



Steve Snider
526 S. Church Street
Charlotte, NC 28202

Mailing Address:
EC07H / P.O. Box 1006
Charlotte, NC 28202

980.373.6195
Steve.Snider@duke-energy.com

Serial: RA-19-0312
August 1, 2019

10 CFR 50.90

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

CATAWBA NUCLEAR STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-413 AND 50-414
RENEWED LICENSE NOS. NPF-35 AND NPF-52

**SUBJECT: SUPPLEMENT TO LICENSE AMENDMENT REQUEST PROPOSING
CHANGES TO THE TECHNICAL SPECIFICATIONS 3.8.1 FOR CATAWBA
NUCLEAR STATION, Units 1 and 2**

REFERENCES:

1. Duke Energy letter, *License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, "AC Sources - Operating"*, dated May 2, 2017 (ADAMS Accession No. ML17122A116).
2. Duke Energy letter, *Supplement to License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, "AC Sources - Operating"*, dated July 20, 2017 (ADAMS Accession No. ML17201Q132).
3. Duke Energy letter, *Supplement to License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, "AC Sources - Operating"*, dated November 21, 2017 (ADAMS Accession No. ML17325A588).
4. Duke Energy letter, *Supplement to License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, "AC Sources – Operating"*, dated October 8, 2018 (ADAMS Accession Nos. ML18281A010).
5. Duke Energy letter, *Response to NRC Request for Additional Information (RAI) Regarding License Amendment Request Proposing Changes to the Technical Specifications 3.8.1 For Catawba Nuclear Station, Units 1 and 2*, dated March 7, 2019 (ADAMS Accession No. ML19066A354).
6. Duke Energy letter, *Supplement to Request for Additional Information (RAI) Responses Regarding License Amendment Request Proposing Changes to the Technical Specifications 3.8.1 For Catawba Nuclear Station and McGuire Nuclear Station*, dated April 8, 2019 (ADAMS Accession No. ML19099A046).

7. Duke Energy letter, *Response to NRC RAI Clarifications Regarding License Amendment Request Proposing Changes to the Technical Specifications 3.8.1 For Catawba Nuclear Station, Units 1 and 2*, dated July 10, 2019 (ADAMS Accession No. ML19191A177).

Ladies and Gentlemen:

In Reference 1, as supplemented by References 2 – 7, Duke Energy Carolinas, LLC (Duke Energy) submitted a License Amendment Request (LAR) for Catawba Nuclear Station (CNS), Units 1 and 2. The proposed change would extend the Completion Time for an inoperable diesel generator in Technical Specification (TS) 3.8.1, "AC Sources - Operating" at the station. The proposed change would also alter the AC power source operability requirements for the Nuclear Service Water System (NSWS), Control Room Area Ventilation System (CRAVS), Control Room Area Chilled Water System (CRACWS) and Auxiliary Building Filtered Ventilation Exhaust System (ABFVES) (i.e., shared systems).

Following a phone conversation with the Nuclear Regulatory Commission (NRC), the staff requested supplemental information from Duke Energy that is needed to complete the LAR review. The clarification questions from the NRC were originally provided in an email correspondence on April 12, 2019. Duke Energy's response to the clarifications are provided in Attachment 1.

The conclusions of the original No Significant Hazards Consideration and Environmental Consideration in the original LAR are unaffected by this RAI response.

In accordance with 10 CFR 50.91, Duke Energy is notifying the state of South Carolina of this LAR by transmitting a copy of this letter and attachments to the designated state official. Should you have any questions concerning this letter, or require additional information, please contact Art Zaremba, Director – Nuclear Fleet Licensing, at 980-373-2062.

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

August 1, 2019.

Sincerely,



Steve Snider
Vice President, Nuclear Engineering

NDE

Attachment:

1. Supplemental Information

U.S. Nuclear Regulatory Commission

RA-19-0312

Page 3

cc: (all with Attachments unless otherwise noted)

L. Dudes, Regional Administrator USNRC Region II

J.D. Austin, USNRC Senior Resident Inspector

M. Mahoney, NRR Project Manager

L. Garner, Manager, SCDHEC

U.S. Nuclear Regulatory Commission
RA-19-0312

Attachment 1
Supplemental Information

NRC Clarification question:

In the March 7, 2019 response to the Catawba RAIs, Duke Energy provided revised proposed Catawba TSs. It is not apparent the reasons for the revisions and the staff has the following question:

The March 7, 2019 letter revised a change in Condition E which now states:

Two LCO 3.8.1.a offsite circuits inoperable.

OR

One LCO 3.8.1.a offsite circuit that provides power to the shared systems inoperable and one LCO 3.8.1.c offsite circuit that provides power to the shared system inoperable.

