



Omaha Public Power District
444 South 16th Street Mall
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LIC-13-0001
February 18, 2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

- References:
1. Docket No. 50-285
 2. Letter from NRC (D. G. Eisenhut) to All Power Reactor Licensees, dated April 10, 1980 (NRC-80-0060)
 3. Letter from NRC (R. A. Clark) to OPPD (W. C. Jones), Fort Calhoun Station Unit No. 1 – Amendment No. 52, dated October 14, 1980 (NRC-80-0187)
 4. Letter from OPPD (R. P. Clemens) to NRC (Document Control Desk), *Revision to Fort Calhoun Station Unit No. 1, License Amendment Request (LAR) 09-03, Revision to Technical Specifications Sections 2.0.1 and 2.7 Inoperable System, Subsystem or Component Due to Inoperable Power*, dated May 28, 2009 (LIC-09-0036)
 5. Letter from NRC (L. E. Wilkins) to OPPD (D. J. Bannister), *Fort Calhoun Station, Unit No. 1 – Issuance of Amendment RE: Revision to Technical Specification Sections 2.0.1 and 2.7 for Inoperable System, Subsystem, or Component Due to Inoperable Power Source and Deletion of Diesel Generator Surveillance Requirement 3.7(1)e (TAC No. ME1484)*, dated May 14, 2010 (NRC-10-0033)(ML100910077)

SUBJECT: Fort Calhoun Station Unit No. 1, License Amendment Request 13-01, Revision to Technical Specifications Sections 2.0.1 and 2.7 for Inoperable System, Subsystem or Component Due to Inoperable Power Source

Pursuant to 10 CFR 50.90, the Omaha Public Power District (OPPD) hereby requests the following changes to the Fort Calhoun Station (FCS), Unit No. 1, Renewed Operating License No. DPR-40: (1) revise the definition for Operable-Operability in the FCS Technical Specifications (TS); (2) modify the provisions under which equipment may be considered operable when either its normal or emergency power source is inoperable; and (3) revise the minimum requirement statement in Technical Specification 2.7 to the wording previously reviewed and approved by the NRC in Amendment 147. These changes are more aligned with NUREG 0212 Revision 2, *Standard Technical Specifications [STS] for Combustion Engineering Plants*.

The associated TS Bases for TS 2.0.1 and 2.7 are also being revised to reflect the addition of 2.0.1 paragraph (2), renumbering of 2.0.1 paragraph (3), repagination, and re-location of information to support the changes to TS 2.7(2), respectively. The TS Bases Changes (TSBCs) are included for information and will be processed in accordance with TS 5.20.

OPPD has determined that this LAR does not involve a significant hazard consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

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NRR

The enclosure contains a description of the proposed changes, the supporting technical evaluation, and the significant hazards consideration determination. Attachment 1 provides the existing TS pages marked-up to show the proposed changes. Attachment 2 provides the retyped (clean) TS pages. Attachments 3 and 4 provide the "information only" markups and retyped (clean) TS Bases pages for TS 2.0.1 and 2.7, respectively.

OPPD requests approval of the proposed amendment by January 30, 2014. Once approved, the amendment shall be implemented within 120 days.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated State of Nebraska official.

If you should have any questions regarding this LAR or require additional information, please contact Mr. Bill R. Hansher at 402-533-6894.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 18, 2013.

A handwritten signature in black ink, appearing to read 'LPC', with a stylized flourish extending from the end.

Louis P. Cortopassi
Site Vice President - CNO

LPC/BRH/dll

Enclosure: OPPD's Evaluation of the Proposed Change(s)

- c: E. E. Collins, Jr., NRC Regional Administrator, Region IV
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OPPD's Evaluation of the Proposed Change(s)

License Amendment Request (LAR) 13-01, Revision to Technical Specifications Sections 2.0.1 and 2.7 for Inoperable System, Subsystem or Component Due to Inoperable Power Source

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ATTACHMENTS:

- 1. Technical Specifications Pages - Markups
- 2. Technical Specifications Pages - Retyped ("Clean")
- 3. Technical Specification Bases Pages – Markups (For Information Only)
- 4. Technical Specification Bases Pages – Retyped ("Clean") (For Information Only)

1.0 SUMMARY DESCRIPTION

The Omaha Public Power District (OPPD) hereby requests an amendment to the Renewed Facility Operating License No. DPR-40 for Fort Calhoun Station (FCS), Unit No. 1, to revise the Technical Specifications (TS) definition of Operable – Operability; Limiting Conditions for Operation (LCO) 2.0.1, *General Requirements*; TS 2.7, *Electrical Systems*, paragraphs (1) *Minimum Requirements* and (2) *Modification of Minimum Requirements*.

Specifically, the TS *Miscellaneous Definition* of Operable – Operability will be revised to be more aligned with NUREG-0212 Revision 2, *Standard Technical Specifications [STS] for Combustion Engineering Plants*. Also, TS 2.0.1 is being revised to incorporate guidance on actions to be taken when either a normal or emergency power supply is inoperable, renumbering paragraph (2), and repaginating TS 2.0.1 due to addition of text.

The associated TS Basis for TS 2.0.1 is also being modified to reflect the proposed addition of 2.0.1(2), the renumbering, and repagination. These TS Bases changes are included for information and will be processed in accordance with TS 5.20.

This license amendment request (LAR) is being submitted to address Nuclear Regulatory Commission (NRC) regional inspection and NRC TS Branch staff concerns regarding the current definition of operable/operability. Specifically, incorporation of the definition of operable/operability from NUREG-1432 in TS Amendment 264 (Reference 6.4) that requires normal or emergency power versus the definition in NUREG-0212 that requires normal and emergency power. The proposed change will restore the wording of the definition to its previous wording requiring normal and emergency power.

2.0 DETAILED DESCRIPTION

In 1980, the NRC mandated all plants to incorporate additional operability guidance in their TS for situations when a normal or emergency power supply is inoperable and provided the model TS based on NUREG-0212 to be included (Reference 6.1). OPPD implemented this guidance by including a definition of operable/operability and guidance in TS 2.0.1(2) via TS Amendment No. 52 (Reference 6.2).

TS Amendment 264 (Reference 6.4) revised the definition of operable/operability from the definition transmitted in 1980 (and incorporated by TS Amendment 52), to the definitions contained within the Improved Standard TS, NUREG-1432.

The proposed change will revise guidance to be more reflective of NUREG-0212. TS 2.0.1(2) will provide guidance for actions to be taken when a component is inoperable due to its normal or emergency power supply being inoperable, which is currently contained in TS 2.7(2)b and TS 2.7(j).

The proposed TS changes are as follows:

- TS Miscellaneous Definition, Operable - Operability – Revise to be more consistent with NUREG 0212.

