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Docket Number 50-346

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License Number NPF-3

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Subject: Davis-Besse Nuclear Power Station
License Amendment Application to Revise Technical Specification 3/4.3.2.1, "Safety Features Actuation System Instrumentation," to Permit a Single Inoperable Safety Features Actuation System (SFAS) Instrument String Functional Unit to be Placed in a Bypassed Condition Indefinitely (License Amendment Request No. 01-0006)

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90, the following amendment is requested for the Davis-Besse Nuclear Power Station, Unit 1 (DBNPS). This amendment request proposes to revise Technical Specification (TS) 3/4.3.2.1, "Safety Features Actuation System Instrumentation," to permit a single inoperable SFAS functional unit to be placed in a bypassed condition indefinitely. Specifically, the proposed change would revise Action 10 of TS Table 3.3-3 to change the required actions when one or two SFAS instrument string functional units are inoperable. The proposed change would require that, with a single instrument string functional unit inoperable, the inoperable SFAS instrument string functional unit be placed in trip or bypass within one hour. The proposed change would also require that, with two instrument string functional units inoperable, one of the inoperable functional units be placed in trip and the other functional unit be placed in bypass within one hour. Additionally, the proposed change would eliminate the existing provision for an 8-hour delay for declaring a functional unit inoperable during channel functional testing. This provision would no longer be required because the ability to indefinitely bypass a single SFAS functional unit would allow performance of channel functional testing with the functional unit in bypass without the need for a special testing allowance.

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Approval of the proposed amendment is requested by December 31, 2005. Once approved, the amendment shall be implemented within 120 days.

The proposed changes have been reviewed by the DBNPS onsite and offsite review committees. Enclosure 1 includes an evaluation of the proposed amendment. A list of regulatory commitments made in this letter is included in Enclosure 2.

Should you have any questions or require additional information, please contact Mr. Henry L. Hegrat, Supervisor - Licensing, at (330) 315-6944.

The statements contained in this submittal, including its associated enclosures and attachments, are true and correct to the best of my knowledge and belief. I am authorized by the FirstEnergy Nuclear Operating Company to make this request. I declare under penalty of perjury that the foregoing is true and correct.

Executed on: JAN 05, 2005

By: _____
Mark B. Bezilla, Vice President - Nuclear

MAR

Enclosures

cc: J. L. Caldwell, Regional Administrator, NRC Region III
J. B. Hopkins, NRC/NRR Senior Project Manager
D. J. Shipley, Executive Director, Ohio Emergency Management Agency, State of Ohio (NRC Liaison)
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Utility Radiological Safety Board

Docket Number 50-346
License Number NPF-3
Serial Number 3086
Enclosure 1

DAVIS-BESSE NUCLEAR POWER STATION
EVALUATION
FOR
LICENSE AMENDMENT REQUEST NUMBER 01-0006

(33 pages follow)

DAVIS-BESSE NUCLEAR POWER STATION
EVALUATION
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LICENSE AMENDMENT REQUEST NUMBER 01-0006

Subject: License Amendment Application to Revise Technical Specification 3/4.3.2.1, "Safety Features Actuation System Instrumentation," to Permit a Single Inoperable Safety Features Actuation System (SFAS) Instrument String Functional Unit to be Placed in a Bypassed Condition Indefinitely

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1.0 DESCRIPTION

This letter is a request to amend the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1 Facility Operating License Number NPF-3.

The proposed change would revise the Operating License Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.2.1, "Safety Features Actuation System Instrumentation," by revising Action 10 of TS Table 3.3-3, "Safety Features Actuation System Instrumentation," to permit a single Safety Features Actuation System (SFAS) instrument string functional unit to be placed in bypass indefinitely. Specifically, the proposed change would revise Action 10 of TS Table 3.3-3 to change the required actions when one or two SFAS instrument string functional units are inoperable. The proposed change would require that, with a single instrument string functional unit inoperable, the inoperable SFAS instrument string functional unit be placed in trip or bypass within one hour. The proposed change would also require that, with two instrument string functional units inoperable, one of the inoperable functional units be placed in trip and the other functional unit be placed in bypass within one hour. Additionally, the proposed change would eliminate the existing provision for an 8-hour delay for declaring a functional unit inoperable during channel functional testing. This provision would no longer be required because the ability to indefinitely bypass a single SFAS functional unit would allow performance of channel functional testing with the functional unit in bypass without the need for a special testing allowance.

The proposed change is similar to the existing requirements for the Reactor Protection System (RPS) in DBNPS TS LCO 3.3.1.1, "Reactor Protection System Instrumentation," and in LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation," of NUREG-1430, *Standard Technical Specifications - Babcock and Wilcox Plants*, Revision 3. The SFAS for the DBNPS is a four-channel system like the RPS described in LCO 3.3.1 of NUREG-1430. The proposed change differs from LCO 3.3.5 of NUREG-1430, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," in that the NUREG-described system only has three channels.

2.0 PROPOSED CHANGE

The proposed change affects TS Table 3.3-3, Action 10, and is shown in the marked-up TS pages in Attachment 2 to this LAR. The proposed change would reformat the action statement to include one action for when the number of operable functional units is one less than the total number of units (i.e. one functional unit inoperable) and a second action for when the number of operable units is one less than the minimum units operable (i.e. two functional units inoperable). The proposed Action 10.a would revise the required action for when one functional unit is inoperable to permit placing the functional unit in bypass instead of tripping the channel. Additionally, the proposed new Action 10.b would require that when two instrument string functional units are inoperable, one channel be tripped and the other placed in bypass. The proposed change would also eliminate the provision for an 8-hour delay for declaring a channel inoperable for channel functional testing. This provision would no longer be needed following adoption of the revised Action 10.

