ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE

BROWNS FERRY NUCLEAR PLANT

TVA BFN TS-326

LIST OF EFFECTIVE PAGES

BFN TS-326

UNIT 1	UNIT 3
3.5/4.5-16	3.5/4.5-16
3.5/4.5-17	3.5/4.5-17
3.5/4.5-31	3.5/4.5-32
3.5/4.5-32	3.5/4.5-33

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.5.G Automatic Depressurization System (ADS)	4.5.G Automatic Depressurization System (ADS)
1. Six valves of the Automatic Depressurization System shall be OPERABLE: (1) PRIOR TO STARTUP from a COLD CONDITION, or, (2) whenever there is irradiated fuel in the reactor vessel and the reactor vessel pressure is greater than 105 psig, except in the COLD SHUTDOWN CONDITION or as specified in 3.5.G.2 and 3.5.G.3 below.	1. During each operating cycle the following tests shall be performed on the ADS: a. A simulated automatic actuation test shall be performed PRIOR TO STARTUP after each refueling outage. Manual surveillance of the relief valves is covered in 4.6.D.2.
2. With one of the above required ADS valves inoperable, provided the HPCI system, the core spray system, and the LPCI system are OPERABLE, restore the inoperable ADS valve to OPERABLE status within 14 days or be in at least a HOT SHUTDOWN CONDITION within the next 12 hours and reduce reactor steam dome pressure to $\leq$ 105 psig within 24 hours.	2. No additional surveillances are required.
3. With two or more of the above required ADS valves inoperable, be in at least a HOT SHUTDOWN CONDITION within 12 hours and reduce reactor steam dome pressure to $\leq$ 105 psig within 24 hours.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS

3.5.H. Maintenance of Filled Discharge Pipe

Whenever the core spray systems, LPCI, HPCI, or RCIC are required to be OPERABLE, the discharge piping from the pump discharge of these systems to the last block valve shall be filled.

The suction of the RCIC and HPCI pumps shall be aligned to the condensate storage tank, and the pressure suppression chamber head tank shall normally be aligned to serve the discharge piping of the RHR and CS pumps. The condensate head tank may be used to serve the RHR and CS discharge piping if the PSC head tank is unavailable. The pressure indicators on the discharge of the RHR and CS pumps shall indicate not less than listed below.

P1-75-20	48 psig
P1-75-48	48 psig
P1-74-51	48 psig
P1-74-65	48 psig

4.5.H. Maintenance of Filled Discharge Pipe

The following surveillance requirements shall be adhered to assure that the discharge piping of the core spray systems, LPCI, HPCI, and RCIC are filled:

1. Every month and prior to the testing of the RHRS (LPCI and Containment Spray) and core spray system, the discharge piping of these systems shall be vented from the high point and water flow determined.

2. Following any period where the LPCI or core spray systems have not been required to be OPERABLE, the discharge piping of the inoperable system shall be vented from the high point prior to the return of the system to service.

3. Whenever the HPCI or RCIC system is lined up to take suction from the condensate storage tank, the discharge piping of the HPCI and RCIC shall be vented from the high point of the system and water flow observed on a monthly basis.

4. When the RHRS and the CSS are required to be OPERABLE, the pressure indicators which monitor the discharge lines shall be monitored daily and the pressure recorded.

3.5.F Reactor Core Isolation Cooling System (RCICS)

The RCICS functions to provide core cooling and makeup water to the reactor vessel during shutdown and isolation from the main heat sink and for certain pipe break accidents. The RCICS provides its design flow between 150 psig and 1120 psig reactor pressure. Below 150 psig, RCICS is not required to be OPERABLE since this pressure is substantially below that for any events in which RCICS is required to provide core cooling. RCICS will continue to operate below 150 psig at reduced flow until it automatically isolates at greater than or equal to 50 psig reactor steam pressure. 150 psig is also below the shutoff head of the CSS and RHRS, thus, considerable overlap exists with the cooling systems that provide core cooling at low reactor pressure. The minimum required NPSH for RCIC is 20 feet. There is adequate elevation head between the suppression pool and the RCIC pump, such that the required NPSH is available with a suppression pool temperature up to 140°F with no containment back pressure.

