for start.

No modification is deemed necessary because the containment isolation valves in the supply and return piping for these monitors (2SV-8231-2, 2SV-8271-1, 2SV-8273-1, 2SV-8261-2, 2SV-8263-2 and 2SV-8265-1) would remain (not flyback) in the closed position isolating the containment. The sample pumps are protected from damage by low flow interlocks.

Restart of these radiation monitors would not impair operator response to the incident.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

Auxiliary Relay - 62/1521-1 - 2VCC-2A/B Containment Coolers
Auxiliary Relay - 62/1514-2 - 2VCC-2C/D

ESFAS: CCAS, MSIS

COMPONENT FUNCTION

Relay contacts close on ESFAS to permit low flow alarms to come in if needed.

QF: Yes CATEGORY: 2

SAFETY IMPLICATION

These relays are designed to flyback upon reset of the CCAS and MSIS. Service water does not flow through the coolers in normal operation. If the relays did not flyback (open), a continuous low flow alarm would come in when service water was not flowing through the coolers. The only effect of relay flyback failure would be an unnecessary alarm.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

ATTACHMENT 3

CATEGORY 3 COMPONENTS

ATTACHMENT 3

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ATTACHMENT 3

CATEGORY 3 COMPONENTS

COMPONENTS

Breaker 2A301, 2A401

ESFAS: SIAS

COMPONENT FUNCTION

2B5 and 2B6 480V load center transformer feeders, normally closed, SIAS to close.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These breakers are not designed to flyback upon reset of the SIAS. As these breakers are normally in their ESFAS position, no change of position would occur on a SIAS, thus no flyback. However, should they open, the control room operators would be immediately aware by the myriad alarms and/or loss of indication on the 480 and 120V systems. Position indication and manual control is provided in the control room. A diesel generator auto start would occur within 8 seconds due to the degraded voltage protection relay on the 480V bus.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2B512, 2B612

ESFAS: SIAS

COMPONENT FUNCTION

2B5 and 2B6 load center main, normally closed, SIAS to close breakers.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These breakers are not designed to flyback upon reset of the SIAS. As these breakers are normally in their ESFAS position, no change of position would occur on a SIAS, thus no flyback. However, should they open, the control room operators would be immediately aware by the myriad alarms and/or loss of indication on the 480 and 120V systems. Position indication and manual control is provided in the control room. A diesel generator auto start would occur within 3 seconds due to the degraded voltage protection relay on the 480V bus.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-0340-2

ESFAS: EFAS

COMPONENT FUNCTION

Steam inlet valve to EFW turbine driver. Valve normally closed. EFAS to open.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

2CV-0340-2 is not designed to flyback following reset of the EFAS. Should the valve flyback to its normally closed position, the turbine driver would shut down due to low steam flow. If actual plant conditions continued to require EFW, an automatic reinitiation of the EFAS would occur reopening the valve. The operator could manually reopen the valve and restart the pump. Such a flyback would not affect the redundant motor-driven EFW pump and system.

2CV-0340-2 has been frequently actuated since ANO-2 startup and has never exhibited flyback characteristics. There are no known cases of the EFW pump shutting down due to 2CV-0340-2 closing by any means other than manual action.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-0716-1, 2CV-0789-1

ESFAS: EFAS

COMPONENT FUNCTION

2CV-0716-1 supplies service water suction to the motor-driven EFW pump (normally closed).
2CV-0789-1 supplies condensate suction to the motor-driven EFW pump (normally open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of an EFAS. These valves are interlocked such that one is always open and the other closed. The EFAS signals applied to these valves provide auto-enabling (interlocking) functions only and do not actuate these valves.

CONCLUSION

A reduction in the margin of safety as it relates to the public health and safety is not involved.

COMPONENTS

2CV-0795-2, 2CV-0711-2

ESFAS: EFAS, EFAS

COMPONENT FUNCTION

2CV-0795-2 is condensate suction to EFW pump turbine (normally open).
2CV-0711-2 SW suction to EFW pump turbine (normally closed).
Both normally in ESFAS position.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of an EFAS. These valves are interlocked such that one is always open and the other closed. The EFAS signals applied to these valves provide auto-enabling functions only and do not, in themselves, actuate those valves.

CONCLUSION

A reduction in the margin of safety as it relates to the public health and safety is not involved.

COMPONENTS

2CV-1023-2, 2CV-1073-2

ESFAS: MSIS #1

COMPONENT FUNCTION

Main feedwater isolation valves (normally open) (MSIS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a MSIS. Redundant valves 2CV-1023-2 and 2CV-1073-2 have recently been installed and likewise are designed to not flyback on reset of a MSIS. Feedwater line ruptures outside containment are mitigated by MFW check valve closure even if both MFW isolation MOVs were to flyback to an open position. The safety significance of flyback of isolation valves due to re-feeding a ruptured steam generator is considered minimal due to the extremely low probability of simultaneous occurrence of all of the following:

1. Both MFW isolation valves having an undetected flyback feature after multiple reviews indicating none exists, and one set of isolation valves having been tested to prove freedom from flyback responses.

2. Resetting MSIS on a ruptured steam generator when PPS design would not allow MSIS to be reset if actuated and steam generator is depressurized.

3. A condensate pump, MFW pump or heater drain pump being re-started or auto-started concurrent with MSIS reset, when design and operating history show this to be extremely unlikely.

CONCLUSION

The margin of safety as it relates tc the public health and safety is not significantly degraded.

COMPONENTS

2CV-1427-2, 2CV-1425-1

ESFAS: SIAS, MSIS

COMPONENT FUNCTION

Service water inlet to auxiliary cooling system (normally open) (SIAS, MSIS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following a reset of the SIAS and/or MSIS. The SIAS/MSIS closes these valves to isolate the non-safety auxiliary cooling water (ACW) system. Should these valves flyback to their normally open position, service water would be restored to the auxiliary cooling system heat exchangers. Restoration of service water flow to this system would cause a flow reduction in one of the two service loops (whichever was aligned to supply ACW). Both SW loops would not be affected, and the loop with reduced flow would only cause a performance reduction in one loop which would be detected by indications provided to the control room operators.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-1453-1; 2CV-1456-2

ESFAS: RAS

COMPONENT FUNCTION

Service water inlet valves to shutdown cooling heat exchangers (normally closed, RAS to open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback upon reset of a RAS. Should they flyback to their closed position, service water to the heat exchangers would be terminated. Emergency Operating procedures specify that RAS not be reset unless RAS cooling of the RCS was no longer necessary. Operating procedures for the desired means of long-term RCS cooling would be used which would specify system alignments and activities. Adequate time exists to allow these valves to be manually aligned as instructed in operating procedures.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-1511-1, 2CV-1519-1