TS Table 3.3-3, Action 10, currently states:

> With the number of OPERABLE functional units one less than the Total Number of Units, STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below), the inoperable functional unit is placed in the tripped condition. When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE.

The proposed new TS Table 3.3-3, Action 10, would state:

a. With the number of OPERABLE functional units one less than the Total Number of Units, place the inoperable functional unit in the bypassed or tripped condition within one hour.

b. With the number of OPERABLE functional units one less than the Minimum Units OPERABLE requirement, within one hour, place one inoperable functional unit in the tripped condition and the second inoperable functional unit in the bypassed condition.

In summary, the proposed change would revise Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.2.1, "Safety Features Actuation System Instrumentation," by revising Action 10 of TS Table 3.3-3, "Safety Features Actuation System Instrumentation," to permit a single Safety Features Actuation System (SFAS) instrument string functional unit to be placed in bypass indefinitely. Specifically, the proposed change would revise Action 10 of TS Table 3.3-3 to change the required actions when one or two SFAS instrument string functional units are inoperable. The proposed change would require that, with a single instrument string functional unit inoperable, the inoperable SFAS instrument string functional unit be placed in trip or bypass within one hour. The proposed change would also require that, with two instrument string functional units inoperable, one of the inoperable functional units be placed in trip and the other functional unit be placed in bypass within one hour. Additionally, the proposed change would eliminate the existing provision for an 8-hour delay for declaring a functional unit inoperable during channel functional testing. This provision would no longer be required because the ability to indefinitely bypass a single SFAS functional unit would allow performance of channel functional testing with the functional unit in bypass without the need for a special testing allowance.

An associated change to the TS Bases is proposed in support of this application. The proposed change is identified in Attachment 4. This change would revise TS Bases Section 3/4.3.1 and 3/4.3.2, "Reactor Protection System and Safety System Instrumentation," to reflect the proposed revision to Action 10 of TS Table 3.3-3. This Bases change would be processed under the DBNPS TS Bases Control Program and is being provided for information only.

3.0 BACKGROUND

The Safety Features Actuation System is described in the DBNPS Updated Safety Analysis Report (USAR) Section 7.3, "Safety Features Actuation System (SFAS)." The function of the SFAS is to automatically prevent or limit fission product and energy release from the core, to isolate the containment vessel, and to initiate the operation of the Engineered Safety Features (ESF) equipment in the event of a loss-of-coolant accident (LOCA). The SFAS consists of four physically separated, redundant instrument channels. The SFAS monitors the following station variables: containment vessel (CV) pressure, Reactor Coolant System (RCS) pressure, and Borated Water Storage Tank (BWST) level.

The SFAS, as shown in logic and signal diagrams in the DBNPS USAR Figures 7.3-1 and 7.3-2, consists of four identical redundant sensing and logic channels and two identical redundant actuation channels. Each sensing channel includes analog circuits with analog isolation devices, and each logic channel includes trip bistable modules with digital (opto-electronic) isolation devices. These opto-electronic isolation devices also provide isolation between channels.

The trip bistables monitor the station variables and normally feed continuous electrical (fail-safe) signals into two-out-of-four coincidence matrices. Should any of the station variables exceed their trip setpoints, the corresponding bistables in each of the four channels would trip and cease sending output signals. Should two of the four channel bistables monitoring the same station variable cease to send output signals, the corresponding normally energized terminating relays on all channels will trip. The terminating relays of sensing and logic channels 1 and 3 must both be de-energized to activate safety actuation channel 1. Similarly, sensing and logic channels 2 and 4 are de-energized to activate safety actuation channel 2. The terminating relays act on the actuation control devices such as motor controllers and solenoid valves.

Each SFAS sensing channel is provided with one key operated rotary test trip bypass switch. The channel bypasses permit test, calibration, or maintenance of the analog circuits of the SFAS including the transmitters of the generating station variables. This switch enables the operator to change the two-out-of-four coincidence matrices (logic channels) into a two-out-of-three mode for one given generating station variable. In effect, the operator may (for one sensing channel only) bypass one of the variables to each of the other logic channels. The logic channel associated with the sensing channel being bypassed remains unaffected by the bypass. The key and the operation of the switch are under administrative control. Electro-mechanical features are provided to prohibit the insertion and operation of more than one channel bypass.

4.0 TECHNICAL ANALYSIS

Technical Specification Limiting Condition for Operation (LCO) 3.3.2.1 requires, in part, that the Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 be operable. TS Action 3.3.2.1.b requires that with a SFAS functional unit inoperable, the action shown in Table 3.3-3 be taken. Action 10 of TS Table 3.3-3 applies solely to Functional Unit 1, "Instrument Strings," for the following parameters: Containment Pressure - High, Containment Pressure - High-High, Reactor Coolant System (RCS) Pressure - Low, RCS Pressure - Low-Low, and Borated Water Storage Tank (BWST) Level Low-Low.

Presently when a single SFAS instrument string is inoperable for reasons other than channel functional testing, it must be placed in the tripped state within one hour. When two or more SFAS instrument strings are inoperable for the same parameter, no action is specified, and a shutdown in accordance with TS 3.0.3 must be initiated. Under the proposed change, with one functional unit inoperable, Action 10.a would permit placing the inoperable functional unit in a tripped condition within one hour. This action is consistent with the existing TS requirements and, therefore, is not evaluated further.