The ADS, CSS, and RHRS (LPCI) must be OPERABLE when starting up from a COLD CONDITION. Steam pressure is sufficient at 150 psig to run the RCIC turbine for OPERABILITY testing, yet still below the shutoff head of the CSS and RHRS pumps so they will inject water into the vessel if required. Considering the low reactor pressure and the availability of the low pressure coolant systems during startup from a COLD CONDITION, twelve hours is allowed as a reasonable time to demonstrate RCIC OPERABILITY once sufficient steam pressure becomes available. The alternative to demonstrate RCIC OPERABILITY PRIOR TO STARTUP using auxiliary steam is provided for plant operating flexibility.

With the RCICS inoperable, a seven-day period to return the system to service is justified based on the availability of the HPCIS to cool the core and upon consideration that the average risk associated with failure of the RCICS to cool the core when required is not increased.

The surveillance requirements, which are based on industry codes and standards, provide adequate assurance that the RCICS will be OPERABLE when required.

3.5.G Automatic Depressurization System (ADS)

The ADS consists of six of the thirteen relief valves. It is designed to provide depressurization of the reactor coolant system during a small break loss of coolant accident (LOCA) if HPCI fails or is unable to maintain the required water level in the reactor vessel. ADS operation reduces the reactor vessel pressure to within the operating pressure range of the low pressure emergency core cooling systems (core spray and LPCI) so that they can operate to protect the fuel barrier. Specification 3.5.G applies only to the automatic feature of the pressure relief system.

Specification 3.6.D specifies the requirements for the pressure relief function of the valves. It is possible for any number of the valves assigned to the ADS to be incapable of performing their ADS functions because of instrumentation failures, yet be fully capable of performing their pressure relief function.

The emergency core cooling system LOCA analyses for small line breaks assumed that four of the six ADS valves were OPERABLE. By requiring six valves to be OPERABLE, additional conservatism is provided to account for the possibility of a single failure in the ADS system.

Reactor operation with one of the six ADS valves inoperable is allowed to continue for fourteen days provided the HPCI, core spray, and LPCI systems are OPERABLE. Operation with more than one ADS valve inoperable is not acceptable.

With one ADS valve known to be incapable of automatic operation, five valves remain OPERABLE to perform the ADS function. This condition is within the analyses for a small break LOCA and the peak clad temperature is well below the 10 CFR 50.46 limit. Analysis has shown that four valves are capable of depressurizing the reactor rapidly enough to maintain peak clad temperature within acceptable limits.

H. Maintenance of Filled Discharge Pipe

If the discharge piping of the core spray, LPCI, HPCIS, and RCICS are not filled, a water hammer can develop in this piping when the pump and/or pumps are started. To minimize damage to the discharge piping and to ensure added margin in the operation of these systems, this Technical Specification requires the discharge lines to be filled whenever the system is in an OPERABLE condition. If a discharge pipe is not filled, the pumps that supply that line must be assumed to be inoperable for Technical Specification purposes.

The core spray and RHR system discharge piping high point vent is visually checked for water flow once a month and prior to testing to ensure that the lines are filled. The visual checking will avoid starting the core spray or RHR system with a discharge line not filled. In addition to the visual observation and to ensure a filled discharge line other than prior to testing, a pressure suppression chamber head tank is located approximately 20 feet above the discharge line high point to supply makeup water for these systems. The condensate head tank located approximately 100 feet above the discharge high point serves as a backup charging system when the pressure suppression chamber head tank is not in service. System discharge pressure indicators are used to determine the water level above the discharge line high point. The indicators will reflect approximately 30 psig for a water level at the high point and 45 psig for a water level in the pressure suppression chamber head tank and are monitored daily to ensure that the discharge lines are filled.

When in their normal standby condition, the suction for the HPCI and RCIC pumps are aligned to the condensate storage tank, which is physically at a higher elevation than the HPCIS and RCICS piping. This assures that the HPCI and RCIC discharge piping remains filled. Further assurance is provided by observing water flow from these systems' high points monthly.

I. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)

This specification assures that the peak cladding temperature following the postulated design basis loss-of-coolant accident will not exceed the limit specified in the 10 CFR 50, Appendix K.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
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The following surveillance requirements shall be adhered to assure that the discharge piping of the core spray systems, LPCI, HPCI, and RCIC are filled:

1. Every month and prior to the testing of the RHRS (LPCI and Containment Spray) and core spray systems, the discharge piping of these systems shall be vented from the high point and water flow determined.

2. Following any period where the LPCI or core spray systems have not been required to be OPERABLE, the discharge piping of the inoperable system shall be vented from the high point prior to the return of the system to service.

3. Whenever the HPCI or RCIC system is lined up to take suction from the condensate storage tank, the discharge piping of the HPCI and RCIC shall be vented from the high point of the system and water flow observed on a monthly basis.

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The ADS, CSS, and RHRS (LPCI) must be OPERABLE when starting up from a COLD CONDITION. Steam pressure is sufficient at 150 psig to run the RCIC turbine for OPERABILITY testing, yet still below the shutoff head of the CSS and RHRS pumps so they will inject water into the vessel if required. Considering the low reactor pressure and the availability of the low pressure coolant systems during startup from a COLD CONDITION, twelve hours is allowed as a reasonable time to demonstrate RCIC OPERABILITY once sufficient steam pressure becomes available. The alternative to demonstrate RCIC OPERABILITY PRIOR TO STARTUP using auxiliary steam is provided for plant operating flexibility.

With the RCICS inoperable, a seven-day period to return the system to service is justified based on the availability of the HPCIS to cool the core and upon consideration that the average risk associated with failure of the RCICS to cool the core when required is not increased.

The surveillance requirements, which are based on industry codes and standards, provide adequate assurance that the RCICS will be OPERABLE when required.

3.5.G Automatic Depressurization System (ADS)

The ADS consists of six of the thirteen relief valves. It is designed to provide depressurization of the reactor coolant system during a small break loss of coolant accident (LOCA) if HPCI fails or is unable to maintain the required water level in the reactor vessel. ADS operation reduces the reactor vessel pressure to within the operating pressure range of the low pressure emergency core cooling systems (core spray and LPCI) so that they can operate to protect the fuel barrier. Specification 3.5.G applies only to the automatic feature of the pressure relief system.

Specification 3.6.D specifies the requirements for the pressure relief function of the valves. It is possible for any number of the valves assigned to the ADS to be incapable of performing their ADS functions because of instrumentation failures, yet be fully capable of performing their pressure relief function.

The emergency core cooling system LOCA analyses for small line breaks assumed that four of the six ADS valves were OPERABLE. By requiring six valves to be OPERABLE, additional conservatism is provided to account for the possibility of a single failure in the ADS system.

Reactor operation with one of the six ADS valves inoperable is allowed to continue for fourteen days provided the HPCI, core spray, and LPCI systems are OPERABLE. Operation with more than one ADS valve inoperable is not acceptable.

With one ADS valve known to be incapable of automatic operation, five valves remain OPERABLE to perform the ADS function. This condition is within the analyses for a small break LOCA and the peak clad temperature is well below the 10 CFR 50.46 limit. Analysis has shown that four valves are capable of depressurizing the reactor rapidly enough to maintain peak clad temperature within acceptable limits.

H. Maintenance of Filled Discharge Pipe

If the discharge piping of the core spray, LPCI, HPCIS, and RCICS are not filled, a water hammer can develop in this piping when the pump and/or pumps are started. To minimize damage to the discharge piping and to ensure added margin in the operation of these systems, this Technical Specification requires the discharge lines to be filled whenever the system is in an OPERABLE condition. If a discharge pipe is not filled, the pumps that supply that line must be assumed to be inoperable for Technical Specification purposes.