ESFAS: CCAS, MSIS

COMPONENT FUNCTION

2CV-1511-1 service water supply to containment coolers 2VCC-2A/B (normally open in ESFAS position).
2CV-1519-1 SW return from containment coolers 2VCC-2A/B (normally closed, opens on CCAS or MSIS).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback upon reset of a CCAS and/or MSIS. As 2CV-1511-1 is normally in its ESFAS position, no change of position upon CCAS/MSIS or reset of CCAS/MSIS would occur. Should 2CV-1519-1 flyback to its closed position upon reset of CCAS/MSIS, flow would be stopped through the coolers. As the purpose of the coolers is long term heat removal and containment pressure reduction, a CCAS and/or MSIS would be automatically reinitiated if the coolers were required. In addition, ANO-2 safety analyses demonstrate that no containment coolers are necessary to mitigate any accident if two trains of containment spray are available.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-1513-2, 2CV-1510-2

ESFAS: CCAS

COMPONENT FUNCTION

2CV-1513-2 SW return from 2VCC-2C/D header number 2 (normally closed).
2CV-1510-2 inlet isolation valve for 2VCC-2C/D (normally open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback upon reset of a CCAS and/or MSIS. As 2CV-1510-1 is normally aligned in its ESFAS position, no change of position upon CCAS/MSIS or reset of CCAS/MSIS would occur. Should 2CV-1513-1 flyback to its closed position upon reset of CCAS/MSIS, flow would be stopped through the coolers. As the purpose of the coolers is long term heat removal and containment pressure reduction, a CCAS and/or MSIS would be automatically reinitiated if the coolers were required. In addition, ANO-2 safety analyses demonstrate that no containment coolers are necessary to mitigate any accident if two trains of containment spray are available.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-1525-1, 2CV-1526-2

ESFAS: MSIS, SIAS

COMPONENT FUNCTION

Service water to spent fuel heat exchanger. (2CV-1525-1 normally open, MSIS or SIAS to close). (2CV-1526-2 normally closed, MSIS or SIAS to close.)

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback upon reset of a MSIS and/or SIAS. One valve of the pair is normally in its ESFAS position. Therefore, a MSIS or SIAS would not cause a change of position negating a flyback. Should the other valve (normally open) flyback upon reset of a MSIS and/or SIAS, service water cooling to the spent fuel pool heat exchanger would be restored reducing the affected SW supply header pressure. Low SW header pressure is annunciated and header pressure is displayed in the control room. Operators have sufficient time to detect and alleviate the reduced header pressure condition before safeguards components degrade from high temperature.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-2202-1, 2CV-2201-2

ESFAS: SIAS, CIAS

COMPONENT FUNCTION

Reactor drain tank isolation valve (normally closed, SIAS or CIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a SIAS and/or CIAS. These valves are interlocked with the reactor drain tank pumps such that the pumps trip if the valves close. These valves are very infrequently opened and then only for very short periods of time. Thus the probability of any flyback to an open position occurring is very low.

CONCLUSION

The margin of safety as it relates to the public health and safety is not significantly degraded.

COMPONENTS

2CV-3200-2

ESFAS: CIAS, SIAS

COMPONENT FUNCTION

Fire water containment isolation valve (normally open, CIAS or SIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

This valve is not designed to flyback upon reset of the CIAS and/or SIAS. Should the valve flyback, containment integrity would be maintained as a check valve is provided inside containment for the second level of isolation. The fire water supply system provides water to hose reels and normally closed sprinkler systems.

CONCLUSION

Containment integrity is maintained regardless of the position of this valve. Therefore, no reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-4690-2

ESFAS: SIAS, CIAS

COMPONENT FUNCTION

Reactor makeup water to the quench tank containment isolation valve. Normally closed; SIAS, CIAS to close.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

This valve is not designed to flyback following reset of the SIAS and/or CIAS. As this valve is normally closed and receives a SIAS/CIAS to close, no change of position would occur upon reset of ESFAS. In addition, a check valve and a normally closed non-ESFAS motor-operated valve (botn inside containment) provide redundant isolation should the valve unexpectedly open upon ESFAS reset.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is invovled.

COMPONENTS

2CV-4821-1, 2CV-4823-2

ESFAS: SIAS and CIAS

COMPONENT FUNCTION

Letdown isolation valves (SIAS and CIAS to close) normally open.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of the SIAS and/or CIAS. For those accidents where letdown isolation is necessary to assist in mitigation of an accident, emergency operating procedures require closing the valve by placing the hand switch in the control room in the closed position. This is a positive close signal which precludes flyback. In other scenarios not procedurally addressed, flyback should not result in negative consequences. Operator instructions with regard to use and positioning of these valves are provided in recovery and shutdown procedures.

Additionally, there is no operator recollection of any flyback characteristics of these valves upon reset following actual and inadvertent SIAS actuation events which have occurred at ANO.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-4847-2, 2CV-4846-1

ESFAS: CIAS, SIAS

COMPONENT FUNCTION

Containment isolation (normally open, SIAS or CIAS to close). RCP bleed-off.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a CIAS and/or SIAS actuation. In the unlikely event both valves exhibited undetected flyback features, only a small, controlled and metered quantity of coolant (< 5 gpm total from full RCS pressure) is bled to the volume control tank. The VCT and its piping is designed to accept primary coolant; further failures must occur before a radioactive release would occur. The loss of primary inventory is not considered significant due to the low flow rates involved.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-5035-1, 2CV-5036-2, 2CV-5056-2, 2CV-5076-2, 2CV-5055-1, 2CV-5016-2, 2CV-5075-1, 2CV-5015-1

ESFAS: SIAS

COMPONENT FUNCTION

High pressure safety injection discharge valves (normally closed, SIAS to open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of the SIAS. If plant conditions exist which require high pressure safety injection, the SIAS would not reset. If conditions do not warrant high pressure safety injection, (i.e., RCS pressure restored), HPSI flow would already have dropped to zero due to RCS pressures being greater than HPSI pump head. Under such conditions, resetting SIAS and subsequent postulated HPSI MOV flyback would have no safety impact.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-5236-1

ESFAS: CIAS

COMPONENT FUNCTION

Component cooling water isolation valve (normally open, CIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

This valve is not designed to flyback following reset of the CIAS. Redundant containment isolation is provided by a check valve inside containment. The CCW system is an isolated closed loop system. Operating procedures require re-establishing CCW to the RCP seals following a CIAS within a relatively short time frame or reactor coolant pump trip. Therefore, it is probable that this valve would be returned manually to its normally open position prior to a CIAS reset.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-5254-2, 2CV-5255-1