The proposed change would permit a single SFAS instrument string functional unit to be placed in bypass indefinitely. This proposed Action 10.a would effectively allow the SFAS sensor channel logic to operate indefinitely in a 2-out-of-3 logic for a single monitored parameter instead of the normal 2-out-of-4 logic. The proposed action 10.b to permit the bypassing of one inoperable functional unit and the tripping of a second inoperable functional unit would allow the SFAS sensor channel logic to be 1-out-of-2 indefinitely.

The SFAS channel bypass is intended to be used for testing and maintenance of a channel. Although the proposed change would permit operating extended periods of time in a configuration different from the original 2-out-of-4 logic, it is not intended that repair of an inoperable SFAS functional unit would be delayed unnecessarily. Operating with a 2-out-of-4 logic will continue to be the preferred state. It is noted that the inoperability of any SFAS functional unit for reasons other than testing or maintenance would constitute a degraded or nonconforming condition and would require corrective action under the requirements of 10 CFR 50 Appendix B.

The design criteria for which the SFAS was designed are provided in USAR Table 7.1-1, "Safety Criteria Used in the Design of Safety Related Control and Instrument Systems." An evaluation of the SFAS with a single instrument string functional unit bypassed against the relevant design criteria for the SFAS is shown in Attachment 1. Attachment 1 presents the source document for each relevant design requirement, the statement of the design requirement, and an evaluation of the SFAS in the conditions permitted by Action 10 to the specified requirement. Design requirements that are not relevant to the proposed change are not listed in Attachment 1. This evaluation shows that with the SFAS in the conditions permitted by the proposed Actions 10.a and 10.b, the SFAS still satisfies all the applicable design criteria.

The proposed change would eliminate the provision for an 8-hour allowance for not declaring an SFAS functional unit inoperable when performing channel functional testing. This provision would no longer be needed under the proposed Actions 10.a and 10.b because the ability to indefinitely bypass a single SFAS functional unit would allow performance of channel functional testing with the channel in bypass.

In summary, the revised Action 10 of TS Table 3.3-3 will continue to assure that SFAS will be capable of performing its required safety functions, and therefore, the proposed changes will have no significant adverse effect on safety.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration (NSHC)

The proposed amendment would revise the Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.2.1, "Safety Features Actuation System Instrumentation," by revising Action 10 of TS Table 3.3-3, "Safety Features Actuation System Instrumentation," to permit a single Safety Features Actuation System (SFAS) instrument string functional unit to be placed in bypass indefinitely. Specifically, the proposed change would revise Action 10 of TS Table 3.3-3 to change the required actions when one or two SFAS instrument string functional units are inoperable. The proposed change would require that, with a single instrument string functional unit inoperable, the inoperable SFAS instrument string functional unit be placed in trip or bypass within one hour. The proposed change would require that, with two instrument string functional units inoperable, one of the inoperable functional units be placed in trip and the other functional unit be placed in bypass within one hour. Additionally, the proposed change would eliminate the existing provision for an 8-hour delay for declaring a functional unit inoperable during channel functional testing. This provision would no longer be required because the ability to indefinitely bypass a single SFAS functional unit would allow performance of channel functional testing with the functional unit in bypass.

An evaluation has been performed to determine whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed change would permit a single SFAS instrument string functional unit to be placed in bypass indefinitely. The primary function of SFAS is to monitor station conditions and actuate the engineered safety features when needed in order to prevent or limit fission product and energy release from the core, to isolate the containment vessel, and to initiate the operation of the Engineered Safety Features (ESF) equipment in the event of a loss-of-coolant accident (LOCA).

   The SFAS is a possible accident initiator in that an inadvertent system level actuation could result in a transient or accident. The existing Technical Specification requirements for SFAS allow operation indefinitely with a single SFAS functional unit in trip, which results in a 1-out-of-3 channel logic. In this condition, the spurious actuation in one

of the three remaining corresponding functional unit would result in an inadvertent system level actuation. Under the proposed change, indefinite operation in a 2-out-of-3, 1-out-of-3, or 1-out-of-2 channel logic would be allowed. The likelihood of a spurious system level actuation for any of the configurations allowed under the proposed change is no greater than the likelihood of spurious actuation under the 1-out-of-3 channel logic allowed under the existing Technical Specification requirements. Therefore, operation of the SFAS in the configurations permitted by the proposed change would not result in an increase in the likelihood of an inadvertent SFAS actuation from that permitted by the existing Technical Specifications.

Under the proposed change, the SFAS will continue to perform this function with a high level of reliability. The proposed change would allow operation of the SFAS in a condition with reduced redundancy from what is currently required by the Technical Specifications. Operation of the SFAS with reduced redundancy was evaluated against the design criteria to which the system was designed. The design criteria applicable to the SFAS, including the single failure criterion, continue to be met. The proposed change does not prevent the SFAS from mitigating the consequences of previously analyzed accidents.

The proposed change would not increase the likelihood of an inadvertent SFAS actuation. The proposed change would not prevent the SFAS from mitigating the consequences of previously analyzed accidents. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change does not alter the SFAS design function or the manner in which that function is performed. Under the proposed change, the SFAS will continue to perform its function with a high degree of reliability. No new failure modes or accident initiators are created by the proposed change. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

The proposed change would allow operation of the SFAS in a condition with reduced redundancy from what is currently required by the Technical Specifications. Operation of the SFAS with reduced redundancy was evaluated against the design criteria to which the system was designed. This evaluation shows that with the SFAS in the conditions permitted by the proposed change, the SFAS still satisfies all the applicable design criteria, including the single failure criterion. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is acceptable.