Operable - Operability

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified ~~safety~~ function(s). Implicit in this definition shall be the assumption that ~~and when~~ all necessary attendant instrumentation, controls, normal and ~~or~~ emergency electrical power sources, cooling or ~~and~~ seal water, lubrication or ~~and~~ other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its ~~specified safety~~ function(s) are also capable of performing their related support function(s).

- TS LCO 2.0.1, *General Requirements*, paragraph (2) – Add paragraph (2) to support revised definition of operable/operability which is more consistent with NUREG 0212.

(2) When the reactor coolant temperature is > 300°F and a system, subsystem, train, component, or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE, or likewise satisfy the requirements of this specification.

a. Within 4 hours from discovery of either diesel generator inoperability, declare the required feature(s) associated with the inoperable diesel generator inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.

b. Within 24 hours from discovery of either house service transformer inoperability, declare the required feature(s) associated with the inoperable house service transformer inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.

- Existing TS LCO 2.0.1(2) – Renumber to TS 2.0.1(3) due to the addition noted above.

~~(2)~~(3) When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

- TS LCO 2.7(1) – Revise the minimum requirement statement to the wording previously reviewed and approved by the NRC in Amendment 147. The wording reverted to its pre-Amendment 147 wording through administrative errors when TS Amendment 162 was issued on March 29, 1994.

(1) Minimum Requirements

The reactor coolant shall not be heated ~~up~~ or maintained at temperatures above 300°F unless the following electrical systems are operable:

- TS LCO 2.7(2)b – Remove a requirement to declare the required feature supported by inoperable house service transformer inoperable if its redundant feature is inoperable. This guidance will be re-located to TS 2.0.1(2).
 - b. Either house service transformer T1A-3 or T1A-4 (4.16kV) may be inoperable for up to 7 days. The NRC Operations Center shall be notified by telephone within 4 hours after transformer inoperability. ~~Additionally, within 24 hours from discovery of either house service transformer inoperability, declare the required feature(s) associated with the inoperable house service transformer inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.~~
- TS LCO 2.7(2)j – Remove a requirement to declare the required feature supported by inoperable emergency diesel generator inoperable if its redundant feature is inoperable. This guidance will be re-located to TS 2.0.1(2).
 - j. Either one of the emergency diesel generators (DG-1 or DG-2) may be inoperable for up to seven consecutive days. In addition, the cumulative total time of inoperability for both DGs during any calendar month shall not exceed seven days. If one diesel generator is inoperable, within 8 hours (regardless of when the inoperable diesel generator is restored to operability) EITHER:
 - (1) Start the other diesel generator to verify operability, OR
 - (2) Ensure the absence of common cause for the diesel generator inoperability for the other diesel generator.

~~Additionally, within 4 hours from discovery of either diesel generator inoperability, declare the required feature(s) associated with the inoperable diesel generator inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.~~

3.0 TECHNICAL EVALUATION

Fort Calhoun Station (FCS) is designed to permit either of two offsite power sources to be used to supply power to station loads, both safety-related and non-safety-related. (Refer to Updated Safety Analysis Report (USAR) Figure 8.1-1, which provides the layout of these power sources and their relationship to plant buses.) The offsite sources consist of power from the 345 kilovolt (KV) substation or the 161 KV substation, both of which are located in a common switchyard adjacent to the plant. Either of the offsite sources can supply power to the plant's four 4160 V buses. The 161 KV source normally provides power to the safety-related buses and the 345 KV source normally provides power to the non-safety-related buses.

During normal operation, the 345 KV transmission system is connected to auxiliary power transformers T1A-1 and T1A-2 through a 22 KV bus which is also connected to the output of the main generator. (Note that the 345 KV voltage is reduced through main generator step-up transformer T1.) This configuration allows a portion of the main generator output to be fed to transformers T1A-1 and T1A-2 to supply power to some plant loads. However, this arrangement results in a loss of power from the 345/22 KV system to the plant buses when the plant is shutdown until such time that the operators are able to open the main generator

disconnect switch and subsequently re-establish the 345 KV supply through a back feed arrangement. The 161 KV source, on the other hand, is continuously available to provide plant power, through house service transformers T1A-3 and T1A-4, before, during and after a plant trip.

Normal plant loads and accident mitigation equipment are distributed among the four 4160 V buses. Two of the 4160 V buses, buses 1A3 and 1A4, provide power to engineered safeguards loads and to many non-safety-related loads which are required for normal plant operation. Emergency diesel generators (DGs) DG-1 and DG-2 are associated with buses 1A3 and 1A4, respectively. Buses 1A1 and 1A2 power only non-safety-related loads.

With one emergency DG inoperable, 4 hours from the time of discovery that a required redundant component subsequently is inoperable would be allowed. The 4-hour allowed time takes into account the operability of the redundant counterpart to the inoperable required feature. Four hours from the discovery of these events existing concurrently is acceptable, because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. Consistent with NUREG-1432, the 4-hour allowed time takes into account the capacity and capability of the remaining alternating current (AC) sources, a reasonable time for repairs, and the low probability of a design basis accident (DBA) occurring during this period. On a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost.

With one house service transformer inoperable, 24 hours from the discovery that a required redundant component is inoperable would be allowed. The 24-hour allowed time takes into account the operability of the redundant counterpart to the inoperable required feature. Consistent with NUREG-1432, the 24-hour allowed time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The definition of operable/operability requires that either the normal or emergency power supply be available. By revising the definition back to requiring both normal and emergency power, guidance is provided similar to NUREG-0212. This guidance allows operation to be governed by the time limits of the action statement associated with the Limiting Condition for Operation for the normal or emergency power source, not the individual action statements for each system, subsystem, component or device that is determined to be inoperable solely because of the inoperability of its normal or emergency power source. This guidance was previously provided in FCS TS 2.0.1(2) prior to issuance of TS Amendment 264.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

4.1.1 Regulations

Code of Federal Regulations Part 50:

10 CFR 50.36, *Technical Specifications*: 10 CFR 50.36(c)(2) states, "When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met." The revised actions continue to meet the requirements of this regulation.

General Design Criteria:

Fort Calhoun Station was licensed for construction prior to May 21, 1971, and at that time committed to the draft General Design Criteria (GDC). The draft GDC is contained in Appendix G of the FCS USAR and are similar to 10 CFR 50 Appendix A, *General Design Criteria for Nuclear Power Plants*. The draft GDC that govern emergency power are Criterion 24 and Criterion 39 from USAR Appendix G.

CRITERION 24 - EMERGENCY POWER FOR PROTECTION SYSTEMS states:

In the event of loss of all offsite power, sufficient alternate sources of power shall be provided to permit the required functioning of the protection systems.

This criterion is met. Emergency power is available from two completely independent diesel generator sets and from the two completely independent 125v dc systems for essential dc loads.