ESFAS: CIAS

COMPONENT FUNCTION

Component cooling water isolation (outlet, normally open, CIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of the CIAS. The CCW inlet is isolated on a CIAS. The CCW system is an isolated closed loop system. Operating procedures require re-establishing CCW to the RCP seals following a CIAS within a relatively short time frame or reactor coolant pump trip. Therefore, it is probable that these valves would be returned manually to their normally open position prior to a CIAS reset.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-5657-1, 2CV-5667-2

ESFAS: CSAS

COMPONENT FUNCTION

Supply for 2P-136A&B (NaOH supply pumps) (normally closed, CSAS to open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of the CSAS. Should plant conditions require containment spray following reset of the CSAS, a CSAS signal would be automatically reinitiated. If a CSAS is not required and containment spray therefore not required, termination of NaOH to the containment spray water would have no adverse affect on plant conditions outside those previously analyzed.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2DG1 Start Relays 2DG2 Start Relays

ESFAS: SIAS

COMPONENT FUNCTION

Provide start signal to diesel generators to supply emergency power.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The emergency diesels do not change modes due to resetting the SIAS actuated start relays.

CONCLUSION

Since diesel generator operation is not affected by the resetting feature of the SIAS start relays there is no reduction in the margin of safety as it relates to the public health and safety.

COMPONENTS

2P-4A, 2P-4B, 2P-4C

ESFAS: SIAS, MSIS, EFAS-A, EFAS-B

COMPONENT FUNCTION

These pumps provide service water which is the safety-related heat sink for plant cooldown following an accident and is the heat sink for non-safety related aux-iliary cooling water and component cooling water systems.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The service water pumps are designed not to trip upon ESFAS reset. If 2P-4A, 2P-4B or 2P-4C were to trip upon resetting of the actuation signal, the following indication is provided:

1. Tripping of the pumps that were running prior to the actuation would be annunciated.

2. Service water loop low pressure is annunciated with the annunciator corrective action procedure, 2203.12, directing the operator to the loss of service water procedure if service water pressure approaches 0 psig.

3. If the condition that initiated the ESFAS returned after the operator reset the ESFAS, the pumps would automatically restart.

4. Red/green indicating lights on 2C-16 and 2C-17.

5. Miscellaneous temperature switches initiate room cooler high temperature alarms such as 2K04-F4. The annunciator corrective action procedure, 2203.12, will direct the operator to verify service water flow.

6. No SW pump "auto-stop" event has ever been acknowledged through any safeguards functional testing conducted since ANO-2 startup.

CONCLUSION

Because of the many diverse indications of loss of service water flow, no significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2P-7B Breaker

ESFAS: SIAS

COMPONENT FUNCTION

Breaker to start 2P-7B motor-driven emergency feedwater pump.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

This breaker is not designed to flyback following reset of the EFAS. Should the breaker flyback to its normally open position, the pump would trip. If actual plant conditions continued to require EFW, an automatic reinitiation of the EFAS would occur, starting the system. Should this not occur, the operators would be aware of the trip by indication in the control room, EFW flow rate indication, EFW low flow alarm and low steam generator level. The operator could manually restart the pump and follow specific procedural steps for operation. Such a flyback would not affect the redundant turbine-driven EFW pump and system. EFW operation has automatically actuated many times on ANO-2; in no event has 2P-7B "auto-stopped" on EFAS auto reset.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2P35A and 2P35B (Containment Spray Pumps)

ESFAS: CSAS

COMPONENT FUNCTION

Start on containment spray actuation signal. Spray pumps are in operation during containment sump recirculation for long-term sump cooling.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The containment spray pumps are not designed to flyback following reset of CSAS. Close observation and maintenance of specified spray header flow is addressed in emergency operating procedures. Should the pumps flyback after CSAS is reset, automatic re-initiation would occur when setpoint was reached. If the setpoint for automatic initiation was not reached subsequent to resetting of the CSAS, containment sump recirculation would still be accomplished by starting the pumps manually and performing Section I, Step 3.8 of Emergency Operating Procedure 2202.06, "Loss of Coolant."

CONCLUSION

No significant reduction in margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2P39A and 2P39B (Boric Acid Addition Pumps)

ESFAS: SIAS

COMPONENT FUNCTION

Boric acid addition pumps start on SIAS to supply concentrated boric acid to charging pumps suction.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The boric acid addition pumps are not designed to flyback on reset of SIAS. Should the pumps stop on reset of SIAS, a redundant supply of boric acid to charging pumps suction is available through two separate gravity drain lines from the boric acid storage tanks. However, since no credit was taken for the boration function of the charging system in SIAS events, boration being accomplished from the RWT. Further, stopping boration would not constitute an improper operational event, since the boration function would be terminated following SIAS by operator action as required by ANO procedures because of boron precipitation concerns.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2P-89A, 2P-89B, 2P-89C

ESFAS: SIAS

COMPONENT FUNCTION

Provide high pressure safety injection flow (SIAS to start).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

Pumps will start upon receipt of SIAS and are not designed to trip on reset. In the event this system did revert to the non ESFAS condition on reset of the SIAS and conditions still warranted, a reinitiation of pump operations would occur. If conditions do not warrant HPSI, i.e., RCS pressures are restored to normal values and allowing SIAS reset, no flow delivery via the HPSI system could occur due to the relatively low discharge head of the HPSI pumps. Since no flow conditions exist, stopping or starting HPSI pumps does not alter any actual conditions.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2P-136A, 2P-136B

ESFAS: CSAS

COMPONENT FUNCTION

NaOH pumps start on CSAS to inject NaOH into spray header during containment spray actuation.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The NaOH pumps are not designed to trip upon reset of CSAS. The NaOH addition pumps will start automatically and inject NaOH to the containment spray header if the containment spray pumps are running and a CSAS is received. If NaOH addition pumps were terminated when the CSAS was reset, the pumps would restart if the CSAS was reinitiated. If a CSAS is not required and containment spray therefore not required, termination of NaOH to the containment spray water would have no affect on plant conditions outside those previously analyzed.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2SV-0317-2

ESFAS: EFAS

COMPONENT FUNCTION

Seal water solenoid valve to EFW turbine (normally closed, EFAS enabled to open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

This valve is not designed to flyback following reset of an EFAS. Should the valve flyback to its normal closed position, seal water to the EFW turbine driver would be lost. 2SV-0317-2 is interlocked with 2CV-0340-2 (steam inlet valve to the turbine driver) such that both valves must be either open or closed. Therefore, closure of 2SV-0317-2 would require closure of 2CV-0340-2 resulting in a turbine shutdown. The two valves are controlled by a single handswitch.