5.2 Applicable Regulatory Requirements/Criteria

The standards, safety guides, and general design criteria to which the SFAS was designed are specified in USAR Table 7.1-1, "Safety Criteria Used in the Design of Safety Related Control and Instrument Systems." The design requirements relevant to the proposed change are identified in Attachment 1 along with an evaluation of how the requirements are met under the proposed change. This evaluation shows that with the SFAS in the conditions permitted by the proposed change, the SFAS still satisfies all the applicable design requirements.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. DBNPS Operating License NPF-3, Appendix A Technical Specifications through Amendment 262.

2. DBNPS Updated Safety Analysis Report through Revision 24.

3. IEEE Standard 279-1971, "IEEE Standard: Criteria for Protection Systems for Nuclear Power Generating Stations."

4. IEEE Standard 308-1971, "IEEE Standard Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations."

5. IEEE Standard 323-1971, "Draft American National and IEEE Trial-Use Standard: General Guide for Qualifying Class I Electric Equipment for Nuclear Power Generating Stations."

6. IEEE Standard 338-1971, "IEEE Trial-Use Criteria for the Periodic Testing of Nuclear Power Generating Station Protection Systems."

7. IEEE Standard 344-1971, "IEEE Trial-Use Guide for Seismic Qualification of Class I Electric Equipment for Nuclear Power Generating Stations."

8. Code of Federal Regulations, Title 10.

9. Safety Guide 22, "Periodic Testing of Protection System Actuation Functions," February 17, 1972.

10. Safety Guide 29, "Seismic Design Classification," June 7, 1972.

11. NUREG-1430, *Standard Technical Specifications - Babcock and Wilcox Plants*, Revision 3.

8.0 ATTACHMENTS

1. Evaluation of the Safety Features Actuation System with a Single Instrument String Functional Unit Bypassed

2. Proposed Mark-Up of Technical Specification Pages

3. Proposed Retyped Technical Specification Pages

4. Technical Specification Bases Pages

EVALUATION OF THE SAFETY FEATURES ACTUATION SYSTEM WITH A SINGLE INSTRUMENT STRING FUNCTIONAL UNIT BYPASSED

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
IEEE 279-1971	These criteria establish minimum requirements for the safety-related functional reliability of protection systems for stationary, land-based nuclear reactors producing steam for electric power generation.	The SFAS continues to satisfy the criteria of this standard even with a single functional unit in the bypass condition. Specific criteria relevant to operation with a single functional unit bypassed are addressed below.
IEEE 279-1971 4.1 General Functional Requirement	The nuclear power generating station protection system shall, with precision and reliability, automatically initiate appropriate protective action whenever a condition monitored by the system reaches a preset level. This requirement applies to the full range of conditions and performance enumerated in Sections 3(7), 3(8), and 3(9).	Permitting a single functional unit to be placed in bypass indefinitely will not affect the ability of the remaining operable SFAS functional units to initiate protective action when a measured parameter exceeds its setpoint. For the operating condition permitted by proposed Action 10.a, 2-out-of-3 logic exists for the remaining instrument strings to generate a system level actuation. For the operating condition permitted by proposed Action 10.b, 1-out-of-2 logic exists for the remaining instrument strings to generate a system level actuation. The proposed change does not affect the operating conditions (voltage, frequency, temperature, etc.) in which the SFAS is required to perform or the ability of the SFAS to perform under such operating conditions. The proposed change does not affect the malfunctions, accidents, or other unusual events the SFAS is designed to withstand nor the ability of the SFAS to withstand such events. No change in SFAS instrumentation setpoints or response times would result from the proposed change.

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
IEEE 279-1971 4.2 Single Failure Criterion	Any single failure within the protection system shall not prevent proper protective action at the system level when required.	Independence of the four SFAS sensing functional units ensures that even with one functional unit bypassed, the remaining functional units are sufficient to initiate protective action even with a single failure of a remaining sensing functional unit. The 2-out-of-3 logic maintained by the proposed Action 10.a and the 1-out-of-2 logic maintained by the proposed Action 10.b provide an adequate degree of redundancy to meet the single failure criterion.
IEEE 279-1971 4.6 Channel Independence	Channels that provide signals for the same protective function shall be independent and physically separated to accomplish decoupling of the effects of unsafe environmental factors, electric transients, and physical accident consequences documented in the design basis, and to reduce the likelihood of interactions between channels during maintenance operations or in the event of channel malfunction.	Independence is provided between redundant SFAS channels to accomplish decoupling of the effects of unsafe environmental factors, earthquake, electric transients, the consequences of physical accidents, and to reduce the likelihood of interactions between redundant channels during maintenance or in the event of channel malfunction. This is accomplished by physical separation and electrical isolation between cabinets and channels. The bypassing of a single instrument string functional unit, as allowed by the proposed Action 10.a, does not affect the independence of the remaining three functional units. Bypassing of a single instrument string functional unit and tripping another, as allowed by the proposed Action 10.b, does not affect the independence of the remaining two functional units.

