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November 6, 2006

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

Subject: Duke Power Company LLC d/b/a Duke Energy
Carolinas, LLC
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
Technical Specification Bases Changes

Pursuant to 10CFR 50.4, please find attached changes to the Catawba Nuclear Station Technical Specification Bases. These Bases changes were made according to the provisions of 10CFR 50.59.

Any questions regarding this information should be directed to L. J. Rudy, Regulatory Compliance, at (803) 831-3084.

I certify that I am a duly authorized officer of Duke Energy Corporation and that the information contained herein accurately represents changes made to the Technical Specification Bases since the previous submittal.

A handwritten signature in black ink, appearing to read 'James R. Morris', written in a cursive style.

James R. Morris

Attachment

A001

U.S. Nuclear Regulatory Commission
November 6, 2006
Page 2

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November 6, 2006

Re: Catawba Nuclear Station
Technical Specifications Bases

Please replace the corresponding pages in your copy of the Catawba Technical Specifications Manual as follows:

REMOVE THESE PAGES

INSERT THESE PAGES

LIST OF EFFECTIVE PAGES

Page 17
Page 18
Page 31

Page 17
Page 18
Page 31

B 3.3.2-31 – B 3.3.2-42

TAB 3.3.2

B 3.3.2-31 – B 3.3.2-42

B 3.8.8-1 – B 3.8.8-2

TAB 3.8.8

B 3.8.8-1 – B 3.8.8-2

If you have any questions concerning the contents of this Technical Specification update, contact Debbie Rome at (803)831-3067.

*Allison Jones-Young
for*

Randy Hart
Manager, Regulatory Compliance

Page Number	Amendment	Revision Date
B 3.3.1-51	Revision 1	4/22/02
B 3.3.2-1	Revision 0	9/30/98
B 3.3.2-2	Revision 1	8/13/99
B 3.3.2-3	Revision 1	8/13/99
B 3.3.2-4	Revision 0	9/30/98
B 3.3.2-5	Revision 0	9/30/98
B 3.3.2-6	Revision 0	9/30/98
B 3.3.2-7	Revision 0	9/30/98
B 3.3.2-8	Revision 0	9/30/98
B 3.3.2-9	Revision 0	9/30/98
B 3.3.2-10	Revision 0	9/30/98
B 3.3.2-11	Revision 0	9/30/98
B 3.3.2-12	Revision 0	9/30/98
B 3.3.2-13	Revision 0	9/30/98
B 3.3.2-14	Revision 1	2/26/99
B 3.3.2-15	Revision 0	9/30/98
B 3.3.2-16	Revision 0	9/30/98
B 3.3.2-17	Revision 0	9/30/98
B 3.3.2-18	Revision 1	11/5/03
B 3.3.2-19	Revision 2	11/5/03
B 3.3.2-20	Revision 2	11/5/03
B 3.3.2-21	Revision 2	11/5/03
B 3.3.2-22	Revision 2	11/5/03
B 3.3.2-23	Revision 2	11/5/03
B 3.3.2-24	Revision 1	9/10/03
B 3.3.2-25	Revision 1	9/10/03
B 3.3.2-26	Revision 1	9/10/03
B 3.3.2-27	Revision 1	9/10/03
B 3.3.2-28	Revision 1	9/10/03
B 3.3.2-29	Revision 1	9/10/03
B 3.3.2-30	Revision 2	5/12/04
B 3.3.2-31	Revision 2	10/10/06