CONCLUSION

Due to the interlocking design, it is not possible to damage the turbine driver if a flyback did occur. The margin of safety as it relates to the public health and safety is not reduced.

COMPONENTS

2UCDM-8216-2, 2UCDM-8203-1, 2UCDM-8222-2, 2UCDM-8209-1

ESFAS: CCAS

COMPONENT FUNCTION

Containment cooling unit bypass dampers (normally closed, CCAS to open).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These dampers are not designed to flyback following reset of a CCAS. The CCAS signal is provided to the bypass damper motors which by turning a retaining lug allow the bypass dampers to physically drop in place by gravity. Manual reset and lifting into place of the dampers is required to reclose the bypass. Therefore, no physical means exists to reclose the bypass should the bypass damper motors flyback.

CONCLUSION

No reduction in [illegible] margin of safety as it relates to the public health and [illegible] exists.

COMPONENTS

2UCDM-8863-1, 2UCDM-8866-2, 2UCDM-8865-1, 2UCDM-8864-2, 2UCDM-8851-1, 2UCDM-8852-2, 2UCDM-8853-1, 2UCDM-8854-2

ESFAS: CIAS

COMPONENT FUNCTION

Penetration room inlet ventilation dampers.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These dampers are not designed to flyback following reset of the CIAS. Upon CIAS, the penetration room ventilation system actuates drawing suction from the penetration rooms and discharging the air after filtering through charcoal and HEPA filters. These dampers provide air into the penetration rooms. Should they flyback upon CIAS reset, an additional amount of air would be pulled into the penetration room and filtered before discharge. ANO-2 safety analyses do not take credit for the DF of the penetration room ventilation system. Therefore, failure of the entire system would not result in off-site releases outside the bounds of current safety analyses.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2VEF-25A-1, 2VEF-25B-2

ESFAS: MSIS, SIAS

COMPONENT FUNCTION

Intake structure exhaust fans.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These fans are not designed to flyback following reset. The fans are normally controlled by a QF room temperature controller. Therefore, they may be either on or off at the time of the ESFAS. The fans will start and/or continue to run upon the ESFAS. Should they flyback to a stopped position following reset, the normal temperature controller would resume fan control and reactuate the fans when necessary.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2VEF-38A-1, 2VEF-38B-2

ESFAS: CIAS

COMPONENT FUNCTION

Penetration room exhaust fans normally tripped. CIAS to start.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These fans are not designed to flyback following reset of the CIAS. Upon CIAS, the fans auto start drawing air from the penetration rooms and discharging it through charcoal and HEPA filters. Should the fans flyback to the shutdown condition, no air would be removed from the penetration rooms. ANO-2 safety analyses do not take credit for the DF of the penetration room ventilation system. Therefore, failure of the entire system would not result in off-site releases outside the bounds of current safety analyses.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2VUC-2A, 2VUC-2C, 2VUC-2B, 2VUC-2D

ESFAS: SIAS

COMPONENT FUNCTION

Unit coolers for switchgear rooms. (SIAS to start coolers.)

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The electrical equipment room unit coolers are not designed to stop when SIAS is reset. (SIAS starts cooler.) If flyback could occur, stop indication on 2C-16 and 2C-17 is available. A trouble alarm on low flow is provided in the control room. High air temperature at the cooler discharge will also alarm in the control room. Sufficient time is available for operator action prior to component degradation.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2VUC-19A-1, 2VUC-19B-1, 2VUC-20A-2, 2VUC-20B-2

ESFAS: SIAS

COMPONENT FUNCTION

Electrical equipment room unit coolers.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

The electrical equipment room unit coolers are not designed to flyback upon SIAS reset (i.e. a SIAS starts the coolers). Should flyback occur, stop indication is provided to the operators in the Control Room on panels 2C-16 and 2C-17. A trouble alarm on low flow is also provided in the control room and available to the operators as well as a high air temperature alarm. Sufficient time is available to allow operator action to restore cooling unit operation prior to component degradation.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-8283-1, 2CV-8289-1, 2CV-8284-2, 2CV-8285-1, 2CV-8291-1, 2CV-8286-2

ESFAS: SIAS, CIAS

COMPONENT FUNCTION

Containment purge air in and out (normally closed, SIAS, CIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a SIAS and/or CIAS. These valves are normally closed and receive a SIAS/CIAS to close. Therefore, no change of position would occur and likewise no flyback would occur. The valves can be closed from the control room. These valves are required closed whenever RCS temperature is above 200°F by the Technical Specifications.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-3850-2, 2CV-3851-1, 2CV-3852-1

ESFAS: CIAS

COMPONENT FUNCTION

Chilled water isolation valves (normally open, CIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of CIAS. Should these valves flyback to an open state, they would open to a closed loop which would provide no path for communication of the containment atmosphere with the environment. A simultaneous rupture of the chilled water system both inside and outside of containment would have to occur to allow leakage out of the containment. This possibility is considered to be extremely unlikely.

CONCLUSION

The margin of safety as it relates to the public health and safety would not be significantly degraded.

COMPONENTS

2CV-5852-2, 2CV-5859-2

ESFAS: SIAS, CIAS

COMPONENT FUNCTION

Steam generator sample valves (normally open, SIAS, CIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a SIAS and/or CIAS. These lines are normally flowing during operation to allow on-line chemistry monitoring. If an unexpected flyback of the valves were to occur, the consequences are not significant due to the small flow rate involved (3/8" lines). Sample liquid flows through radiation monitors with control room indication and an alarm. Consequently, if flyback occurred and a primary/secondary leak existed, identification and corrective action would be rapid.

CONCLUSION

The margin of safety as it relates to the public health and safety is not significantly degraded.