The independent diesel generator supply systems are located in the plant and are connected to separate buses. Both generator sets are independently automatic starting upon loss of auxiliary power and will be ready to accept load within 10 seconds of loss of normal supply power. Starting power is self contained within each unit. Each unit has sufficient capacity to start sequentially the loads that must be supplied for the engineered safeguards equipment for the hypothetical accident concurrent with loss of outside power. This capacity is adequate to provide a safe and orderly plant shutdown and maintain the plant in a safe condition. Each of the two 125v dc batteries is capable of supplying essential station dc load for 8 hours and may be charged by the generator power supply.

Facilities are included to permit periodic starting and running the diesel generator sets without interrupting plant operation. Diesel units are synchronized to the bus and loaded periodically to ensure readiness for emergency services.

This criterion continues to be met with this proposed change.

CRITERION 39 – EMERGENCY POWER FOR ENGINEERED SAFETY FEATURES states:

Alternate power systems shall be provided and designed with adequate independency, redundancy, capacity and testability to permit the functioning required of the engineered safety features. As a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system.

This criterion is met. Offsite power to the plant is available via the 161 kV system..., and after the unit is tripped, via backfeed from the 345 kV system through the main and unit auxiliary transformers.

When the unit is tripped and the 161 kV supply is not available, the motor operated disconnect switch in the generator main leads is opened and the supply to the unit auxiliary transformers is re established. Switch operation is accomplished by a motor operator supplied from the station battery.

Onsite power is provided by two diesel generator sets. Each independent diesel generator set is adequate for supplying the minimum engineered safeguards equipment for the hypothetical accident concurrent with loss of outside power.

Station batteries provide onsite power for instrument and control systems. These batteries will be subject to rigorous inspection and maintenance. The charger voltage will periodically be manually lowered to test batteries capability to assume load at the appropriate bus voltage.

The diesel generator facilities permit periodic starting and running during normal plant operations.

This criterion continues to be met with this proposed change.

10 CFR 50 Appendix A Criterion 34 - Residual heat removal

A system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.

Suitable redundancy in components and features, and suitable interconnections, leak detection, and isolation capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

As previously stated, FCS was licensed for construction prior to May 21, 1971, and this criterion is not applicable to FCS Unit No. 1.

4.1.2 Design Basis (USAR)

USAR Sections 8.3, *Electrical Systems, Station Distribution*; and 8.4, *Electrical Systems, Emergency Power Sources*; are applicable to this LAR.

USAR Section 8.3:

Buses 1A3 and 1A4 supply plant 4.16 KV loads and all 480V loads through three, double-ended 480V load centers, each with three bus sections. The double-ended 480V load centers permit feeding of the 480V station auxiliary loads from either bus 1A3 or 1A4. The normal alignment for the 480V load centers is shown in USAR Figure 8.1-1. Interlocks prevent interconnection of these systems at the 480V level. Buses 1A3 and 1A4 also supply engineered safeguards, directly or through the 480V load centers. The systems associated with buses 1A3 and 1A4 are operated as separate systems, between which redundant engineered safeguards are so divided that minimum engineered safeguards are connected to each system. The exception to this is the steam turbine driven auxiliary feedwater (AFW) pump FW-10. The redundant auxiliary feedwater pump FW-6 is supplied from bus 1A3.

The automatic bus 4.16 KV transfers are summarized in USAR Table 8.4-3.

USAR Section 8.4:

The DGs are designed to furnish reliable in-plant AC power adequate for safe plant shutdown and for operation of engineered safeguards, when no energy is available from the 345 or 161 KV systems. Two DGs are installed to meet single failure criteria. One unit is connected to each of the two separate 4.16 KV systems (one system consists of bus 1A3, the second system consists of bus 1A4) between which engineered safeguards and other essential auxiliaries are divided (see USAR Figure 8.4-1). The division of loads is such that operation of either system alone provides minimum Engineered Safeguards required for the DBA as discussed in USAR Section 6.

4.1.3 Approved Methodologies

NRC Safety Guide 32, *Use of IEEE STD 308-1971, Criteria for Class 1E Electrical Systems for Nuclear Power Generating Stations*, dated August 11, 1972. This Safety Guide endorses IEEE 308-1971.

IEEE 308-1971, Section 7, Suggested Operating Alternatives under Class 1E Alternating –Current Systems states:

Operating technical specifications may require limitations in the operation of the station under the condition of electric systems degradation. These limitations shall be determined with due consideration to the design features of the station and the alternatives available to the operator under the degraded system conditions. Table 3 presents suggested operation alternatives to compensate for degraded system condition.

Table 3 provides the recommended actions to be included in technical specifications and note 1 for the table states that the assumption is that the degradation to the Class 1E electric system occurs when the unit is in operations. A unit in shutdown or start-up when the degradation occurs should remain shutdown or should shutdown.

The applicable operating modes for electrical systems contained in TS 2.7 (above 300 degrees Fahrenheit (F)) ensures emergency power supplies during the applicable modes of operation for TS 2.3, *Emergency Core Cooling System*, TS 2.4, *Containment Cooling*, which includes containment cooling and filtering, component cooling and raw water system requirements; and TS 2.15 for reactor protection as stated in FCS Criteria 24 and 39.

Regulatory Guide (RG) 1.93, *Availability of Electric Power Sources*, was reviewed for applicability. This RG states, "Nuclear power plants wherein only one of the two required offsite power circuits can be made available within a few seconds following a loss-of-coolant accident (LOCA) are outside the scope of this guide." Since FCS is designed to have only one offsite circuit available within a few seconds, RG 1.93 is determined to not be applicable. Generally, however, the requirements of this RG are followed.

4.2 Precedent

TS Amendment 52 for FCS Unit. No. 1 (Reference 6.2) incorporated guidance for inoperable system, subsystem or component due to inoperable power source into the definition and TS 2.0.1 based on guidance from NUREG-0212 as transmitted by Reference 6.1. An exception from this is being proposed as NUREG-0212 and Amendment 52 stated that those requirements were not applicable in operating modes 4 and 5. This original requirement was based on the standard TS in NUREG-0212 and does not match the applicability for the electrical TS contained in FCS TS 2.7. Therefore, it is proposed to state that the requirements in TS 2.0.1(2) do not apply when the reactor coolant is less than 300 degrees F to match the applicability of FCS TS 2.7.

TS Amendment 147 for FCS Unit. No. 1 (Reference 6.3) approved the proposed wording for the minimum requirements in TS 2.7 that the reactor coolant would not be heated or maintained above 300 degrees F. The current wording that the reactor would not be heated up or maintained was inadvertently re-issued in the next change that affected that TS page in Amendment 162. (Reference 6.5)

TS Amendment 264 for FCS Unit. No. 1 (Reference 6.4) approved the allowance of 4 hours from the time of discovery of one emergency DG inoperable, and 24 hours from the time of discovery of one house service transformer inoperable, to declare that a required redundant supported component would be declared inoperable.