Page Number	Amendment	Revision Date
B 3.3.2-32	Revision 2	10/10/06
B 3.3.2-33	Revision 2	10/10/06
B 3.3.2-34	Revision 1	10/10/06
B 3.3.2-35	Revision 1	10/10/06
B 3.3.2-36	Revision 2	10/10/06
B 3.3.2-37	Revision 2	10/10/06
B 3.3.2-38	Revision 2	10/10/06
B 3.3.2-39	Revision 2	10/10/06
B 3.3.2-40	Revision 3	10/10/06
B 3.3.2-41	Revision 4	10/10/06
B 3.3.2-42	Revision 4	10/10/06
B 3.3.2-43	Revision 1	9/10/03
B 3.3.2-44	Revision 1	9/10/03
B 3.3.2-45	Revision 2	5/24/05
B 3.3.2-46	Revision 2	5/24/05
B 3.3.2-47	Revision 3	5/24/05
B 3.3.2-48	Revision 2	5/24/05
B 3.3.2-49	Revision 1	5/24/05
B 3.3.3-1	Revision 0	9/30/98
B 3.3.3-2	Revision 0	9/30/98
B 3.3.3-3	Revision 0	9/30/98
B 3.3.3-4	Revision 0	9/30/98
B 3.3.3-5	Revision 0	9/30/98
B 3.3.3-6	Revision 0	9/30/98
B 3.3.3-7	Revision 0	9/30/98
B 3.3.3-8	Revision 1	3/01/05
B 3.3.3-9	Revision 0	9/30/98
B 3.3.3-10	Revision 1	5/19/00
B 3.3.3-11	Revision 0	9/30/98
B 3.3.3-12	Revision 2	3/01/05
B 3.3.3-13	Revision 0	9/30/98
B 3.3.3-14	Revision 2	3/01/05
B 3.3.3-15	Revision 1	3/01/05

Page Number	Amendment	Revision Date
B 3.8.4-2	Revision 1	2/26/99
B 3.8.4-3	Revision 0	9/30/98
B 3.8.4-4	Revision 1	4/27/99
B 3.8.4-5	Revision 3	4/27/05
B 3.8.4-6	Revision 4	4/27/05
B 3.8.4-7	Revision 7	4/27/05
B 3.8.4-8	Revision 6	10/06/05
B 3.8.4-9	Revision 6	10/06/05
B 3.8.4-10	Revision 1	3/29/05
B 3.8.5-1	Revision 0	9/30/98
B 3.8.5-2	Revision 2	7/29/03
B 3.8.5-3	Revision 1	7/29/03
B 3.8.6-1	Revision 2	4/27/05
B 3.8.6-2	Revision 1	4/27/05
B 3.8.6-3	Revision 2	4/27/05
B 3.8.6-4	Revision 2	4/27/05
B 3.8.6-5	Revision 1	4/27/05
B 3.8.6-6	Revision 1	4/27/05
B 3.8.6-7	Revision 1	4/27/05
B 3.8.7-1	Revision 0	9/30/98
B 3.8.7-2	Revision 1	3/15/04
B 3.8.7-3	Revision 2	3/15/04
B 3.8.7-4	Revision 0	3/15/04
B 3.8.8-1	Revision 0	9/30/98
B 3.8.8-2	Revision 2	10/10/06
B 3.8.8-3	Revision 2	7/29/03
B 3.8.8-4	Revision 0	7/29/03
B 3.8.9-1	Revision 0	9/30/98
B 3.8.9-2	Revision 0	9/30/98
B 3.8.9-3	Revision 0	9/30/98
B 3.8.9-4	Revision 0	9/30/98
B 3.8.9-5	Revision 0	9/30/98
B 3.8.9-6	Revision 0	9/30/98

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

valves, and start the NSWS pumps. This function is initiated on a two-out-of-three logic from either NSWS pump pit.

This function must be OPERABLE in MODES 1, 2, 3, and 4 to ensure cooling water remains available to essential components during a DBA. In MODES 5 and 6, the sufficient time exists for manual operator action to realign the NSWS pump suction, if required.

Unlike other shared NSWS equipment, the pit level interlocks do not require both normal and emergency power for OPERABILITY. This is because unlike mechanical components such as pumps and valves, the interlocks are designed to fail safe upon a loss of power, initiating a transfer from Lake Wylie to the standby nuclear service water pond. The definition of OPERABILITY, which requires either normal or emergency power, provides sufficient power supply requirements and these interlocks can be considered OPERABLE provided they are powered from either an inverter or regulated power.

The ESFAS instrumentation satisfies Criterion 3 of 10 CFR 50.36 (Ref. 6).

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.2-1. When the Required Channels in Table 3.3.2-1 are specified (e.g., on a per steam line, per loop, per SG, etc., basis), then the Condition may be entered separately for each steam line, loop, SG, etc., as appropriate.