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
IEEE 279-1971 4.11 Channel Bypass or Removal from Operation	The system shall be designed to permit any one channel to be maintained, and when required, tested or calibrated during power operation without initiating a protective action at the system level. During such operation the active parts of the system shall themselves continue to meet the single failure criterion.	The SFAS was designed with a test trip bypass switch (TTBS) in each channel to permit bypassing a single monitored station parameter in a single channel. This places the system in a two-out-of-three logic for system level actuation of the parameter bypassed. In this configuration the single failure criterion is met. The bypassing of the same parameter in two SFAS channels would place the SFAS in a configuration where the single failure criterion would no longer be met. To ensure this condition does not occur, the TTBSs for each channel are interlocked to prevent more than one channel from being in bypass at any one time. One of the remaining channels could be maintained or tested in the tripped condition without initiating a protective action at the system level, as permitted by proposed Action 10.b.
IEEE 308-1971	The purpose of this standard is to provide: (1) The principal design criteria and the design features of the Class IE electric systems that enable the systems to meet their functional requirement under the conditions produced by the design basis events, (2) The minimum operational conditions of the Class IE electric systems under which the station will be permitted to operate, (3) The surveillance requirements of the Class IE electric systems.	There are four separate trains of essential power that supply the four separate SFAS channels. Power for each channel is from an essential AC instrumentation distribution panel. Bypassing or tripping an SFAS functional unit does not affect the design capability of the SFAS channel power supplies, the conditions under which the SFAS channel power supplies are required to operate, or the independence of the SFAS channel power supplies.

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
IEEE 323-1971	The purpose of this document is to provide guidance for demonstrating the qualifications of electrical equipment as required in IEEE Std 279 - Criteria for Nuclear Power Generating Station Protection Systems, and IEEE Std 308 - Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations.	The SFAS complies with the basic requirements for the qualifications of Class 1E electrical equipment and meets this standard. Operating with a single functional unit in bypass does not affect the qualification of SFAS equipment.
IEEE 338-1971	This document establishes specific criteria for the periodic testing required to ensure operational availability of protection systems utilizing the capability called for in the Criteria for Nuclear Power Generating Station Protection Systems, IEEE Std. 279-1971.	The SFAS continues to satisfy the criteria of this standard even with a single functional unit in the bypass condition. Specific criteria relevant to operation with a single functional unit bypassed are addressed below.
IEEE 338-1971 5.1 General Considerations	The periodic testing program shall be designed such that: . . (3) The test circuits and equipment shall not negate the protective function. The effects of any test-induced nonredundancy must be acceptable in terms of the reliability goals.	Independence of the four SFAS sensing channels ensures that even if one functional unit is bypassed for testing, the remaining functional units are sufficient to initiate protective action even with a single failure of a remaining sensing functional unit. The 2-out-of-3 logic maintained by the proposed Action 10.a and the 1-out-of-2 logic maintained by the proposed Action 10.b provide an adequate degree of redundancy to meet the single failure criterion.

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
IEEE 338-1971 5.3.2	The test input to the channel shall be introduced as close to the sensor as is practicable. This may be accomplished in various ways, for example: . . (2) By introducing and varying as appropriate a substitute input to the sensor of the same nature as the monitored variable. If this method is used, the test procedures shall be such that (a) the channel continues to be operable during testing; that is, a real demand over rides the test; or (b) if the channel has to be rendered inoperative for the test, the inoperative condition shall be indicated and the remainder of the system shall independently meet the single failure criterion. . . .	SFAS testing includes tests in which a channel is inoperative during testing. Initiation of the channel bypass is continuously indicated at the SFAS cabinets, by the station computer, and annunciator. The 2-out-of-3 logic maintained by the proposed Action 10.a and the 1-out-of-2 logic maintained by the proposed Action 10.b provide an adequate degree of redundancy to meet the single failure criterion. If the SFAS were operating in the condition allowed by proposed Action 10.b and one of the two remaining operable functional units required testing, a plant shutdown would be required by TS 3.0.3 since no action is provided for the condition when three functional units are inoperable.
IEEE 344-1971	This guide provides direction for establishing procedures that will yield data which can verify that the Class I electric equipment can meet its performance requirements during and following a design basis earthquake.	The SFAS components are designed to function properly before, during, and after earthquake conditions. Operating with a single functional unit in bypass does not affect the seismic qualification of SFAS equipment.

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
GDC 21	The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.	When a single SFAS functional unit is bypassed, the remaining three SFAS functional units will continue to assure high functional reliability. With the remaining functional units in a 2-out-of-3 logic, no single failure will prevent successful system actuation. Even with the removal of an additional functional unit from service (i.e. tripped), a 1-out-of-2 logic ensures no loss of protection function even with an additional single failure. The bypassing of a single functional unit does not prevent the performance of testing of the remaining functional units. If the SFAS were operating in the condition allowed by proposed Action 10.b and one of the two remaining operable functional units required testing, a plant shutdown would be required by TS 3.0.3 since no action is provided for the condition when three functional units are inoperable.

Reference	Requirement	Evaluation of System with Functional Unit in Bypass
GDC 22	The protection system shall be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function, or shall be demonstrated to be acceptable on some other defined basis. Design techniques, such as functional diversity or diversity in component design and principles of operation, shall be used to the extent practical to prevent loss of the protection function.	Independence is provided between redundant SFAS channels to accomplish decoupling of the effects of unsafe environmental factors, earthquake, electric transients, the consequences of physical accidents, and to reduce the likelihood of interactions between redundant channels during maintenance or in the event of channel malfunction. This is accomplished by physical separation and electrical isolation between cabinets and channels. The bypassing of a single instrument string functional unit does not affect the independence of the remaining three functional units. The bypassing of a single parameter (Reactor Coolant Pressure, Containment Pressure, or Borated Water Storage Tank Level) for a single channel does not affect the diversity of parameters monitored by the SFAS. Since the TTBS affects only one monitored parameter at a time, the instrument strings monitoring diverse parameters remain available to initiate a protective action.