4.3 Significant Hazards Consideration

The Omaha Public Power District (OPPD) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The proposed change to revise the definition of operable-operability, modify the provisions under which equipment may be considered operable when either its normal or emergency power source is inoperable, add Technical Specification (TS) limiting conditions for operation (LCO) 2.0.1(2), and relocate the guidance for inoperable power supplies and verifying operability of redundant components into the LCO for electrical equipment is more aligned with NUREG-0212 Revision 2, *Standard Technical Specifications [STS] for Combustion Engineering Plants*, and does not adversely impact the probability of an accident previously evaluated. The proposed change does not affect the operability requirements for the emergency diesel generators (DGs) or the house service transformers, and therefore does not impact the consequences of an analyzed accident.

In addition, the administrative changes to renumber the existing TS sections "TS 2.0.1(2) to 2.0.1(3)" is being made as a result of additions to previous TS paragraphs and are being made for consistency and clarification. Also, revising the minimum requirement statement in TS 2.7 to the wording previously reviewed and approved by the NRC in Amendment 147 is an administrative change as the wording reverted to its pre-Amendment 147. This wording simply corrects previous administrative errors when TS Amendment 162 was issued on March 29, 1994.

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

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

Response: No.

The proposed changes do not involve a physical alteration to the plant (i.e., no new or different type of equipment will be installed) or a change in methods governing normal plant operation. The proposed changes to TS 2.0.1(2) and TS 2.7 do not create the possibility of a new or different kind of accident since the design function of the affected equipment is not changed. No new interactions between systems or components are created. No new failure mechanisms of associated systems will exist.

No new failure mechanisms would be created. The proposed changes do not alter any assumptions made in the safety analyses. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No.

The proposed changes to add TS 2.0.1(2) and relocate the guidance for inoperable power supplies and verifying operability of redundant components from TS LCO 2.7 do not alter the manner in which safety limits or limiting safety system settings are determined. The safety analysis acceptance criteria are not affected by these proposed changes. The sources of power credited for design basis events are not affected by the proposed changes.

The proposed changes to modify the provisions under which equipment may be considered operable when either its normal or emergency power source is inoperable, and relocate the guidance for inoperable power supplies and verifying operability of redundant components into the TS 2.0.1 LCO is more aligned with the STS contained in NUREG-0212.

Further, the proposed change does not change the design function of any equipment assumed to operate in the event of an accident.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, OPPD concludes 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 justified.

4.4 Conclusions

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.

5.0 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.

6.0 REFERENCES

- 6.1 Letter from NRC (D. G. Eisenhower) to All Power Reactor Licensees, dated April 10, 1980 (NRC-80-0060)
- 6.2 Letter from NRC (R. A. Clark) to OPPD (W. C. Jones), Fort Calhoun Station, Unit No. 1 - Amendment No. 52, dated October 14, 1980 (NRC-80-0187)
- 6.3 Letter from NRC (S. D. Bloom) to OPPD (W. G. Gates), *Fort Calhoun Station, Unit No. 1 – Amendment No. 147 to Facility Operating License No. DPR-40 (TAC No. M80878)*, dated August, 3, 1992
- 6.4 Letter from NRC (L. E. Wilkins) to OPPD (D. J. Bannister), *Fort Calhoun Station, Unit No. 1 – Issuance of Amendment RE: Revision to Technical Specification Sections 2.0.1 and 2.7 for Inoperable System, Subsystem, or Component due to Inoperable Power Source and Deletion of Diesel Generator Surveillance Requirement 3.7(1)e (TAC No. ME1484)*, dated May 14, 2010
- 6.5 Letter from NRC (S. D. Bloom) to OPPD (T. L. Patterson), Fort Calhoun Station, Unit No. 1 – Amendment No. 162 to Facility Operating License No. DPR-40 (TAC No. M83960), dated March 29, 1994 (NRC-94-091)

Technical Specifications Pages

Markups

TS Definitions
TS 2.0.1
TS 2.7(1)
TS 2.7(2)

TECHNICAL SPECIFICATION

DEFINITIONS

MISCELLANEOUS DEFINITIONS

Operable - Operability

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified ~~safety~~-function(s). Implicit in this definition shall be the assumption that and when all necessary attendant instrumentation, controls, normal and or emergency electrical power sources, cooling or and seal water, lubrication or and other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its specified safety-function(s) are also capable of performing their related support function(s).

In Operation

A system or component is IN OPERATION if it is OPERABLE and is performing its design function.

CEA's

All full length shutdown and regulating control rods.

Non-trippable (NT) CEA's

CEA's which are non-trippable.

Containment Integrity

Containment integrity is defined to exist when all of the following are met:

- (1) All nonautomatic containment isolation valves which are not required to be open during accident conditions and blind flanges, except for valves that are open under administrative control as permitted by Specification 2.6(1)a, are closed.
- (2) The equipment hatch is properly closed and sealed.
- (3) The personnel air lock satisfies Specification 2.6(1)b.
- (4) All automatic containment Isolation valves are operable, locked closed, or deactivated and secured in their closed position (or isolated by locked closed valves or blind flanges as permitted by a limiting condition for operation).
- (5) The uncontrolled containment leakage satisfies Specification 3.5, and
- (6) The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is operable.

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements

Applicability

Applies to the operable status of all systems, subsystems, trains, components, or devices covered by the Limiting Conditions for Operation.

Objective

To specify corrective measures to be employed for system conditions not covered by or in excess of the Limiting Conditions for Operation.

Specification

- (1) In the event a Limiting Condition for Operation and/or associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least HOT SHUTDOWN within 6 hours, in at least subcritical and $< 300^{\circ}\text{F}$ within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours, unless corrective measures are completed that permit operation under the permissible action requirements for the specified time interval as measured from initial discovery or until the reactor is placed in an Operating Mode in which the specification is not applicable. Exceptions to these requirements shall be stated in the individual specifications.
- (2) When the reactor coolant temperature is $> 300^{\circ}\text{F}$ and a system, subsystem, train, component, or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE, or likewise satisfy the requirements of this specification.
 - a. Within 4 hours from discovery of either diesel generator inoperability, declare the required feature(s) associated with the inoperable diesel generator inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.
 - b. Within 24 hours from discovery of either house service transformer inoperability, declare the required feature(s) associated with the inoperable house service transformer inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.
- (3) When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems**

Applicability

Applies to the availability of electrical power for the operation of plant components.

Objective

To define those conditions of electrical power availability necessary to provide for safe reactor operation and the continuing availability of engineered safety features.