A channel shall be OPERABLE if the point at which the channel trips is found more conservative than the Allowable Value. In the event a channel's trip setpoint is found less conservative than the Allowable Value, or the transmitter, instrument loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition(s) entered for the protection Function(s) affected. If plant conditions warrant, the trip setpoint may be set outside the NOMINAL TRIP SETPOINT calibration tolerance band as long as the trip setpoint is conservative with respect to the NOMINAL TRIP SETPOINT. If the trip setpoint is found outside of the NOMINAL TRIP SETPOINT calibration tolerance band and non-conservative with respect to the NOMINAL TRIP SETPOINT, the setpoint shall be re-adjusted.

BASES

ACTIONS (continued)

When the number of inoperable channels in a trip function exceed those specified in one or other related Conditions associated with a trip function, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 should be immediately entered if applicable in the current MODE of operation.

A.1

Condition A applies to all ESFAS protection functions.

Condition A addresses the situation where one or more channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.2-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1, B.2.1 and B.2.2

Condition B applies to manual initiation of:

- SI;
- Containment Spray;
- Phase A Isolation; and
- Phase B Isolation.

This action addresses the train orientation of the SSPS for the functions listed above. If a channel or train is inoperable, 48 hours is allowed to return it to an OPERABLE status. Note that for containment spray and Phase B isolation, failure of one or both channels in one train renders the train inoperable. Condition B, therefore, encompasses both situations. The specified Completion Time is reasonable considering that there are two automatic actuation trains and another manual initiation train OPERABLE for each Function, and the low probability of an event occurring during this interval. If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (54 hours total time) and in MODE 5 within an additional 30 hours (84 hours total time). The allowable Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

ACTIONS (continued)

C.1, C.2.1 and C.2.2

Condition C applies to the automatic actuation logic and actuation relays for the following functions:

- SI;
- Containment Spray;
- Phase A Isolation;
- Phase B Isolation; and
- Automatic Switchover to Containment Sump.

This action addresses the train orientation of the SSPS and the master and slave relays. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status. The specified Completion Time is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (12 hours total time) and in MODE 5 within an additional 30 hours (42 hours total time). The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. The Required Actions are not required to be met during this time, unless the train is discovered inoperable during the testing. This allowance is based on the reliability analysis assumption of WCAP-10271-P-A (Ref. 7) that 4 hours is the average time required to perform channel surveillance.

BASES

ACTIONS (continued)

D.1, D.2.1, and D.2.2

Condition D applies to:

- Containment Pressure-High;
- Pressurizer Pressure-Low;
- Steam Line Pressure-Low;
- Steam Line Pressure-Negative Rate-High;
- Loss of offsite power;
- SG Water level—Low Low; and
- SG Water level—High High (P-14) for the Feedwater Isolation Function.

If one channel is inoperable, 6 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Generally this Condition applies to functions that operate on two-out-of-three logic. Therefore, failure of one channel places the Function in a two-out-of-two configuration. One channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements.

Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 4 hours for surveillance testing of other channels. The 6 hours allowed to restore the channel to OPERABLE status or to place the inoperable channel in the tripped condition, and the 4 hours allowed for testing, are justified in Reference 7.

BASES

ACTIONS (continued)

E.1, E.2.1, and E.2.2

Condition E applies to:

- Containment Spray Containment Pressure-High High;
- Containment Phase B Isolation Containment Pressure-High High;
and
- Steam Line Isolation Containment Pressure - High High.

None of these signals has input to a control function. Thus, two-out-of-three logic is necessary to meet acceptable protective requirements. However, a two-out-of-three design would require tripping a failed channel. This is undesirable because a single failure would then cause spurious containment spray initiation. Spurious spray actuation is undesirable because of the cleanup problems presented. Therefore, these channels are designed with two-out-of-four logic so that a failed channel may be bypassed rather than tripped. Note that one channel may be bypassed and still satisfy the single failure criterion. Furthermore, with one channel bypassed, a single instrumentation channel failure will not spuriously initiate containment spray.

To avoid the inadvertent actuation of containment spray and Phase B containment isolation, the inoperable channel should not be placed in the tripped condition. Instead it is bypassed. Restoring the channel to OPERABLE status, or placing the inoperable channel in the bypass condition within 6 hours, is sufficient to assure that the Function remains OPERABLE and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The Completion Time is further justified based on the low probability of an event occurring during this interval. Failure to restore the inoperable channel to OPERABLE status, or place it in the bypassed condition within 6 hours, requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows one additional channel to be bypassed for up to 4 hours for surveillance testing. Placing a second channel in the bypass condition for up to 4 hours for testing purposes is acceptable based on the results of Reference 7.