Note: The SFAS also meets the General Design Criteria and Safety Guides listed below. These design requirements are not affected by operation of the SFAS in a bypass condition and, therefore, are not discussed in this evaluation.

- AEC General Design Criteria 1, 2, 3, 4, 13, 15, 20, 23, and 24
- AEC Safety Guides 22 and 29

LAR 01-0006
Attachment 2

PROPOSED MARK-UP
OF
TECHNICAL SPECIFICATION PAGES
(9 pages follow)

INFORMATION ONLY

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4, with the exception of: Instrument Strings Functional Units b, c, d, e, and f and Interlock Channels Functional Unit a, which shall be set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.

TABLE 3.3-3

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
1. INSTRUMENT STRINGS					
a. DELETED	DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	4	2	3	1, 2, 3	10#
c. Containment Pressure - High-High	4	2	3	1, 2, 3	10#
d. RCS Pressure - Low	4	2	3	1, 2, 3*	10#
e. RCS Pressure - Low-Low	4	2	3	1, 2, 3**	10#
f. BWST Level - Low-Low	4	2	3	1, 2, 3	10#
2. OUTPUT LOGIC					
a. Incident Level #1: Containment Isolation	2	1	2	1, 2, 3, 4	11
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	2	1	2	1, 2, 3, 4	11
c. Incident Level #3: Low Pressure Injection	2	1	2	1, 2, 3, 4	11
d. Incident Level #4: Containment Spray	2	1	2	1, 2, 3, 4	11
e. Incident Level #5: Containment Sump Recirculation Permissive	2	1	2	1, 2, 3, 4	11

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	1,2,3,4	12
b. Containment Spray	2	2	2	1,2,3,4	12
4. SEQUENCE LOGIC CHANNELS					
a. Sequencer	4	2/BUS	2/BUS	1,2,3,4	15#
b. Essential Bus Feeder Breaker Trip (90%)	4*****	2/BUS	2/BUS	1,2,3,4	15#
c. Diesel Generator Start, Load shed on Essential Bus (59%)	4	2/BUS	2/BUS	1,2,3,4	15#
5. INTERLOCK CHANNELS					
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#
b. Pressurizer Heaters	2	2	2	3******	14

Amendment No. ~~28,37,52,102,~~ ~~135,159,211,~~ 221

INFORMATION ONLY

TABLE NOTATION

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig.

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

*** DELETED

**** DELETED

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump.

****** When either Decay Heat Isolation Valve is open.

The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 10 - a. With the number of OPERABLE functional units one less than the Total Number of Units, ~~STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below),~~ place the inoperable functional unit ~~is placed~~ in the bypassed or tripped condition within one hour. ~~When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE.~~

b. With the number of OPERABLE functional units one less than the Minimum Units OPERABLE requirement, within one hour, place one inoperable functional unit in the tripped condition and the second inoperable functional unit in the bypassed condition.

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

INFORMATION ONLY

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE Units one less than the Total Number of Units, restore the inoperable functional unit to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - a. With less than the Minimum Units OPERABLE and indicated reactor coolant pressure $\geq$ 328 psig, both Decay Heat Isolation Valves (DHI1 and DHI2) shall be verified closed.

b. With Less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig.

ACTION 14 - With less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig, operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig, or the inoperable functional unit shall be placed in the tripped state.

ACTION 15 - a. With the number of OPERABLE units one less than the Minimum Units Operable per Bus, place the inoperable unit in the tripped condition within one hour. For functional unit 4.a the sequencer shall be placed in the tripped condition by physical removal of the sequencer module. The inoperable functional unit may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

b. With the number of OPERABLE units two less than the Minimum Units Operable per Bus, declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and take the ACTION required of Specification 3.8.1.1.

TABLE 3.3-4

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
INSTRUMENT STRINGS		
a. DELETED	DELETED	DELETED
b. Containment Pressure – High	DELETED	≤ 19.38 psia##
c. Containment Pressure - High-High	DELETED	≤ 41.65 psia##
d. RCS Pressure – Low	N.A.	≥ 1576.2 psig##
e. RCS Pressure - Low-Low	N.A.	≥ 441.42 psig##
f. BWST Level	N.A.	≥ 101.6 and ≤ 115.4 in. H_2O##
SEQUENCE LOGIC CHANNELS		
a. Essential Bus Feeder Breaker Trip (90%)	≥ 3744 volts for ≤ 7.8 sec	≥ 3558 volts ≤ 7.8 sec
b. Diesel Generator Start, Load Shed on Essential Bus (59%)	≥ 2071 and ≤ 2450 volts for 0.5 ± 0.1 sec	≥ 2071 and ≤ 2450 volts for 0.5 ± 0.1 sec#
INTERLOCK CHANNELS		
a. Decay Heat Isolation Valve and Pressurizer Heater	N.A.	< 328 psig## *

Allowable Value for CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION
* Referenced to the RCS Pressure instrumentation tap.
Allowable Value for CHANNEL FUNCTIONAL TEST