Specifications

(1) Minimum Requirements

The reactor coolant shall not be heated up or maintained at temperatures above 300°F unless the following electrical systems are operable:

- a. Unit auxiliary power transformers T1A-1 or T1A-2 (4,160 V).
- b. House service transformers T1A-3 and T1A-4 (4,160 V).
- c. 4,160 V engineered safety feature buses 1A3 and 1A4.
- d. 4,160 V/480 V Transformers T1B-3A, T1B-3B, T1B-3C, T1B-4A, T1B-4B, T1B-4C.
- e. 480 V distribution buses 1B3A, 1B3A-4A, 1B4A, 1B3B, 1B3B-4B, 1B4B, 1B3C, 1B3C-4C, 1B4C.
- f. MCC No. 3A1, 3A2, 3B1, 3C1, 3C2, 4A1, 4A2, 4B1, 4C1 and 4C2.
- g. 125 V d-c buses No. 1 and 2 (Panels EE-8F and EE-8G).
- h. 125 V d-c distribution panels AI-41A and AI-41B.
- i. 120V a-c instrument buses A, B, C, and D (Panels AI-40-A, B, C and D).
- j. Two (2) 125 V d-c bus No. 1 required inverters: (A and C), or (A and associated swing inverter), or (C and associated swing inverter) AND;

Two (2) 125 V d-c bus No. 2 required inverters: (B and D), or (B and associated swing inverter), or (D and associated swing inverter).
- k. Station batteries No. 1 and 2 (EE-8A and EE-8B) including one battery charger on each 125 V d-c bus No. 1 and 2 (EE-8F and EE-8G).
- l. Two emergency diesel generators (DG-1 and DG-2).
- m. One diesel fuel oil storage system containing a minimum volume of 16,000 gallons of diesel fuel in FO-1, and a minimum volume of 10,000 gallons of diesel fuel in FO-10.
- n. Lubricating oil inventory for each DG is ≥ 500 gallons.
- o. Each required starting air receiver bank pressure is ≥ 190 psig.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems (Continued)**

(2) **Modification of Minimum Requirements**

The minimum requirements may be modified to the extent that one of the following conditions will be allowed after the reactor coolant has been heated above 300°F. However, the reactor shall not be made critical unless all minimum requirements are met. If any of the provisions of these exceptions are violated, the reactor shall be placed in a hot shutdown condition within the following 12 hours. If the violation is not corrected within an additional 12 hours, the reactor shall be placed in a cold shutdown condition within an additional 24 hours.

- a. Both unit auxiliary power transformers T1A-1 and -2 (4.16 kV) may be inoperable for up to 72 hours.
- b. Either house service transformer T1A-3 or T1A-4 (4.16kV) may be inoperable for up to 7 days. The NRC Operations Center shall be notified by telephone within 4 hours after transformer inoperability. ~~Additionally, within 24 hours from discovery of either house transformer inoperability, declare the required feature(s) associated with the inoperable house service transformer inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.~~
- c. Both house service transformers T1A-3 and T1A-4 (4.16kV) may be inoperable for up to 72 hours. The loss of the 161kV incoming line renders both transformers inoperable. The NRC Operations Center shall be notified by telephone within 4 hours after inoperability of both transformers.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 Electrical Systems (Continued)

- d. Either one of the 4.16kV engineered safeguards buses, 1A3 or 1A4 may be inoperable for up to 8 hours provided the operability of the diesel generator associated with the operable bus is demonstrated immediately.
- e. One of each group of 4160 V/480 V Transformers (T1B-3A or 4A), (T1B-3B or 4B), and (T1B-3C or 4C) may be inoperable for up to 8 hours.
- f. One of the 480 V distribution buses connected to bus 1A3 or connected to bus 1A4 may be inoperable for up to 8 hours..
- g. Either Group of MCC No.'s (3A1, 3A2, 3B1, 3C1, 3C2,) or (4A1, 4A2, 4B1, 4C1, 4C2) may be inoperable for up to 8 hours.
- h. One of the four 120V a-c instrument buses (A, B, C or D) may be inoperable for 8 hours provided the reactor protective and engineered safeguards systems instrument channels supplied by the remaining three buses are all operable.
- i. Two battery chargers may be inoperable for up to 8 hours provided battery charger No. 1 (EE-8C) or No. 2 (EE-8D) is operable.
- j. Either one of the emergency diesel generators (DG-1 or DG-2) may be inoperable for up to seven consecutive days. In addition, the cumulative total time of inoperability for both DGs during any calendar month shall not exceed seven days. If one diesel generator is inoperable, within 8 hours (regardless of when the inoperable diesel generator is restored to operability) EITHER:
 - (1) Start the other diesel generator to verify operability, OR
 - (2) Ensure the absence of common cause for the diesel generator inoperability for the other diesel generator.

~~Additionally, within 4 hours from discovery of either diesel generator inoperability, declare the required feature(s) associated with the inoperable diesel generator inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.~~

- k. Not used.
- l. Island buses 1B3A-4A, 1B3B-4B, and 1B3C-4C may be inoperable for up to 8 hours.
- m. Either one of the 125V d-c buses No. 1 or 2 (Panels EE-8F or EE-8G) may be inoperable for up to 8 hours.
- n. Either one of the 125V d-c distribution panels AI-41A or AI-41B may be inoperable for up to 8 hours.

Technical Specification Pages

Retyped ("Clean")

TS Definitions
TS 2.0.1
TS 2.7(1)
TS 2.7(2)

TECHNICAL SPECIFICATION

DEFINITIONS

MISCELLANEOUS DEFINITIONS

Operable - Operability

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

In Operation

A system or component is IN OPERATION if it is OPERABLE and is performing its design function.

CEA's

All full length shutdown and regulating control rods.

Non-trippable (NT) CEA's

CEA's which are non-trippable.

Containment Integrity

Containment integrity is defined to exist when all of the following are met:

- (1) All nonautomatic containment isolation valves which are not required to be open during accident conditions and blind flanges, except for valves that are open under administrative control as permitted by Specification 2.6(1)a, are closed.
- (2) The equipment hatch is properly closed and sealed.
- (3) The personnel air lock satisfies Specification 2.6(1)b.
- (4) All automatic containment Isolation valves are operable, locked closed, or deactivated and secured in their closed position (or isolated by locked closed valves or blind flanges as permitted by a limiting condition for operation).
- (5) The uncontrolled containment leakage satisfies Specification 3.5, and
- (6) The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is operable.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.0.1 **General Requirements**

Applicability

Applies to the operable status of all systems, subsystems, trains, components, or devices covered by the Limiting Conditions for Operation.

Objective

To specify corrective measures to be employed for system conditions not covered by or in excess of the Limiting Conditions for Operation.

Specification

- (1) In the event a Limiting Condition for Operation and/or associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least HOT SHUTDOWN within 6 hours, in at least subcritical and < 300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours, unless corrective measures are completed that permit operation under the permissible action requirements for the specified time interval as measured from initial discovery or until the reactor is placed in an Operating Mode in which the specification is not applicable. Exceptions to these requirements shall be stated in the individual specifications.
- (2) When the reactor coolant temperature is > 300°F and a system, subsystem, train, component, or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE, or likewise satisfy the requirements of this specification.
 - a. Within 4 hours from discovery of either diesel generator inoperability, declare the required feature(s) associated with the inoperable diesel generator inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.
 - b. Within 24 hours from discovery of either house service transformer inoperability, declare the required feature(s) associated with the inoperable house service transformer inoperable, when its redundant required feature (including the steam driven auxiliary feedwater pump FW-10) is inoperable.
- (3) When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems**

Applicability

Applies to the availability of electrical power for the operation of plant components.