BASES

ACTIONS (continued)

F.1, F.2.1, and F.2.2

Condition F applies to:

- Manual Initiation of Steam Line Isolation; and
- P-4 Interlock.

For the Manual Initiation and the P-4 Interlock Functions, this action addresses the train orientation of the SSPS. If a train or channel is inoperable, 48 hours is allowed to return it to OPERABLE status. The specified Completion Time is reasonable considering the nature of these Functions, the available redundancy, and the low probability of an event occurring during this interval. If the Function cannot be returned to OPERABLE status, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power in an orderly manner and without challenging unit systems. In MODE 4, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

G.1 and G.2

Condition G applies to manual initiation of Steam Line Isolation.

This action addresses the operability of the manual steam line isolation function for each individual main steam isolation valve. If a channel is inoperable, 48 hours is allowed to return it to an OPERABLE status. If the train cannot be restored to OPERABLE status, the Conditions and Required Actions of LCO 3.7.2, "Main Steam Isolation Valves," must be entered for the associated inoperable valve. The specified Completion Time is reasonable considering that there is a system level manual initiation train for this Function and the low probability of an event occurring during this interval.

BASES

ACTIONS (continued)

H.1, H.2.1 and H.2.2

Condition H applies to the automatic actuation logic and actuation relays for the Steam Line Isolation, Feedwater Isolation, and AFW actuation Functions.

The action addresses the train orientation of the SSPS and the master and slave relays for these functions. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. If the train cannot be returned to OPERABLE status, the unit must be brought to MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 7) assumption that 4 hours is the average time required to perform channel surveillance.

I.1 and I.2

Condition I applies to the automatic actuation logic and actuation relays for the Turbine Trip Function.

This action addresses the train orientation of the SSPS and the master and slave relays for this Function. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the following 6 hours. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. These Functions are no longer required in MODE 3. Placing

BASES

ACTIONS (continued)

the unit in MODE 3 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 7) assumption that 4 hours is the average time required to perform channel surveillance.

J.1 and J.2

Condition J applies to:

- SG Water Level—High High (P-14) for the Turbine Trip Function; and
- T_{avg} -Low.

If one channel is inoperable, 6 hours are allowed to restore one channel to OPERABLE status or to place it in the tripped condition. If placed in the tripped condition, the Function is then in a partial trip condition where one-out-of-three logic will result in actuation. The 6 hour Completion Time is justified in Reference 7. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit to be placed in MODE 3 within the following 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 4 hours for surveillance testing of other channels. The 6 hours allowed to place the inoperable channel in the tripped condition, and the 4 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 7.

BASES

ACTIONS (continued)

K.1 and K.2

Condition K applies to the AFW pump start on trip of all MFW pumps.

This action addresses the auto start function of the AFW System on loss of all MFW pumps. The OPERABILITY of the AFW System must be assured by allowing automatic start of the AFW System pumps. If a channel is inoperable, 1 hour is allowed to return it to an OPERABLE status or to place the channel in trip. If the function cannot be returned to an OPERABLE status or placed in a trip condition, 6 hours are allowed to place the unit in MODE 3. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above.

L.1

Condition L applies to the Doghouse Water Level – High High. The failure of one channel in either reactor building doghouse results in a loss of redundancy for the function and possible feedwater isolation (depending on the failed status of the channel). This requires the unit be placed in MODE 3 within 6 hours.

The allowed Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In Mode 3, this Function is no longer required OPERABLE.

The Required Actions are modified by a Note that allows this inoperable channel to be bypassed for up to 2 hours for surveillance testing of other channels.

M.1, M.2.1 and M.2.2

Condition M applies to the Auxiliary Feedwater Pumps Suction Transfer on Suction Pressure Low.

If one channel is inoperable, 1 hour is allowed to restore the channel to OPERABLE status or to place it in the tripped condition. The failure of one channel places the Function in a two-out-of-two configuration. One

BASES

ACTIONS (continued)

channel must be tripped to place the Function in a one-out-of-three configuration that satisfies redundancy requirements.

Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 1 hour requires the unit to be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, this Function is no longer required OPERABLE.

N.1, N.2.1 and N.2.2

Condition N applies to:

- RWST Level—Low Low Coincident with Safety Injection.