Amendment No. 7,28,36,58,190,218,221,241, 243

INFORMATION ONLY

TABLE 3.3-5

SAFETY FEATURES SYSTEM RESPONSE TIMES

DELETED

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. INSTRUMENT STRINGS				
a. DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	S	E	M(2)	1, 2, 3
c. Containment Pressure - High-High	S	E	M(2)	1, 2, 3
d. RCS Pressure - Low	S	R	M	1, 2, 3
e. RCS Pressure - Low-Low	S	R	M	1, 2, 3
f. BWST Level - Low-Low	S	E	M	1, 2, 3
2. OUTPUT LOGIC				
a. Incident Level #1: Containment Isolation	S	E	M	1, 2, 3, 4
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	S	E	M	1, 2, 3, 4
c. Incident Level #3: Low Pressure Injection	S	E	M	1, 2, 3, 4
d. Incident Level #4: Containment Spray	S	E	M	1, 2, 3, 4
e. Incident Level #5: Containment Sump Recirculation Permissive	S	E	M	1, 2, 3, 4
3. MANUAL ACTUATION				
a. SFAS (Except Containment Spray and Emergency Sump Recirculation)	NA	NA	M(1)	1, 2, 3, 4
b. Containment Spray	NA	NA	M(1)	1, 2, 3
4. SEQUENCE LOGIC CHANNELS	S	NA	M	1, 2, 3, 4

INFORMATION ONLY

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
5. INTERLOCK CHANNELS				
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3
b. Pressurizer Heater	S	R	**	3 ##

**See Specification 4.5.2.d.1

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days.

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter.

DELETED

When either Decay Heat Isolation Valve is open.

Amendment No. ~~28, 35, 37,~~ ~~139, 159, 186, 218, 221~~

LAR 01-0006
Attachment 3

PROPOSED RETYPED
TECHNICAL SPECIFICATION PAGES
(1 page follows)

TABLE NOTATION

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig.

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

*** DELETED

**** DELETED

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump.

****** When either Decay Heat Isolation Valve is open.

The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 10 - a. With the number of OPERABLE functional units one less than the Total Number of Units, place the inoperable functional unit in the bypassed or tripped condition within one hour.

b. With the number of OPERABLE functional units one less than the Minimum Units OPERABLE requirement, within one hour, place one inoperable functional unit in the tripped condition and the second inoperable functional unit in the bypassed condition.

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

LAR 01-0006
Attachment 4

TECHNICAL SPECIFICATION BASES PAGES
(3 pages follow)

Note: The Bases pages are provided for information only.

INFORMATION ONLY

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION

The OPERABILITY of the RPS, SFAS and SFRCS instrumentation systems ensure that 1) the associated action and/or trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for RPS, SFAS and SFRCS purposes from diverse parameters

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the required design standards The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. The response time limits for these instrumentation systems are located in the Updated Safety Analysis Report and are used to demonstrate OPERABILITY in accordance with each system's response time surveillance requirements

As indicated in RPS Table 4 3-1 for Functional Units 1 and 12, a CHANNEL FUNCTIONAL TEST is required to be performed for the Manual Reactor Trip function and the CRD Trip Breakers function once prior to each reactor startup, i.e , prior to Mode 2 entry, if not performed within the previous 7 days. These surveillance requirements ensure the OPERABILITY of these Functional Units prior to achieving criticality

If the plant is in MODE 2 or if the plant is in MODE 3, 4, or 5 with the control rod drive trip breakers in the closed position and the control rod drive system capable of rod withdrawal, then Functional Unit 11.A of Table 3.3-1 applies With THERMAL POWER level > 10^{-10} amps on both Intermediate Range channels, high voltage to the Source Range detectors may be de-energized If the plant is in MODE 3, 4, or 5 with the control rod drive trip breakers not in the closed position or the control rod drive system not capable of withdrawal, Functional Unit 11 B of Table 3 3-1 applies Applicability of Functional Units 11 A and 11 B is dependent upon the plant MODE and control rod drive system status and is not dependent on if the plant is in the process of a startup or a shutdown

In order to comply with TS 3 3 1 1, all four CRD Trip Breakers and all four RPS Reactor Trip Modules (RTMs) must be OPERABLE, or entry into RPS Table 3.3-1, ACTION 7 and/or ACTION 8 is required:

> If an RTM is inoperable, depending on the reason, it may be appropriate to apply Action 7 a.1, 7 a.2, or both, as needed to ensure that a valid reactor trip signal will cause a reactor trip when needed, despite the inoperability of the RTM. The most conservative action would be to open the CRD Trip Breaker and physically remove the RTM from its cabinet, however, this may make the plant susceptible to an unnecessary reactor trip and transient due to a spurious signal
>
> If a CRD Trip Breaker is inoperable, it is appropriate to apply Action 7 a.2
>
> Action 7.b affords limited flexibility with respect to surveillance testing in the Reactor Trip System opposite the Reactor Trip System with the inoperable channel

The Shutdown Bypass High Pressure trip provides the means for removing four automatic RPS trip parameters (i.e , RC Low Pressure, RC Pressure-Temperature, Flux-ΔFlux-Flow, High Flux/Number of Reactor Coolant Pumps On) from the RPS circuitry during a plant shutdown and heatup, or control rod drive testing and zero power physics testing, and inserts a lower RC high pressure trip in the circuit If the CRD breakers are open and the CRD system is not capable of rod withdrawal, the trip function of the Shutdown Bypass is not considered actuated with the keyswitch initiated since it will not cause tripping of the CRD breakers. Therefore, under this condition the "Applicable MODES" of Functional Unit 14 of Table 3 3-1 and the "MODES in Which Surveillance Required" for Functional Unit 14 of Table 4 3-1 are not entered.