Objective

To define those conditions of electrical power availability necessary to provide for safe reactor operation and the continuing availability of engineered safety features.

Specifications

(1) Minimum Requirements

The reactor coolant shall not be heated or maintained at temperatures above 300°F unless the following electrical systems are operable:

- a. Unit auxiliary power transformers T1A-1 or T1A-2 (4,160 V).
- b. House service transformers T1A-3 and T1A-4 (4,160 V).
- c. 4,160 V engineered safety feature buses 1A3 and 1A4.
- d. 4,160 V/480 V Transformers T1B-3A, T1B-3B, T1B-3C, T1B-4A, T1B-4B, T1B-4C.
- e. 480 V distribution buses 1B3A, 1B3A-4A, 1B4A, 1B3B, 1B3B-4B, 1B4B, 1B3C, 1B3C-4C, 1B4C.
- f. MCC No. 3A1, 3A2, 3B1, 3C1, 3C2, 4A1, 4A2, 4B1, 4C1 and 4C2.
- g. 125 V d-c buses No. 1 and 2 (Panels EE-8F and EE-8G).
- h. 125 V d-c distribution panels AI-41A and AI-41B.
- i. 120V a-c instrument buses A, B, C, and D (Panels AI-40-A, B, C and D).
- j. Two (2) 125 V d-c bus No. 1 required inverters: (A and C), or (A and associated swing inverter), or (C and associated swing inverter) AND;

Two (2) 125 V d-c bus No. 2 required inverters: (B and D), or (B and associated swing inverter), or (D and associated swing inverter).
- k. Station batteries No. 1 and 2 (EE-8A and EE-8B) including one battery charger on each 125 V d-c bus No. 1 and 2 (EE-8F and EE-8G).
- l. Two emergency diesel generators (DG-1 and DG-2).
- m. One diesel fuel oil storage system containing a minimum volume of 16,000 gallons of diesel fuel in FO-1, and a minimum volume of 10,000 gallons of diesel fuel in FO-10.
- n. Lubricating oil inventory for each DG is ≥ 500 gallons.
- o. Each required starting air receiver bank pressure is ≥ 190 psig.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems (Continued)**

(2) **Modification of Minimum Requirements**

The minimum requirements may be modified to the extent that one of the following conditions will be allowed after the reactor coolant has been heated above 300°F. However, the reactor shall not be made critical unless all minimum requirements are met. If any of the provisions of these exceptions are violated, the reactor shall be placed in a hot shutdown condition within the following 12 hours. If the violation is not corrected within an additional 12 hours, the reactor shall be placed in a cold shutdown condition within an additional 24 hours.

- a. Both unit auxiliary power transformers T1A-1 and T1A-2 (4.16 kV) may be inoperable for up to 72 hours.
- b. Either house service transformer T1A-3 or T1A-4 (4.16kV) may be inoperable for up to 7 days. The NRC Operations Center shall be notified by telephone within 4 hours after transformer inoperability.
- c. Both house service transformers T1A-3 and T1A-4 (4.16kV) may be inoperable for up to 72 hours. The loss of the 161kV incoming line renders both transformers inoperable. The NRC Operations Center shall be notified by telephone within 4 hours after inoperability of both transformers.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems** (Continued)

- d. Either one of the 4.16kV engineered safeguards buses, 1A3 or 1A4 may be inoperable for up to 8 hours provided the operability of the diesel generator associated with the operable bus is demonstrated immediately.
- e. One of each group of 4160 V/480 V Transformers (T1B-3A or 4A), (T1B-3B or 4B), and (T1B-3C or 4C) may be inoperable for up to 8 hours.
- f. One of the 480 V distribution buses connected to bus 1A3 or connected to bus 1A4 may be inoperable for up to 8 hours.
- g. Either Group of MCC No.'s (3A1, 3A2, 3B1, 3C1, 3C2,) or (4A1, 4A2, 4B1, 4C1, 4C2) may be inoperable for up to 8 hours.
- h. One of the four 120V a-c instrument buses (A, B, C or D) may be inoperable for 8 hours provided the reactor protective and engineered safeguards systems instrument channels supplied by the remaining three buses are all operable.
- i. Two battery chargers may be inoperable for up to 8 hours provided battery charger No. 1 (EE-8C) or No. 2 (EE-8D) is operable.
- j. Either one of the emergency diesel generators (DG-1 or DG-2) may be inoperable for up to seven consecutive days. In addition, the cumulative total time of inoperability for both DGs during any calendar month shall not exceed seven days. If one diesel generator is inoperable, within 8 hours (regardless of when the inoperable diesel generator is restored to operability) EITHER:
 - (1) Start the other diesel generator to verify operability, OR
 - (2) Ensure the absence of common cause for the diesel generator inoperability for the other diesel generator.
- k. Not used.
- l. Island buses 1B3A-4A, 1B3B-4B, and 1B3C-4C may be inoperable for up to 8 hours.
- m. Either one of the 125V d-c buses No. 1 or 2 (Panels EE-8F or EE-8G) may be inoperable for up to 8 hours.
- n. Either one of the 125V d-c distribution panels AI-41A or AI-41B may be inoperable for up to 8 hours.

Technical Specifications Bases Pages

Markups

2.0.1 and 2.7

(FOR INFORMATION ONLY)

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements (Continued)

- a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or
- b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

Basis

- (1) This specification delineates corrective measures to be taken for circumstances not directly provided for in the system specific specifications and whose occurrence would violate the intent of the specification. For example, Specification 2.3 requires each Low Pressure Safety Injection (LPSI) pump to be operable and provides explicit corrective measures to be followed if one pump is inoperable. Under the terms of Specification 2.0.1(1), if more than one LPSI pump is inoperable, the unit must be placed in at least HOT SHUTDOWN within 6 hours, in at least subcritical and < 300°F within the following 6 hours, and in at least COLD SHUTDOWN within the following 30 hours, unless at least one LPSI pump were restored to operability. It is assumed that the unit is brought to the required mode within the required times by promptly initiating and carrying out the appropriate measures required by the specification.
- (2) The requirement in Specification 2.0.1(2), to declare required redundant feature(s) inoperable, is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related components.

Redundant required feature failures consist of inoperable features with a component redundant to the component that has an inoperable DG. The steam driven auxiliary feedwater pump FW-10 is required to be considered a redundant required feature to motor driven auxiliary feedwater pump FW-6, and, is therefore, required to be determined OPERABLE, since there are only two safety-related AFW pumps. With FW-10 and DG-1 INOPERABLE, coincident with a single failure of house service transformer T1A-3, would result in a complete loss of a safety function. With FW-6 and DG-2 INOPERABLE coincident with a single failure

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements (Continued)

of house service transformer T1A-4, would not result in a complete loss of a safety function since FW-10 would still be OPERABLE.