RWST Level—Low Low Coincident With SI provides actuation of switchover to the containment sump. Note that this Function requires the bistables to energize to perform their required action. The failure of up to two channels will not prevent the operation of this Function. However, placing a failed channel in the tripped condition could result in a premature switchover to the sump, prior to the injection of the minimum volume from the RWST. Placing the inoperable channel in bypass results in a two-out-of-three logic configuration, which satisfies the requirement to allow another failure without disabling actuation of the switchover when required. Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass condition within 6 hours is sufficient to ensure that the Function remains OPERABLE, and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The 6 hour Completion Time is justified in Reference 7. If the channel cannot be returned to OPERABLE status or placed in the bypass condition within 6 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

BASES

ACTIONS (continued)

The Required Actions are modified by a Note that allows placing a second channel in the bypass condition for up to 2 hours for surveillance testing. The total of 12 hours to reach MODE 3 and 2 hours for a second channel to be bypassed is acceptable based on the results of Reference 7.

O.1, O.2.1 and O.2.2

Condition O applies to the P-11 and P-12 interlocks.

With one channel inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. If the interlock is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of these interlocks.

P.1

Condition P applies to the Containment Pressure Control System Start and Terminate Permissives.

With one or more channels inoperable, the affected containment spray and containment air return systems components must be declared inoperable immediately. The supported system LCOs provide the appropriate Required Actions and Completion Times for the equipment made inoperable by the inoperable channel. The immediate Completion Time is appropriate since the inoperable channel could prevent the supported equipment from starting when required. Additionally, protection from an inadvertent actuation may not be provided if the terminate function is not OPERABLE.

BASES

ACTIONS (continued)

Q.1, Q.2, Q.3.1, and Q.3.2

With one channel of NSWS Suction Transfer - Low Pit Level inoperable in one or more NSWS pits, 4 hours are allowed to place it in the tripped condition or align the NSWS to the Standby NSWS Pond. The failure of one channel places the Function in a two-out-of-two configuration. The failed channel must either be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements, or the NSWS realigned to fulfill the safety function.

Failure to place the channel in the tripped condition or to realign the NSWS suction and discharge within 4 hours requires the unit be placed in MODE 3 within the following 6 hours and MODE 5 within the next 30 hours.

The requirement to align the NSWS to the Standby NSWS Pond only applies to OPERABLE trains of the system.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, this Function is no longer required OPERABLE.

R.1, R.2.1, and R.2.2

With two or more channels of NSWS Suction Transfer - Low Pit Level inoperable in one or more pits, the NSWS must be aligned to the Standby NSWS Pond within 4 hours. Failure to accomplish the realignment within 4 hours requires the unit be placed in MODE 3 within the following 6 hours and MODE 5 within the next 30 hours.

The requirement to align the NSWS to the Standby NSWS Pond only applies to OPERABLE trains of the system.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, this Function is no longer required OPERABLE.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Inverters—Shutdown

BASES

BACKGROUND A description of the inverters is provided in the Bases for LCO 3.8.7, "Inverters—Operating."

APPLICABLE SAFETY ANALYSES The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protective System and Engineered Safety Features Actuation System instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum inverters to each AC vital bus during MODES 5 and 6 ensures that:

- a. The unit can be maintained in the shutdown or refueling condition for extended periods;
- b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and
- c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident.

The inverters were previously identified as part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

LCO The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. At least two AC vital buses on one train energized

BASES

LCO (continued)

by their associated battery powered inverters provide uninterruptible supply of AC electrical power to associated loads even if the 4.16 kV safety buses are de-energized. OPERABILITY of the inverters requires that the AC vital bus be powered by its channel-related inverter, or swing inverter. When the redundant train of Class 1E AC vital bus electrical power distribution subsystem is required by LCO 3.8.10, the power source for these AC vital buses may consist of 1) the associated channel-related inverter powered by its associated battery; 2) the constant voltage source transformer; or 3) a swing inverter powered by one of the train-related batteries. This ensures the availability of sufficient power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

- a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;
- b. Systems needed to mitigate a fuel handling accident are available;
- c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and
- d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.7.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two trains are required by LCO 3.8.10, "Distribution Systems—Shutdown," the remaining OPERABLE Inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for positive reactivity additions. By the allowance of the option to declare required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances,