The core spray and RHR system discharge piping high point vent is visually checked for water flow once a month and prior to testing to ensure that the lines are filled. The visual checking will avoid starting the core spray or RHR system with a discharge line not filled. In addition to the visual observation and to ensure a filled discharge line other than prior to testing, a pressure suppression chamber head tank is located approximately 20 feet above the discharge line high point to supply makeup water for these systems. The condensate head tank located approximately 100 feet above the discharge high point serves as a backup charging system when the pressure suppression chamber head tank is not in service. System discharge pressure indicators are used to determine the water level above the discharge line high point. The indicators will reflect approximately 30 psig for a water level at the high point and 45 psig for a water level in the pressure suppression chamber head tank and are monitored daily to ensure that the discharge lines are filled.

When in their normal standby condition, the suction for the HPCI and RCIC pumps are aligned to the condensate storage tank, which is physically at a higher elevation than the HPCIS and RCICS piping. This assures that the HPCI and RCIC discharge piping remains filled. Further assurance is provided by observing water flow from these systems' high points monthly.

I. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)

This specification assures that the peak cladding temperature following the postulated design basis loss-of-coolant accident will not exceed the limit specified in the 10 CFR 50, Appendix K.

ENCLOSURE 2

BROWNS FERRY NUCLEAR PLANT

DESCRIPTION AND JUSTIFICATION FOR THE PROPOSED CHANGES

Summary of Changes for Units 1 and 3

1. Existing LCO 3.5.G.1 reads in part:

   "1. Four of the six valves of the Automatic Depressurization System . . . "

   Proposed LCO 3.5.G.1 reads in part:

   "1. Six valves of the Automatic Depressurization System . . ."

2. Existing LCO 3.5.G.2 and 3.5.G.3 reads as follows:

   "2. If three of the six ADS valves are known to be incapable of automatic operation, the reactor may remain in operation for a period not to exceed 7 days, provided the HPCI system is OPERABLE. (Note that the pressure relief function of these valves is assured by Section 3.6.D of these specifications and that this specification only applies to the ADS function.) If more than three of the six ADS valves are known to be incapable of automatic operation, an immediate orderly shutdown shall be initiated, with the reactor in a HOT SHUTDOWN CONDITION in 6 hours, and in a COLD SHUTDOWN CONDITION in the following 18 hours.

   3. If Specification 3.5.G.1 and 3.5.G.2 cannot be met, an orderly shutdown will be initiated and the reactor vessel pressure shall be reduced to 105 psig or less within 24 hours."

   Proposed LCO 3.5.G.2 and 3.5.G.3 reads as follows:

   "2. With one of the above required ADS valves inoperable, provided the HPCI system, the core spray system, and the LPCI system are OPERABLE, restore the inoperable ADS valve to OPERABLE status within 14 days or be in at least a HOT SHUTDOWN CONDITION within the next 12 hours and reduce reactor steam dome pressure to $\leq$ 105 psig within 24 hours.

   3. With two or more of the above required ADS valves inoperable, be in at least a HOT SHUTDOWN CONDITION within 12 hours and reduce reactor steam dome pressure to $\leq$ 105 psig within 24 hours."

ENCLOSURE 2

BROWNS FERRY NUCLEAR PLANT

DESCRIPTION AND JUSTIFICATION FOR THE PROPOSED CHANGES

Summary of Changes for Units 1 and 3 (Continued)

3. Existing Bases 3.5.G reads as follows:

"This specification ensures the OPERABILITY of the ADS under all conditions for which the depressurization of the nuclear system is an essential response to station abnormalities.

The nuclear system pressure relief system provides automatic nuclear system depressurization for small breaks in the nuclear system so that the low-pressure coolant injection (LPCI) and the core spray subsystems can operate to protect the fuel barrier. Note that this specification applies only to the automatic feature of the pressure relief system.

Specification 3.6.D specifies the requirements for the pressure relief function of the valves. It is possible for any number of the valves assigned to the ADS to be incapable of performing their ADS functions because of instrumentation failures, yet be fully capable of performing their pressure relief function.

Because the automatic depressurization system does not provide makeup to the reactor primary vessel, no credit is taken for the steam cooling of the core caused by the system actuation to provide further conservatism to the CSCS.

With two ADS valves known to be incapable of automatic operation, four valves remain OPERABLE to perform their ADS function. The ECCS loss-of-coolant accident analyses for small line breaks assumed that four of the six ADS valves were OPERABLE. Reactor operation with three ADS valves inoperable is allowed to continue for seven days provided that the HPCI system is OPERABLE. Operation with more than three of the six ADS valves inoperable is not acceptable."