Redundant required features for an inoperable DG do not include components powered from 125 VDC or 120 VAC sources, since a loss of function would not occur with an inoperable DG coincident with a single failure of its associated house service transformer. Radiation monitors RM-051, RM-052, and RM-062 are required to be considered redundant features since the monitors are contained on a skid assembly which is powered from 480 VAC.

The time allowed for declaring a redundant required feature(s) inoperable is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This also allows for an exception to the normal beginning for the limiting condition for operation time. In this required action, the time only begins upon discovery that both:

- a. An inoperable DG exists and
- b. A required feature associated with the other 4160V bus is inoperable.

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this time begins to be tracked. Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the time for the required action. Four hours from the discovery of these events existing concurrently, is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite electrical distribution system. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4-hour allowed time takes into account the operability of the redundant counterpart to the inoperable required feature. Additionally, the 4-hour allowed time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

When a system has installed spare components, the spare component is not required to be OPERABLE to meet required feature operability. As an example, there are three installed 100% capacity high pressure safety injection (HPSI) pumps, one (SI-2B) associated with 4160V bus 1A4, and two (SI-2A and SI-2C) associated with 4160V bus 1A3. Specification 2.3(1) *Minimum Requirements* are that there be one HPSI pump on each associated 4160V bus and each safety injection refueling water tank-containment sump header. This requires that SI-2A OR SI-2C be OPERABLE, not both.

Specification 2.0.1(2) is not applicable when the reactor coolant is < 300°F, and thus the individual requirements for each applicable Limiting Condition for Operation in these modes must be adhered to.

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements (Continued)

(2)(3) LCO 2.0.1(2)(3) establishes conditions under which systems are considered to remain capable of performing their intended safety function when associated snubbers are not capable of providing their associated support function(s). This LCO states that the supported system is not considered to be inoperable solely due to one or more snubbers not capable of performing their associated support function(s). This is appropriate because a limited length of time is allowed for maintenance, testing, or repair of one or more snubbers not capable of performing their associated support function(s) and appropriate compensatory measures are specified in the snubber requirements, which are located outside of the Technical Specifications (TS) under licensee control. The snubber requirements do not meet the criteria in 10 CFR 50.36(c)(2)(ii), and, as such, are appropriate for control by the licensee.

If the allowed time expires and the snubber(s) are unable to perform their associated support function(s), the affected supported system's LCO(s) must be declared not met and the Conditions and Required Actions entered.

LCO 2.0.1(2)(3)a applies when one or more snubbers are not capable of providing their associated support function(s) to a single train or subsystem of a multiple train or subsystem supported system or to a single train or subsystem supported system. LCO 2.0.1(2)(3)a allows 72 hours to restore the snubber(s) before declaring the supported system inoperable. The 72-hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function and due to the availability of the redundant train of the supported system.

LCO 2.0.1(2)(3)b applies when one or more snubbers are not capable of providing their associated support function(s) to more than one train or subsystem of a multiple train or subsystem supported system. LCO 2.0.1(2)(3)b allows 12 hours to restore the snubber(s) before declaring the supported system inoperable. The 12-hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function.

LCO 2.0.1(2)(3) requires that risk be assessed and managed. Industry and NRC guidance on the implementation of 10 CFR 50.65(a)(4) (the Maintenance Rule) does not address seismic risk. However, use of LCO 2.0.1(2)(3) should be considered with respect to other plant maintenance activities, and integrated into the existing Maintenance Rule process to the extent possible so that maintenance on any unaffected train or subsystem is properly controlled, and emergent issues are properly addressed. The risk assessment need not be quantified, but may be a qualitative awareness of the vulnerability of systems and components when one or more snubbers are not able to perform their associated support function.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems** (Continued)

One battery charger on each battery shall be operating so that the batteries will always be at full charge; this ensures that adequate d-c power will be available for all emergency uses. Each battery has one battery charger permanently connected with a third charger capable of being connected to either battery bus. The chargers are each rated for 400 amperes at 130 volts. Following a DBA the batteries and the chargers will handle all required loads. Each of the reactor protective channels instrumentation channels is supplied by one of the safety-related a-c instrument buses. The removal of one of the safety-related a-c instrument buses is permitted as the 2-of-4 logic may be manually changed to a 2-of-3 logic without compromising safety.

The engineered safeguards instrument channels use safety-related a-c instrument buses (one redundant bus for each channel) and d-c buses (one redundant bus for each logic circuit). The removal of one of the safety-related a-c instrument buses is permitted as the two of four logic automatically becomes a two of three logic.

~~The requirement in Specification 2.7(2)j, to declare required redundant feature(s) inoperable, is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related components.~~

~~Redundant required feature failures consist of inoperable features with a component redundant to the component that has an inoperable DG. The steam driven auxiliary feedwater pump FW-10 is required to be considered a redundant required feature to motor driven auxiliary feedwater pump FW-6, and, is therefore, required to be determined OPERABLE, since there are only two safety related AFW pumps. With FW-10 and DG-1 INOPERABLE, coincident with a single failure of house service transformer T1A-3, would result in a complete loss of a safety function. With FW-6 and DG-2 INOPERABLE coincident with a single failure of house service transformer T1A-4, would not result in a complete loss of a safety function since FW-10 would still be OPERABLE.~~

~~Redundant required features for an inoperable DG do not include components powered from 125 VDC or 120 VAC sources, since a loss of function would not occur with an inoperable DG coincident with a single failure of its associated house service transformer. Radiation monitors RM-051, RM-052, and RM-062 are required to be considered redundant features since the monitors are contained on a skid assembly which is powered from 480 VAC.~~

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION** 2.7 Electrical Systems (Continued)

Basis (continued)

~~The time allowed for declaring a redundant required feature(s) inoperable is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This also allows for an exception to the normal beginning for the limiting condition for operation time. In this required action, the time only begins upon discovery that both:~~

- ~~a. An inoperable DG exists and~~
- ~~b. A required feature associated with the other 4160V bus is inoperable.~~

~~If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this time begins to be tracked. Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the time for the required action. Four hours from the discovery of these events existing concurrently, is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.~~

~~In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite electrical distribution system. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4-hour allowed time takes into account the operability of the redundant counterpart to the inoperable required feature. Additionally, the 4-hour allowed time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.~~

~~When a system has installed spare components, the spare component is not required to be OPERABLE to meet required feature operability. As an example, there are three installed 100% capacity high pressure safety injection (HPSI) pumps, one (SI-2B) associated with 4160V bus 1A4, and two (SI-2A and SI-2C) associated with 4160V bus 1A3. Specification 2.3(1) *Minimum Requirements* are that there be one HPSI pump on each associated 4160V bus and each safety injection refueling water tank containment sump header. This requires that SI-2A OR SI-2C be OPERABLE, not both.~~