COMPONENTS

2CV-1530-1, 2CV-1531-2, 2CV-1543-1, 2CV-1542-2, 2CV-1541-1, 2CV-1560-2

ESFAS: SIAS, MSIS

COMPONENT FUNCTION

2CV-1530-1 - SW inlet to CCW heat exchanger (SIAS, normally open)
2CV-1531-2 - SW inlet to CCW heat exchanger (SIAS, MSIS, normally closed)
2CV-1543-1 - SW outlet from CCW heat exchanger (MSIS, normally open)
2CV-1542-2 - SW from hdr #2 (MSIS, SIAS, normally open)
2CV-1541-1 - SW to emergency pond (SIAS, normally closed)
2CV-1560-2 - SW discharge to emergency pond (SIAS, normally closed)

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a SIAS and/or MSIS. The SIAS/MSIS closes the valves to isolate the non-safety component cooling water system. Should these CCW valves flyback to their normally open position, service water would be restored to the CCW heat exchangers. Restoration of service water flow to this system would have no impact on other safety systems. However, a small reduction of one or both service water system flow rates to ESFAS components would be anticipated. This should not cause any significant degradation of the performance of SW cooled ESFAS components. 2CV-1541-1 and 2CV-1560-2 discharge valves to the ECP are normally closed and receive a SIAS/MSIS signal to open.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-2400-2, 2CV-2401-1

ESFAS: SIAS and CIAS

COMPONENT FUNCTION

Containment vent header isolation valves. Normally closed. SIAS and CIAS to close.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves were not designed to flyback following reset of a SIAS and/or CIAS. Since these valves are normally closed, even if flyback did occur, no change in position would be expected. However, these valves are very infrequently opened for RDT or quench tank venting. Should these valves flyback upon ESFAS reset, it would be necessary for vented gases to pass through a holding tank 2T17, a stopped pump 2C9A or 2C9B and through normally closed manual valves before any discharge to the environs could occur. Radiation monitoring is provided to detect radioactive gases and provide shutdown on high radiation.

CONCLUSION

The margin of safety as it relates to the public health and safety is not significantly degraded.

COMPONENTS

2CV-2061-2, 2CV-2060-1

ESFAS: CIAS, SIAS

COMPONENT FUNCTION

Containment building sump drain valve (normally closed, CIAS and SIAS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a CIAS and/or SIAS. The normal and ESFAS positions of these valves are the same - closed. The valves are infrequently opened only for short periods of time under operator cognizance. The normal closed position is verified and logged as a part of routine logging at least once/shift, asssuring freedom from flyback to an open position. Should they fly open upon a reset and allow gravity flow of containment sump water to the auxiliary building sump, this would be indicated to the operators in the control room by: auxiliary building sump level indication, auxiliary building sump level alarm and area radiation monitors. The isolation valves could be isolated by a hand switch in the control room and the auxiliary building sump contents transferred to a holding tank selected by operators.

CONCLUSION

As these valves are normally in their ESFAS position, a flyback would not result in a change of position. Therefore, the margin of safety as it relates to the public health and safety is not significantly degraded.

COMPONENTS

2CV-1400-1, 2CV-1406-2

ESFAS: SIAS

COMPONENT FUNCTION

Service water inlet valves to the ESF pump room coolers, shutdown cooling heat exchangers and ESF pump coolers.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback upon a SIAS reset. Should the valves flyback closed upon SIAS reset, service water to the coolers would be terminated. If the ESF pumps continued to run, the room temperature would begin to increase until a high temperature alarm on the room cooler(s) air outlet would be received in the control room and differential pressure alarms on ESF pump coolers would alarm in the control room. Sufficient time would be available for the operators to re-establish the service water flow. Service water flow to shutdown cooling heat exchangers would not be required in a condition in which the SIAS reset could occur (RCS pressure recovered above the low pressurizer pressure trip setpoint). The valves can be opened by handswitches in the control room.

CONCLUSION

A reduction in the margin of safety as it relates to the public health and safety is not involved.

COMPONENTS

2VSF-1A, 2VSF-1B, 2VSF-1C, 2VSF-1D

ESFAS: MSIS, CCAS

COMPONENT FUNCTION

Containment cooling fans (normally running, MSIS, CCAS to start).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These fans are not designed to flyback upon reset of CCAS and/or MSIS. If these components were stopped by flyback due to incorrect implementation or any other reason, no serious safety concerns result. Inadvertent stopping would cause containment cooling via the containment cooling units to be ineffective. However, since the purpose of the coolers is long-term heat removal and containment pressure reduction, a CCAS and/or MSIS would be automatically reinitiated if the coolers were required. In addition, ANO-2 safety analyses demonstrate that no containment coolers are necessary to mitigate any accident if two trains of containment spray are available. Unit cooler trouble alarms annunciated in the control room would indicate low air flow if the fans were to stop when signal was reset.

CONCLUSION

No significant reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2CV-5037-1, 2CV-5017-1, 2CV-5057-2, 2CV-5077-2

ESFAS: SIAS

COMPONENT FUNCTION

Low pressure safety injection discharge valves (normally closed) SIAS to open.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of the SIAS. If plant conditions exist which require low pressure safety injection, the SIAS would automatically reinitiate following reset reopening the valves. The PPS does not allow SIAS reset if RCS pressures are reduced to the point where LPSI is capable of actually injecting water. Therefore, if the SIAS is being reset (i.e., RCS pressure above actuation setpoint) the LPSI injection MOV's repositioning will not alter any actual system function, since no flow would occur with the valves open or closed. If conditions do not warrant low pressure safety injection, the operators would proceed with plant recovery and shut down following appropriate procedures which give specific instructions with regard to manually aligning systems and starting equipment. Therefore, flyback of these valves would have no impact on plant recovery.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

ATTACHMENT 3

CATEGORY 3 COMPONENTS

COMPONENTS

2CV-8233-1, 2CV-8259-1

ESFAS: SIAS, CIAS

COMPONENT FUNCTION

Containment air sample isolation valves (normally open, SIAS or MSIS to close).

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These valves are not designed to flyback following reset of a SIAS and/or CIAS. Manual operation of the valves can be accomplished from the control room. This system is a closed loop, and all sample air flow returns to the containment after passing through radiation monitors which indicate in the control room.

CONCLUSION

No reduction in the margin of safety as it relates to the public heatlh and safety is involved.

COMPONENTS

2A-308, 2A-408

ESFAS: SIAS

COMPONENT FUNCTION

2A-308 and 2A-408 are the diesel generator output breakers to the 4160 busses. SIAS commands tripping of the diesel generator output breaker if the diesel generator is in test and output breakers 2A-308, 2A-309, 2A-408 and 2A-409 are closed.

QF: Yes CATEGORY: 3

SAFETY IMPLICATION

These breakers are not designed to flyback. If the breakers are closed due to diesel generator testing with the off-site breakers closed (2A-309 and 2A-409) to the safety bus and a SIAS signal is received, the diesel generator breakers (2A-308 and 2A-408) will be tripped and the ESFAS bus is left on off-site power (preferred power). Flyback of the SIAS signal will have no effect since both 2A-308/2A-408 and 2A-309/2A-409 have to be closed to satisfy the logic to open the 2A-308/2A-408 breakers.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved due to inherent protection in the system design.