INFORMATION ONLY

BASES

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION (Continued)

~~SFAS Table 3.3-3, ACTION 10, allows entry into this ACTION statement to be delayed for up to 8 hours when a functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, provided at least two other corresponding functional units remain OPERABLE. The term "corresponding functional units" refers to the functional units (Total No. of Units column in Table 3.3-3) for the same trip setpoint in the other SFAS channels. For example, the corresponding functional units for a Containment Pressure—High unit are the other three Containment Pressure—High units. This 8-hour allowance provides a reasonable time to perform the required surveillance testing without having to enter the ACTION statement and implement the required ACTIONS.~~

SFRCS Table 3.3-11, ACTION 16, allows entry into this ACTION statement to be delayed for up to 8 hours when a channel is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, provided the remaining actuation channel remains OPERABLE. This 8-hour allowance provides a reasonable time to perform the required surveillance testing without having to enter the ACTION statement and implement the required ACTIONS

For the RPS, SFAS Table 3.3-4 Functional Unit Instrument Strings b, c, d, e, and f, and Interlock Channel a, and SFRCS Table 3.3-12 Functional Unit 2:

Only the Allowable Value is specified for each Function. Nominal trip setpoints are specified in the setpoint analysis. The nominal trip setpoints are selected to ensure the setpoints measured by CHANNEL FUNCTIONAL TESTS do not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis to account for instrument uncertainties appropriate to the trip parameter. These uncertainties are defined in the specific setpoint analysis.

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function Setpoints must be found within the specified Allowable Values Any setpoint adjustment shall be consistent with the assumptions of the current specific setpoint analysis.

A CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to the measured parameter within the necessary range and accuracy CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the setpoint analysis.

The frequency is justified by the assumption of an 18 or 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

The measurement of response time at the specified frequencies provides assurance that the RPS, SFAS, and SFRCS action function associated with each channel is completed within the time limit assumed in the safety analyses.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION (Continued)

The SFRCS RESPONSE TIME for the turbine stop valve closure is based on the combined response times of main steam line low pressure sensors, logic cabinet delay for main steam line low pressure signals and closure time of the turbine stop valves This SFRCS RESPONSE TIME ensures that the auxiliary feedwater to the unaffected steam generator will not be isolated due to a SFRCS low pressure trip during a main steam line break accident

Surveillance Requirement 4 3 2 1 3 requires demonstration that each SFAS function can be performed within the applicable SAFETY FEATURES RESPONSE TIME If an inoperable SFAS-actuated component is placed in its actuated position, this surveillance requirement is met. When this surveillance requirement can not be met due to an inoperable SFAS-actuated component, the LCO ACTION associated with the inoperable actuated component should be entered The actuated component, except for the contacts at the actuator is not part of the SFAS output logic When the SAFETY FEATURES RESPONSE TIME surveillance requirement can not be met due to inoperable components within the SFAS, the applicable Table 3 3-3 ACTION should be followed Similarly, Surveillance Requirement 4 3 2 2 3 requires demonstration that each SFRCS function can be performed within the applicable SFRCS RESPONSE TIME When this surveillance requirement can not be met due to an inoperable SFRCS-actuated component, the LCO ACTION associated with the inoperable actuated component should be entered When the SFRCS RESPONSE TIME surveillance requirement can not be met due to inoperable components within the SFRCS, ACTION 16 of Table 3 3-11 should be followed

The actuation logic for Functional Units 4 a , 4 b , and 4 c of Table 3.3-3, Safety Features Actuation System Instrumentation, is designed to provide protection and actuation of a single train of safety features equipment, essential bus or emergency diesel generator Collectively, Functional Units 4 a , 4.b , and 4 c function to detect a degraded voltage condition on either of the two 4160 volt essential buses, shed connected loads, disconnect the affected bus(es) from the offsite power source and start the associated emergency diesel generator In addition, if an SFAS actuation signal is present under these conditions, the sequencer channels for the two SFAS channels which actuate the train of safety features equipment powered by the affected bus will automatically sequence these loads onto the bus to prevent overloading of the emergency diesel generator Functional Unit 4 a. has a total of four units, one associated with each SFAS channel (i e , two for each essential bus) Functional Units 4 b and 4 c each have a total of four units, (two associated with each essential bus); each unit consisting of two undervoltage relays and an auxiliary relay

An SFRCS channel consists of 1) the sensing device(s), 2) associated logic and output relays, and 3) power sources. The SFRCS output signals that close the Main Feedwater Block Valves (FW-779 and FW-780) and trip the Anticipatory Reactor Trip System (ARTS) are not required to mitigate any accident and are not credited in any safety analysis Therefore, LCO 3 3 2 2 does not apply to these functions

Safety-grade anticipatory reactor trip is initiated by a turbine trip (above 45 percent of RATED THERMAL POWER) or trip of both main feedwater pump turbines. This anticipatory trip will operate in advance of the reactor coolant system high pressure reactor trip to reduce the peak reactor coolant system pressure and thus reduce challenges to the pilot operated relief valve This anticipatory reactor trip system was installed to satisfy Item II K 2.10 of NUREG-0737

Docket Number 50-346
License Number NPF-3
Serial Number 3086
Enclosure 2

COMMITMENT LIST

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station (DBNPS) in this document. Any other actions discussed in the submittal represent intended or planned actions by the DBNPS. They are described only for information and are not regulatory commitments. Please notify the Supervisor – Licensing (330-315-6944) of any questions regarding this document or any associated regulatory commitments.

COMMITMENTS	DUE DATE
None	N/A