Revised Condition G is also revised, similarly:

Two LCO 3.8.1.b DGs inoperable.

OR

One LCO 3.8.1.b DG that provides power to the shared systems inoperable and one LCO 3.8.1.d DG that provides power to the shared system inoperable.

Since the NSWs pumps are separate from the “shared systems,” please explain why the NSW pumps are not mentioned.

Duke Energy response:

Both proposed Conditions E and G for Catawba TS 3.8.1 are focused on a loss of safety function associated with the shared systems (defined in the TS Bases as shared components of Train A or Train B of the NSWs, CRAVS, CRACWS and ABFVES whose power supply can be swapped between units; i.e., the shared components powered at the 600V level).

Condition E Discussion (Both Units Online)

Assuming the normal electrical power alignment to shared systems at Catawba (i.e., 1A offsite circuit and DG are the normal and emergency power supplies for Train A shared systems and 2B offsite circuit and DG are the normal and emergency power supplies for Train B shared systems) and inoperability of the 1A and 2B offsite circuits, the following would apply with respect to proposed TS 3.8.1. Unit 1 would declare LCO 3.8.1.a not met for the inoperable 1A offsite circuit and would declare 3.8.1.c not met for the inoperable 2B offsite circuit. As a result, Unit 1 would enter Condition E because the 1A offsite circuit (the inoperable LCO 3.8.1.a offsite circuit) is the normal power supply to the Train A shared systems (600V level) and the 2B offsite circuit (the inoperable LCO 3.8.1.c offsite circuit) is the normal power supply to the Train B shared systems (600V level). Unit 1 would have 24 hours to restore one of the inoperable offsite circuits to operable status. This 24-hour Completion Time is appropriate given that both

trains of shared systems are without their normal power supply and two NSWS pumps (1A and 2B) are also without their normal power supply. Unit 2 would similarly enter Condition E, as well, and have 24 hours to restore one of the offsite circuits to operable status.

If instead, the 1B and 2A offsite circuits are inoperable, the following would apply with respect to proposed TS 3.8.1. Unit 1 would declare LCO 3.8.1.a not met for the inoperable 1B offsite circuit and would declare 3.8.1.c not met for the inoperable 2A offsite circuit. Both the 1B and 2A offsite circuits are necessary to supply the 1B and 2A NSWS Pumps. As a result, Unit 1 would enter Condition A and Condition C (“One LCO 3.8.1.c offsite circuit inoperable.”). Since the 1B offsite circuit is not the normal power supply to the Train B shared systems and the 2A offsite circuit is not the normal power supply to the Train A shared systems, proposed Condition E would not be entered. Unit 1 would have 72 hours to restore the 1B offsite circuit to operable status and would have 72 hours to restore the 2A offsite circuit to operable status. The 72-hour Completion Time is appropriate given that both trains of shared systems have their normal power supply operable (i.e., 1A and 2B offsite circuits) and two NSWS pumps (1A and 2B) still have an operable normal and emergency power supply. Furthermore, the 1B and 2A essential buses still have an operable DG (i.e., 1B and 2A DGs). Application of TS 3.8.1 for Unit 2 would be similar.

However, if the NSWS pumps were to be added to proposed Condition E (“One LCO 3.8.1.a offsite circuit that provides power to the shared systems and a NSWS pump inoperable and one LCO 3.8.1.c offsite circuit that provides power to the shared systems and a NSWS pump inoperable”) and the 1B and 2A offsite circuits were inoperable, the Catawba units would be unnecessarily restricted by TS 3.8.1. Unit 1 would declare LCO 3.8.1.a not met for the inoperable 1B offsite circuit and would declare 3.8.1.c not met for the inoperable 2A offsite circuit. Both the 1B and 2A offsite circuits are necessary to supply the 1B and 2A NSWS Pumps. Condition E would be entered on both Catawba units even though both trains of shared systems have an operable normal power supply. A Completion Time of 24 hours to restore one of the inoperable offsite circuits to operable status when only two NSWS pumps (1B and 2A) do not have normal power is overly restrictive. Two NSWS pumps (1A and 2B) have operable normal and emergency power and two NSWS pumps (1B and 2A) have operable emergency power. Train A and Train B shared systems have operable normal and emergency power.