Proposed Bases 3.5.G reads as follows:

"The ADS consists of six of the thirteen relief valves. It is designed to provide depressurization of the reactor coolant system during a small break loss of coolant accident (LOCA) if HPCI fails or is unable to maintain the required water level in the reactor vessel. ADS operation reduces the reactor vessel pressure to within the operating pressure range of the

ENCLOSURE 2

BROWNS FERRY NUCLEAR PLANT

DESCRIPTION AND JUSTIFICATION FOR THE PROPOSED CHANGES

Summary of Changes for Units 1 and 3 (Continued)

low pressure emergency core cooling systems (core spray and LPCI) so that they can operate to protect the fuel barrier. Specification 3.5.G applies only to the automatic feature of the pressure relief system.

Specification 3.6.D specifies the requirements for the pressure relief function of the valves. It is possible for any number of the valves assigned to the ADS to be incapable of performing their ADS functions because of instrumentation failures, yet be fully capable of performing their pressure relief function.

The emergency core cooling system LOCA analyses for small line breaks assumed that four of the six ADS valves were operable. By requiring six valves to be operable, additional conservatism is provided to account for the possibility of a single failure in the ADS system.

Reactor operation with one of the six ADS valves inoperable is allowed to continue for fourteen days provided the HPCI, core spray, and LPCI systems are operable. Operation with more than one ADS valve inoperable is not acceptable.

With one ADS valve known to be incapable of automatic operation, five valves remain operable to perform the ADS function. This condition is within the analyses for a small break LOCA and the peak clad temperature is well below the 10 CFR 50.46 limit. Analysis has shown that four valves are capable of depressurizing the reactor rapidly enough to maintain peak clad temperature within acceptable limits."

Reason for the Changes

The Limiting Condition for Operation (LCO) for the ADS currently requires four valves to be operable prior to startup. If while operating with four operable valves, an event occurs which requires the ADS, there is a potential that only two ADS valves may be available for reactor depressurization. This condition could potentially occur since a single failure (loss of a 250 VDC Reactor MOV Board) could make two ADS valves inoperable. Analyses have shown that depressurization with two ADS valves and no high

ENCLOSURE 2

BROWNS FERRY NUCLEAR PLANT

DESCRIPTION AND JUSTIFICATION FOR THE PROPOSED CHANGES

Reason for Changes (Continued)

pressure coolant injection will result in exceeding the peak cladding temperature limits. This change will revise the ADS LCO 3.5.G.1 to require all six valves to be operable prior to startup. This will ensure that sufficient ADS capacity exists to mitigate an accident if a single failure renders two valves inoperable.

Justification for the Changes

The ADS provides for automatic depressurization of the nuclear system as needed to allow operation of LPCI and CS to protect the fuel barrier from overheating. The ADS uses six of the thirteen nuclear system pressure relief valves to relieve high pressure steam from the reactor vessel to the suppression pool. For a large line break of the primary system, operation of the ADS would not be required since the large break would result in rapid depressurization of the primary system. However, for smaller line breaks in which the primary system does not depressurize quickly and the high pressure coolant systems cannot maintain reactor vessel level greater than the low level ADS initiation setpoint, the ADS operates to reduce the reactor vessel pressure to within the discharge head of the LPCI and CS Systems. By performing this function, the ADS in conjunction with LPCI and/or CS acts as a backup to the HPCI system, thus ensuring core cooling when the HPCI system is not available.