ATTACHMENT 4

CATEGORY 4 COMPONENTS

COMPONENT	DESCRIPTION	PAGE
2CV-1001	Main Steam Atmospheric Dump Valves	2
2CV-1051	Main Steam Atmospheric Dump Valves	2
2CV-1016-1	Steam Generator Blowdown Isolation Valve	3
2CV-1066-1	Steam Generator Blowdown Isolation Valve	3
2CV-4820-2	Letdown Line Stop Valve	4
2CV-5123-1	LPSI Recirc	5
2CV-5124-1	LPSI Recirc	5
2CV-5612-1	Spray Header Isol	6
2CV-5613-2	Spray Header Isol	6
2SV-5633-1	PASS Cont Isol Valve	7
2SV-5633-2	PASS Cont Isol Valve	7
2SV-5634-1	PASS Cont Isol Valve	7
2SV-5634-2	PASS Cont Isol Valve	7

COMPONENTS

2CV-1001, 2CV-1051

ESFAS: MSIS

COMPONENT FUNCTION

Main steam atmospheric dump valves.

QF: Yes CATEGORY: 4

SAFETY IMPLICATION

These valves have not been operated in the "auto" mode and were caution carded since February 20, 1980 to be left in the off position. Therefore, flyback would not have occurred.

CONCLUSION

A reduction in the margin of safety as it relates to the public health and safety is not involved.

ATTACHMENT 4

CATEGORY 4 COMPONENTS

COMPONENTS

2CV-1016-1, 2CV-1066-1

ESFAS: MSIS

COMPONENT FUNCTION

Steam generator blowdown isolation valves.

QF: Yes CATEGORY: 4

SAFETY IMPLICATION

These valves are designed to isolate in the event of the following accident conditions: (1) Steam generator tube rupture (SGTR), (2) MSLB upstream of MSIVs, (3) MSLB downstream of MSIVs and (4) steam generator blowdown line rupture.

(1) In the case of SGTR, Emergency Procedure 2202.34, Rev. 4, requires the operator to secure blowdown on both steam generators. MSIS would not normally be expected to occur on a SGTR. Even if MSIS did occur, subsequent reset and flyback occurred, the operator action is unchanged and override capability is provided.

(2) In the case of MSLB upstream of the MSIVs, MSIS will not reset and therefore, flyback will not occur.

(3) In the case of MSLB downstream of the MSIVs, MSIV closure will terminate the event. When steam generator pressure recovers to the point where MSIS reset is possible, restart of blowdown due to possible flyback would not result in a safety problem. The valves can be reclosed if needed.

(4) In the case of a blowdown line break, the break would be within the bounds of break spectrum already analyzed and deemed not to proceed to MSIS actuation.

CONCLUSION

The margin of safety as it relates to the public health and safety is not reduced.

COMPONENTS

2CV-4820-2, Letdown Isolation Valve

ESFAS: SIAS

COMPONENT FUNCTION

Isolation of letdown, one of two valves inside containment and one of three valves which isolate letdown.

QF: Yes CATEGORY: 4

SAFETY IMPLICATION

Since there are two other letdown isolation valves, neither of which are designed such that flyback will occur, flyback of 2CV-4820-2 would only be of concern if a line failure were to occur between 2CV-4820-2 and 2CV-4821-1. In this event, an actuation of SIAS would isolate the affected line and flyback would re-open the initiating fault. However, this event would not result in radiation releases outside of containment since the fault which would be re-opened only upstream of a closed valve inside of containment re-opening the line break would again result in SIAS, thus reclosing the valve.

CONCLUSION

The margin of safety as it relates to the public health and safety is not involved.

COMPONENTS

2CV-5123-1, 2CV-5124-1

ESFAS: RAS

COMPONENT FUNCTION

2CV-5123-1 - 2P-60A LPSI recirc. valve
2CV-5124-1 - 2P-60B LPSI recirc. valve

QF: Yes CATEGORY: 4

SAFETY IMPLICATION

These valves were modified by DCP 80-2102 to prevent flyback. However, our review reveals that the modification is only functional if the local handswitch at the MCC is in the remote position. If the MCC handswitch is in the remote position, the valve will not flyback regardless of control room handswitch positon. "Remote" is the specified position for the control room handswitch and "local" would be selected very infrequently during test or maintenance.

If the MCC handswitch is placed in any position other than remote, an annunciator is provided to alert the plant operators in the control room of this abnormal condition. Further flyback would only occur if RAS was reset prior to resetting SIAS. RAS reset requires RWT refill and is not a condition that would be anticipated during a situation which requires safety injection.

Repositioning of this valve would not result in a reinitiation of the initiating event nor would it impair operator evaluation of the event or impair ultimate plant recovery.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

ATTACHMENT 4

CATEGORY 4 COMPONENTS

COMPONENTS

2CV-5612-1, 2CV-5613-2

ESFAS: CSAS

COMPONENT FUNCTION

Reactor building spray header (normally closed, CSAS to open).

QF: Ye- CATEGORY: 4

SAFETY IMPLICATION

These valves are designed to flyback upon reset of CSAS. However, Emergency Operating procedures contain specific instructions against securing containment spray so as to not interrupt long-term cooling of the containment sump. (The containment spray pumps discharge through the shutdown cooling heat exchangers to provide this cooling.)

CONCLUSION

The margin of safety as it relates to the public health and safety is not significantly degraded due to the fact that specific operator guidance is provided to preclude premature CSAS reset.

ATTACHMENT 4

CATEGORY 4 COMPONENTS

COMPONENTS

2SV-5633-1, 2SV-5633-2, 2SV-5634-1, 2SV-5634-2

ESFAS: SIAS or CIAS

COMPONENT FUNCTION

PASS containment sump sample and sample return to the containment sump.

QF: Yes CATEGORY: 4

SAFETY IMPLICATION

These valves are normally closed and are opened only for PASS sampling per Procedure 1617.009. These valves would close upon ESFAS actuation if sampling was in progress at the time of the actuation. The valves would then re-open upon reset of SIAS and CIAS. This system is designed for post accident sampling including necessary shielding, etc. Consequently, opening of the valves in a post CIAS reset would pose no safety hazard.

CONCLUSION

These valves present no reduction in the margin of safety with respect to the public health and safety since the system is designed to be operated in a post accident situation without hazard to the public.