Condition E Discussion (One Unit Shutdown)

Assuming Unit 1 is online, Unit 2 is shutdown and shared systems are aligned to be supplied by the online unit per the current CNS practice (i.e., 1A offsite circuit and DG are the normal and emergency power supplies for Train A shared systems and 1B offsite circuit and DG are the normal and emergency power supplies for Train B shared systems) and inoperability of the 1A and 2B offsite circuits, the following would apply with respect to proposed TS 3.8.1. Unit 1 would declare LCO 3.8.1.a not met for the inoperable 1A offsite circuit and would declare 3.8.1.c not met for the inoperable 2B offsite circuit. As a result, Unit 1 would enter Condition A for the inoperable 1A offsite circuit and Condition C for the inoperable 2B offsite circuit. Each offsite circuit must be restored to operable status within 72 hours. Unit 1 would not enter Condition E because the 2B offsite circuit (the inoperable LCO 3.8.1.c offsite circuit) is not the normal power supply to the Train B shared systems (600V level) when Unit 1 is online and Unit 2 is shutdown. Rather, the 1B offsite circuit is the normal power supply to the Train B shared systems. The 72-hour Completion Time for the 1A offsite circuit and for the 2B offsite circuit is appropriate given that one train of shared systems (Train B) is operable with both operable

normal and emergency power and the other train of shared systems (Train A) has operable emergency power (1A DG). The 1B NSWS pump has operable normal and emergency power and at least one of the Unit 2 NSWS pumps has both normal and emergency power (Note: one offsite circuit and one DG are required to be operable for a shutdown unit per LCO 3.8.2). Unit 2 is shutdown and is not in the Mode of Applicability for proposed TS 3.8.1.

However, if the NSWS pumps were to be added to proposed Condition E (“One LCO 3.8.1.a offsite circuit that provides power to the shared systems and a NSWS pump inoperable and one LCO 3.8.1.c offsite circuit that provides power to the shared systems and a NSWS pump inoperable”) and the 1A and 2B offsite circuits were inoperable, Catawba Unit 1 in this example would be unnecessarily restricted by TS 3.8.1. Again, it is assumed that both trains of shared systems are being supplied by the online unit as is the current CNS practice when a unit is shutdown. Unit 1 would declare LCO 3.8.1.a not met for the inoperable 1A offsite circuit and would declare 3.8.1.c not met for the inoperable 2B offsite circuit. The 1A offsite circuit is necessary to supply the Train A shared systems and the 1A NSWS pump. The 2B offsite circuit is necessary to supply power to the 2B NSWS pump. Condition E would be entered for Unit 1 even though Train B shared systems has an operable normal and emergency power supply and Train A shared systems has an operable emergency power supply. Furthermore, the 1B NSWS pump has operable normal and emergency power and at least one of the Unit 2 NSWS pumps has both normal and emergency power (whichever offsite circuit and DG are being maintained operable to satisfy LCO 3.8.2). The 1A NSWS pump has operable emergency power. A Completion Time of 24 hours to restore one of the inoperable offsite circuits to operable status with the remaining operable equipment to mitigate a LOOP/LOCA event on Unit 1 is overly restrictive.

Condition G Discussion (Both Units Online)

Assuming the normal electrical power alignment to shared systems at Catawba and inoperability of the 1A and 2B DGs, the following would apply with respect to proposed TS 3.8.1. Unit 1 would declare LCO 3.8.1.b not met for the inoperable 1A DG and would declare 3.8.1.d not met for the inoperable 2B DG. For simplicity, ESPS is assumed to be unavailable and is not factored into this discussion. As a result, Unit 1 would enter Condition G because the 1A DG (the inoperable LCO 3.8.1.b DG) is the emergency power supply to the Train A shared systems (600V level) and the 2B DG (the inoperable LCO 3.8.1.d DG) is the emergency power supply to the Train B shared systems (600V level). Unit 1 would have 2 hours to restore one of the inoperable DGs to operable status. This Completion Time is appropriate given that both trains of shared systems are without their emergency power supply. Unit 2 would similarly enter Condition G and have 2 hours to restore one of the DGs to operable status.

If instead, the 1B and 2A DGs are inoperable, the following would apply with respect to proposed TS 3.8.1. Unit 1 would declare LCO 3.8.1.b not met for the inoperable 1B DG and would declare 3.8.1.d not met for the inoperable 2A DG. Both the 1B and 2A DGs are necessary to supply the 1B and 2A NSWS Pumps. As a result, Unit 1 would enter Condition B and Condition D (“One LCO 3.8.1.d DG inoperable.”). Since the 1B DG is not the emergency power supply to the Train B shared systems and the 2A DG is not the normal power supply to the Train A shared systems, proposed Condition G would not be entered. Unit 1 would have 72 hours to restore the 1B DG to operable status (again assuming ESPS is unavailable for simplicity) and would have 72 hours to restore the 2A DG to operable status. The 72-hour Completion Time is appropriate given that both trains of shared systems have their emergency

power supply operable (i.e., 1A and 2B DGs) and two NSWSPumps (1A and 2B) still have an operable normal and emergency power supply. Furthermore, the 1B and 2A essential buses still have an operable offsite circuit (i.e., 1B and 2A offsite circuits). Application of TS 3.8.1 for Unit 2 would be similar.