The changes to ADS LCO 3.5.G will increase the number of ADS valves required operable prior to startup from a cold condition or whenever there is irradiated fuel in the vessel and reactor vessel pressure is greater than 105 psig, to six (up from the current four). The ADS valves are air operated with DC powered solenoid valves. Two valves are supplied power from each of the three 250V DC Reactor MOV boards. The valves require DC power and air to perform the ADS function; however, the spring function for overpressure protection is independent of air or DC power supplies. The accident analysis assumes only four of the six ADS valves to be operable. With only four ADS valves operable prior to startup (as currently allowed by 3.5.G.1), a single failure of a 250V DC Reactor MOV board could result in only two ADS valves being operable. Analyses shows that depressurization with two ADS valves and no HPCI system available could result in exceeding the established peak clad temperature (PCT) goal of 1500°F for the fuel (the PCT limit established in 10 CFR 50.46 is 2200°F). This change ensures that at least four ADS valves will be available to

ENCLOSURE 2

BROWNS FERRY NUCLEAR PLANT

DESCRIPTION AND JUSTIFICATION FOR THE PROPOSED CHANGES

Justification for the Changes (Continued)

mitigate an accident and that the PCT limit will not be exceeded even with a single failure of a DC power supply.

Present LCO actions 3.5.G.2 and 3.5.G.3 are being revised to be consistent with Standard Technical Specification provisions. These changes allow one of the required ADS valves to be inoperable for 14 days provided the HPCI system, the core spray system and the LPCI system are operable. Operation of five of the ADS valves will provide the required depressurization during an accident situation. However, with one valve inoperable, the overall reliability of the ADS is reduced and operation is only allowed for a limited time. The 14 day allowed out of service time has been shown to be acceptable through operating experience at other operating BWRs and is currently in use at BFN Unit 2. Operation with more than one ADS valve inoperable is not acceptable and a plant shutdown is required.

The bases for the ADS are revised to reflect the LCO changes and to more accurately reflect system characteristics.

ENCLOSURE 3

BROWNS FERRY NUCLEAR PLANT (BFN)

PROPOSED DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Description of Proposed Technical Specification Amendment

The proposed technical specification change applies to BFN Units 1 and 3 and was implemented on BFN Unit 2 prior to its restart. The proposed change will increase the number of ADS valves required to be operable from four to six, revise the LCO actions to allow a 14 day allowed out of service period when one valve is inoperable and require a plant shutdown if more than one valve is inoperable.

Basis For Proposed No Significant Hazards Consideration Determination

The NRC has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92(c). A proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated, or 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or 3) involve a significant reduction in a margin of safety.

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed changes to the Units 1 and 3 technical specifications are the same as those implemented on Unit 2 prior to its restart. The proposed changes will increase the number of ADS valves required operable from four to six which is the number of relief valves assigned to the ADS function. This change will ensure that assumptions of the accident analysis are met with regard to number of ADS valves assumed to operate (four) when considering the worst case single failure such that two valves are made inoperable from loss of a 250V DC board. The proposed change does not affect any accident precursors and thus does not involve a significant increase in the probability of an accident previously evaluated.

ENCLOSURE 3

BROWNS FERRY NUCLEAR PLANT (BFN)

PROPOSED DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Basis For Proposed No Significant Hazards Consideration Determination (Continued)

The proposed change does not involve any physical modifications to the plant. The changes do not modify the design assumptions for the ADS system and, as such, cannot significantly affect the consequences of an accident previously evaluated.

2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The ADS operates to reduce the reactor vessel pressure to within the discharge head of the LPCI and CS systems for small line breaks in which the primary system does not depressurize quickly and the high pressure coolant system cannot maintain reactor vessel water level. The proposed change does not decrease the ADSs' ability to perform its intended function nor does the change create any opportunities for new or different accidents outside of those evaluated. The proposed changes do not introduce any new or different modes of operation. The proposed change for Units 1 and 3 is the same as is presently in use on Unit 2. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3. The proposed change does not involve a significant reduction in a margin of safety.

The proposed change increases the number of ADS valves required operable from four to six. Limited operation for 14 days is permitted with one of the six valves inoperable provided the HPCI, Core Spray and LPCI systems are operable. With more than one valve inoperable, the plant is required to shutdown. The proposed increase in the number of valves required operable will ensure that accident analysis assumptions (four valves) are met considering a worst case single failure of a 250V DC board which could cause the loss of two valves. With one ADS valve inoperable, limited operation is allowed since backup systems are available and the five remaining ADS valves meet accident assumptions. The proposed changes do not affect safety limits, operating limits or design assumptions. Therefore, the proposed changes do not involve a significant reduction in any margin of safety.