~~The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation. This supply is sufficient supply to allow the operator to replenish lube oil from outside sources. With lube oil inventory < 500 gallons, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

Technical Specifications Bases Pages

Retyped ("Clean")

2.0.1 and 2.7

(FOR INFORMATION ONLY)

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements (Continued)

- a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or
- b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

Basis

- (1) This specification delineates corrective measures to be taken for circumstances not directly provided for in the system specific specifications and whose occurrence would violate the intent of the specification. For example, Specification 2.3 requires each Low Pressure Safety Injection (LPSI) pump to be operable and provides explicit corrective measures to be followed if one pump is inoperable. Under the terms of Specification 2.0.1(1), if more than one LPSI pump is inoperable, the unit must be placed in at least HOT SHUTDOWN within 6 hours, in at least subcritical and < 300°F within the following 6 hours, and in at least COLD SHUTDOWN within the following 30 hours, unless at least one LPSI pump were restored to operability. It is assumed that the unit is brought to the required mode within the required times by promptly initiating and carrying out the appropriate measures required by the specification.
- (2) The requirement in Specification 2.0.1(2), to declare required redundant feature(s) inoperable, is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related components.

Redundant required feature failures consist of inoperable features with a component redundant to the component that has an inoperable DG. The steam driven auxiliary feedwater pump FW-10 is required to be considered a redundant required feature to motor driven auxiliary feedwater pump FW-6, and, is therefore, required to be determined OPERABLE, since there are only two safety-related AFW pumps. With FW-10 and DG-1 INOPERABLE, coincident with a single failure of house service transformer T1A-3, would result in a complete loss of a safety function. With FW-6 and DG-2 INOPERABLE coincident with a single failure

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements (Continued)

of house service transformer T1A-4, would not result in a complete loss of a safety function since FW-10 would still be OPERABLE.

Redundant required features for an inoperable DG do not include components powered from 125 VDC or 120 VAC sources, since a loss of function would not occur with an inoperable DG coincident with a single failure of its associated house service transformer. Radiation monitors RM-051, RM-052, and RM-062 are required to be considered redundant features since the monitors are contained on a skid assembly which is powered from 480 VAC.

The time allowed for declaring a redundant required feature(s) inoperable is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This also allows for an exception to the normal beginning for the limiting condition for operation time. In this required action, the time only begins upon discovery that both:

- a. An inoperable DG exists and
- b. A required feature associated with the other 4160V bus is inoperable.

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this time begins to be tracked. Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the time for the required action. Four hours from the discovery of these events existing concurrently, is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite electrical distribution system. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4-hour allowed time takes into account the operability of the redundant counterpart to the inoperable required feature. Additionally, the 4-hour allowed time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

When a system has installed spare components, the spare component is not required to be OPERABLE to meet required feature operability. As an example, there are three installed 100% capacity high pressure safety injection (HPSI) pumps, one (SI-2B) associated with 4160V bus 1A4, and two (SI-2A and SI-2C) associated with 4160V bus 1A3. Specification 2.3(1) *Minimum Requirements* are that there be one HPSI pump on each associated 4160V bus and each safety injection refueling water tank-containment sump header. This requires that SI-2A OR SI-2C be OPERABLE, not both.

Specification 2.0.1(2) is not applicable when the reactor coolant is < 300°F, and thus the individual requirements for each applicable Limiting Condition for Operation in these modes must be adhered to.

TECHNICAL SPECIFICATIONS

2.0 LIMITING CONDITIONS FOR OPERATION

2.0.1 General Requirements (Continued)

- (3) LCO 2.0.1(2)(3) establishes conditions under which systems are considered to remain capable of performing their intended safety function when associated snubbers are not capable of providing their associated support function(s). This LCO states that the supported system is not considered to be inoperable solely due to one or more snubbers not capable of performing their associated support function(s). This is appropriate because a limited length of time is allowed for maintenance, testing, or repair of one or more snubbers not capable of performing their associated support function(s) and appropriate compensatory measures are specified in the snubber requirements, which are located outside of the Technical Specifications (TS) under licensee control. The snubber requirements do not meet the criteria in 10 CFR 50.36(c)(2)(ii), and, as such, are appropriate for control by the licensee.

If the allowed time expires and the snubber(s) are unable to perform their associated support function(s), the affected supported system's LCO(s) must be declared not met and the Conditions and Required Actions entered.

LCO 2.0.1(3)a applies when one or more snubbers are not capable of providing their associated support function(s) to a single train or subsystem of a multiple train or subsystem supported system or to a single train or subsystem supported system. LCO 2.0.1(3)a allows 72 hours to restore the snubber(s) before declaring the supported system inoperable. The 72-hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function and due to the availability of the redundant train of the supported system.

LCO 2.0.1(3)b applies when one or more snubbers are not capable of providing their associated support function(s) to more than one train or subsystem of a multiple train or subsystem supported system. LCO 2.0.1(3)b allows 12 hours to restore the snubber(s) before declaring the supported system inoperable. The 12-hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function.

LCO 2.0.1(3) requires that risk be assessed and managed. Industry and NRC guidance on the implementation of 10 CFR 50.65(a)(4) (the Maintenance Rule) does not address seismic risk. However, use of LCO 2.0.1(3) should be considered with respect to other plant maintenance activities, and integrated into the existing Maintenance Rule process to the extent possible so that maintenance on any unaffected train or subsystem is properly controlled, and emergent issues are properly addressed. The risk assessment need not be quantified, but may be a qualitative awareness of the vulnerability of systems and components when one or more snubbers are not able to perform their associated support function.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.7 **Electrical Systems** (Continued)

One battery charger on each battery shall be operating so that the batteries will always be at full charge; this ensures that adequate d-c power will be available for all emergency uses. Each battery has one battery charger permanently connected with a third charger capable of being connected to either battery bus. The chargers are each rated for 400 amperes at 130 volts. Following a DBA the batteries and the chargers will handle all required loads. Each of the reactor protective channels instrumentation channels is supplied by one of the safety-related a-c instrument buses. The removal of one of the safety-related a-c instrument buses is permitted as the 2-of-4 logic may be manually changed to a 2-of-3 logic without compromising safety.

The engineered safeguards instrument channels use safety-related a-c instrument buses (one redundant bus for each channel) and d-c buses (one redundant bus for each logic circuit). The removal of one of the safety-related a-c instrument buses is permitted as the two of four logic automatically becomes a two of three logic.

TECHNICAL SPECIFICATIONS

2.0 **LIMITING CONDITIONS FOR OPERATION** 2.7 **Electrical Systems** (Continued)

Basis (continued)

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation. This supply is sufficient supply to allow the operator to replenish lube oil from outside sources. With lube oil inventory < 500 gallons, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.