However, if the NSWSPumps were to be added to proposed Condition G (“One LCO 3.8.1.b DG that provides power to the shared systems and a NSWSPump inoperable and one LCO 3.8.1.d DG that provides power to the shared systems and a NSWSPump inoperable”) and the 1B and 2A DGs were inoperable, the Catawba units would be unnecessarily restricted by TS 3.8.1. Unit 1 would declare LCO 3.8.1.b not met for the inoperable 1B DG and would declare 3.8.1.d not met for the inoperable 2A DG. Both the 1B and 2A DGs are necessary to supply the 1B and 2A NSWSPumps. Condition G would be entered on both Catawba units even though both trains of shared systems have an operable normal power supply (i.e., offsite circuit) and an operable emergency power supply. A Completion Time of 2 hours to restore one of the inoperable DGs to operable status when only two NSWSPumps (1B and 2A) do not have emergency power is overly restrictive. Two NSWSPumps (1A and 2B) still have both operable normal and emergency power and two NSWSPumps (1B and 2A) have operable normal power. Train A and Train B shared systems have operable normal and emergency power.

Condition G (One Unit Shutdown)

Assuming Unit 1 is online, Unit 2 is shutdown and shared systems are aligned to be supplied by the online unit per the current CNS practice (i.e., 1A offsite circuit and DG are the normal and emergency power supplies for Train A shared systems and 1B offsite circuit and DG are the normal and emergency power supplies for Train B shared systems) and inoperability of the 1A and 2B DGs, the following would apply with respect to proposed TS 3.8.1. Unit 1 would declare LCO 3.8.1.b not met for the inoperable 1A DG and would declare 3.8.1.d not met for the inoperable 2B DG. As a result, Unit 1 would enter Condition B for the inoperable 1A DG and Condition D for the inoperable 2B DG. Each DG must be restored to operable status within 72 hours (Note: for simplicity, ESPS is unavailable and is not factored into this discussion). Unit 1 would not enter Condition G because the 2B DG (the inoperable LCO 3.8.1.d DG) is not the emergency power supply to the Train B shared systems (600V level) when Unit 1 is online and Unit 2 is shutdown. Rather, the 1B DG is the emergency power supply to the Train B shared systems. The 72-hour Completion Time for the 1A DG and for the 2B DG is appropriate given that one train of shared systems (Train B) is operable with both operable normal and emergency power and the other train of shared systems (Train A) has operable normal power (1A offsite circuit). The 1B NSWSPump has operable normal and emergency power and at least one of the Unit 2 NSWSPumps has both normal and emergency power (Note: one offsite circuit and one DG are required to be operable for a shutdown unit per LCO 3.8.2). Unit 2 is shutdown and is not in the Mode of Applicability for proposed TS 3.8.1.

However, if the NSWSPumps were to be added to proposed Condition G (“One LCO 3.8.1.b DG that provides power to the shared systems and a NSWSPump inoperable and one LCO 3.8.1.d DG that provides power to the shared systems and a NSWSPump inoperable”) and the 1A and 2B DGs were inoperable, Catawba Unit 1 in this example would be unnecessarily restricted by TS 3.8.1. Again, it is assumed that both trains of shared systems are being supplied by the online unit as is the current CNS practice when a unit is shutdown. Unit 1 would declare LCO 3.8.1.b not met for the inoperable 1A DG and would declare 3.8.1.d not met for the inoperable 2B DG. The 1A DG is necessary to supply the Train A shared systems and the 1A

NSWS pump. The 2B DG is necessary to supply power to the 2B NSWS pump. Condition G would be entered for Unit 1 even though Train B shared systems has an operable normal and emergency power supply and Train A shared systems has an operable normal power supply. Furthermore, the 1B NSWS pump has operable normal and emergency power and at least one of the Unit 2 NSWS pumps has both normal and emergency power (whichever offsite circuit and DG are being maintained operable to satisfy LCO 3.8.2). The 1A NSWS pump has operable normal power. A Completion Time of 2 hours to restore one of the inoperable DGs to operable status with the remaining operable equipment to mitigate a LOOP/LOCA event on Unit 1 is overly restrictive.

Conclusions for Proposed Conditions E and G

Proposed Conditions E and G (without inclusion of the NSWS pumps) and the associated Required Actions satisfy the requirements of 10 CFR 50.36(c)(2)(i) by providing remedial actions when the LCO is not met. The remedial actions to be followed for proposed Conditions E and G are to restore the applicable AC power sources within the specified Completion Time such that LCO 3.8.1 is met. Appropriate Conditions and Required Actions are established for all combinations of inoperable offsite circuits and DGs that result in not meeting LCO 3.8.1. If the remedial actions are not followed, then the proposed TS 3.8.1 requires a shutdown of the applicable unit.