ATTACHMENT 5

CATEGORY 5 COMPONENTS

ATTACHMENT 5

CATEGORY 5 COMPONENTS

ATTACHMENT 5

CATEGORY 5 COMPONENTS

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CATEGORY 5 COMPONENTS

COMPONENT	DESCRIPTION	PAGE
2CV-1541-1 OL	SW to ECP Control Valve - TOL	15
2CV-1542 OL	SW from RT Header 2 - TOL	15
2CV-1543-1 OL	SW from Return Header 1 - TOL	15
2CV-1560-2 OL	SW Disc to ECP - TOL	15
2CV-2060-1 OL	RB Sump Isolation Valve - TOL	15
2CV-2202-1 OL	RDT 2T-68 Discharge Isolation Valve - TOL	15
2CV-2401-1 OL	Containment Vent Isolation Valve - TOL	15
2CV-3200-2 OL	Containment Fire Water Isolation Valve - TOL	15
2CV-3850-2 OL	CWCAT Containment Isolation - TOL	15
2CV-4690 OL	RCS Demineralizer Water to Containment - TOL	15
2CV-4820-2 OL	CVCS RCS Letdown to 2E-23 - TOL	15
2CV-4821-1 OL	CVCS Containment Isolation - TOL	15
2CV-4846-1 OL	RCP Seal Water Isolation Valve - TOL	15
2CV-4873-1 OL	CVCS Disc Valve - TOL	15
2CV-4916-2 OL	CVCS Makeup Bypass Valve - TOL	15
2CV-4920-1 OL	CVCS Boric Acid Tank Shutoff Valve - TOL	15
2CV-4921-1 OL	CVCS Boric Tank 2 Isolation Valve - TOL	15
2CV-5003-1 OL	SIS 2T-2A Isolation Valve - TOL	15
2CV-5015-1 OL	HPSI 1 Shutoff Valve - TOL	15
2CV-5016-2 OL	SIS HP Header 2 Shutoff Valve - TOL	15
2CV-5017-1 OL	SIS Low Header Shutoff Valve - TOL	15
2CV-5023-1 OL	SIS 2T-2B Isolation Valve - TOL	15
2CV-5035-1 OL	SIS Shutoff Valve - TOL	15
2CV-5036-2 OL	SIS HP Header 2 Shutoff Valve - TOL	15

ATTACHMENT 5

CATEGORY 5 COMPONENTS

COMPONENT	DESCRIPTION	PAGE
2CV-5037-1 OL	SIS LP Shutoff Valve - TOL	15
2CV-5043-2 OL	SIS Tank 2T-2C Isolation Valve - TOL	15
2CV-5055-1 OL	SIS Shutoff Valve - TOL	15
2CV-5056-2 OL	SIS Header 2 Shutoff Valve - TOL	15
2CV-5057-2 OL	SIS Low Pressure Header Shutoff Valve -	15
2CV-5063-2 OL	SIST 2T-2D Isolation Valve - TOL	15
2CV-5075-1 OL	SIS HP Shutoff Valve - TOL	15
2CV-5076-2 OL	SIS HP Header 2 Shutoff Valve - TOL	15
2CV-5077-2 OL	SIS Shutoff Valve - TOL	15
2CV-5123-1 OL	2P-60A Recirc. - TOL	15
2CV-5124-1 OL	SIS 2P-60B Recirc. Valve - TOL	15
2CV-5126-1 OL	2P-89A Recirc. - TOL	15
2CV-5127-1 OL	SIS 2P-89C Recirc. Valve - TOL	15
2CV-5128-1 OL	SIS 2P-89B Recirc. Valve - TOL	15
2CV-5236-1 OL	CCS to RCP Coolers - TOL	15
2CV-5254-2 OL	CCW Return from RCP Heat Exchanger - TOL	15
2CV-5255-1 OL	CCW Return from RCP Heat Exchanger - TOL	15
2CV-5612-1 OL	CSS B Containment Isolation - TOL	15
2CV-5613-2 OL	CSS System B Containment Isol. Valve - TOL	15
2CV-5628-2 OL	CSS Injection Pump Recirc. Isol. Valve - TOL	15
2CV-5630-1 OL	CSS RWT Disc to System A - TOL	15
2CV-5631-2 OL	CSS RWT2TB Disc to System B - TOL	15
2CV-5647-1 OL	CSS Recirc. Isolation Valve - TOL	15
2CV-5648-2 OL	CSS B Recirc. Header Isol. Valve - TOL	15

ATTACHMENT 5

CATEGORY 5 COMPONENTS

COMPONENT	DESCRIPTION	PAGE
2CV-5649-1 OL	CSS A Recirc. Header Isol. Valve - TOL	15
2CV-5650-2 OL	CSS B Recirc. Header Isol. Valve - TOL	15
2CV-5657-1 OL	CSS NaOH Addition Tank Disc Valve - TOL	15
2CV-5667-2 OL	CSS NaOH Addition Tank Disc Valve - TOL	15
2CV-5672-1 OL	NaOH 2T-10 Addition Valve - TOL	15
2CV-5673-1 OL	CSS P-35A Recirc. Isolation Valve - TOL	15
2CV-5852-2 OL	Sample Containment Isolation Line - TOL	15
2CV-5859-2 OL	Sample Containment Isolation Valve - TOL	15
2CV-8289-1 OL	Containment Purge Isolation Valve - TOL	15
2CV-8291-1 OL	Containment Purge Isolation Valve - TOL	15
2UCDM-8203-10L	2VSF-1A Bypass Damper - TOL	15
2UCDM-8209-10L	2VSF-1A Bypass Damper - TOL	15
2UCDM-8216-20L	2VSF-1C Bypass Damper - TOL	15
2UCDM-8222-20L	2VSF-1D Bypass Damper - TOL	15
52-64J2	2PM76 Overload Bypass	16

COMPONENTS

2SV-0388-2, 2SV-0387-1

ESFAS: MSIS

COMPONENT FUNCTION

2SV-0388-2 - FWP A reset
2SV-0387-1 - FWP B reset

QF: No CATEGORY: 5

SAFETY IMPLICATION

These valves are not designed to flyback upon reset of the MSIS. Should they flyback upon MSIS reset, no change will take place. Restoring the valves to their normal position will allow pump restart with deliberate operator action.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

Routine operation of the MFWP turbines has consistently demonstrated the "lockout" function of any MFWP turbine trips; any trip requires manual trip system resetting.

COMPONENTS

2SV-0389-2, 2SV-0390-1

ESFAS: MSIS

COMPONENT FUNCTION

2SV-0389-2 - Trip solenoid for FWP B (normally energized, MSIS - de-energize)
2SV-0390-1 - Trip solenoid for FWP A (normally energized, MSIS - de-energize)

QF: No CATEGORY: 5

SAFETY IMPLICATION

These valves are not designed to flyback upon reset of the MSIS. Should they flyback upon MSIS reset, no change will take place. Restoring the valves to their normal position will allow pump restart with deliberate operator action.

Routine operation of the MFWP turbines has consistently demonstrated the "lockout" function of any MFWP turbine trips; any trip requires manual trip system resetting.

CONCLUSION

No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2VCH-1A, 2VCH-1B, Main Chillers
2P-2A, 2P-2B, 2P-2C, 2P-2D Condensate Pumps
2P-8A, 2P-8B Heater Drain Pumps; 2P-3A, 2P-3B Circulating Water Pumps
(Load Shed Relays)

ESFAS: SIAS

COMPONENT FUNCTION

152Y Relays are actuated by SIAS to load shed selected loads to provide higher integrity of off-site power sources for feeding safeguards busses.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Flyback of the 152Y relays (or auto-reset) allows the loads shed to be re-applied by operator action. Critical loads would have already sequenced onto the ESFAS busses at the time of SIAS reset, and reapplication of loads to off-site power sources are under direct operator control after situation assessment.

CONCLUSION

Since no loads previously shed on SIAS will be automatically re-applied on SIAS reset, no reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2KM-6, 2KM-7A, 2KM-7B - Load Shed Relays

ESFAS: SIAS

COMPONENT FUNCTION

Load shed of main turbine and main feedwater pump turbine turning gear motors.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Flyback will occur upon SIAS reset and the turning gear motors will restart if the turbine speed is low enough to accept the load. Application of these loads at the time of SIAS reset poses no safety hazard since at this time either actuation had been determined to be spurious and reload is of no concern or SIAS is reset following valid actuation and plant conditions are restored to normal where electrical loads would be at nominal values. Thus, reapplication of these minimal loads would cause no concern.

CONCLUSION

There is no decrease in the margin of safety as related to the public health and safety.

COMPONENTS

2PM-90A,B,C,D,E&F (MTG lift pumps), 2P-26 and 2P-27 (MFP auxiliary LO pp's) and 2P-63A,B,C&D (1 and 2) RCP oil lift pump interposing relays

ESFAS: SIAS

COMPONENT FUNCTION

The interposing relays serve on SIAS to cause non-class 1E loads to be shed from the class 1E busses to provide a higher degree of integrity of the ESFAS busses during ESFAS actuation.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Resetting of the interposing relays on SIAS reset and subsequent automatic reapplication of the loads previously shed is not safety significant in that all safeguard loads would have already been sequenced onto the ESFAS busses, their starting currents no longer of concern. The surge applied to the ESFAS busses, even if all non-class 1E loads were simultaneously applied, is lower than the surge induced from starting any of the several large ESFAS motors.

CONCLUSION

Since the reapplication of these loads serve to protect plant equipment (main turbine, MFP turbines and RCPs), and the reapplication does not result in ESFAS bus overload, no reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2M-43A, 2M-43B, 2M-43C, 2M-43D - Load Shed Relays

ESFAS: SIAS

COMPONENT FUNCTION

Load shed of boric acid makeup tank heaters.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Upon reset of SIAS signal, auto control circuit will be reinstated to control the boric acid makeup tank heaters by design.

These heaters are not class 1E and are not safety significant. No credit has been taken for them in the safety analysis.

Upon clearing of the SIAS actuation, and resetting, the reinstatement of auto control is desirable to prevent crystallization of boric acid in the makeup tanks 2T-6A and 2T-6B. Resetting will not impair the ability of the operator to evaluate and cope with the initiating event.

CONCLUSION

It would be undesirable for these heaters not to flyback since they provide assurance that boric acid crystallization in the BAMTs will not occur. No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2A-111, 2A-112, 2A-113, 2A-211, 2A-212, 2A-213, 2H-13, 2H-15, 2H-23, 2H-25, 2B-1, 2B-2, 2B-3, 2B-8, 2B-9, and 2B-10 - Load Shed Relays

ESFAS: SIAS

COMPONENT FUNCTION

These relays provide logic to the breakers for selective load shed on SIAS in order to assure a high degree of integrity of offsite power sources to serve safeguards busses.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Autoreset of the SIAS actuated relays in the nonclass 1E breaker schemes on SIAS reset does not result in automatic reapplication of the loads removed. Loads would be re-applied as necessary by direct operator action. Such manual reapplication of non ESFAS loads would follow any ESFAS bus load sequencing and therefore not result in ESFAS bus voltage degradation.

CONCLUSION

Since no actual loads are reapplied following a SIAS reset from load shed relay flyback, no reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

2C-329, 2C-330, 2C-331, 2C-332, 2C-333, 2C-334 - Load Shed Relays

ESFAS: SIAS

COMPONENT FUNCTION

Load shedding of boric heat trace circuitry.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Boric acid heat trace circuitry is de-energized on SIAS to remove non-class 1E circuitry from class 1E power supplies to meet the requirements of Regulatory Guide 1.75. The reinstatement of heat trace circuitry following reset of SIAS will occur but would not impair the operators ability to evaluate and cope with accidents nor will the load added be sufficient to require undervoltage relay actuation.

CONCLUSION

It is desirable to restore the boric acid heat trace circuitry upon SIAS reset to assure that boric acid crystallization does not occur. No reduction in the margin of safety as it relates to the public health and safety is involved.

COMPONENTS

Control Valves (Thermal Overload .nterlocks)

ESFAS: SIAS, CIAS, RAS, CSAS, CCAS, EFAS, MSIS

COMPONENT FUNCTION

Interposing relays for thermal overload bypass of control valves.

QF: Yes CATEGORY: 5*

SAFETY IMPLICATION

On an ESFAS actuation, the control valve overloads will be bypassed to insure that the valves will continue to their ESFAS position even though the valve overloads might open.

Once the ESFAS actuation has cleared and has been reset, the bypass of valve overloads will be removed, but no valves will move by this action. Placing the overload protection back in service assures motor protection for non-safeguards operations, insuring availability for safeguards events.

CONCLUSION

Since no valve motion would occur upon removal of the overload bypass, no reduction in the margin of safety as it relates to the public health and safety is involved.

*Although these thermal overload interlocks are safety related, they are not within the areas of concern for Bulletin 80-06; consequently, these components have been classified as Category 5.

COMPONENTS

Relay 52-64J2 in 2PM-76 control scheme.

ESFAS: SIAS

COMPONENT FUNCTION

Relay 52-64J2 interlocks 2P-76 off when SIAS is actuated to separate non class 1E loads from the ESFAS busses to assure a high degree of ESFAS bus power integrity.

QF: No CATEGORY: 5

SAFETY IMPLICATION

Relay 52-64J2 will reset on SIAS reset, allowing 2P-76 to autostart (If required by plant conditions). 2P-76 autostart, following SIAS reset, would follow the ESFAS component sequencing on the ESFAS busses, and would not result in overloading any class 1E busses. Restart of 2P-76 is desireable to prevent damage to the main turbine and generator.

CONCLUSION

Flyback of the relay 52-64J does not result in any significant degradation of the margin of safety as it relates to the public health and safety.