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Carolinas

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May 5, 2009

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Duke Energy Carolinas, LLC
Catawba Nuclear Station, Units 1 and 2
Docket Number 50-413 and 50-414
Proposed Change to Technical Specification (TS)
and Bases Section 3.6.9, Hydrogen Ignition System

Reference: Letter from Duke Energy Carolinas, LLC to the NRC, *TS and Bases Administrative changes*, dated October 2, 2008

The reference letter submitted a proposed revision to the subject TS requirements. The license amendment application, in part, proposed a revision to TS 3.6.9, Hydrogen Ignition System, page 2, for the deletion of an obsolete one-time TS change noted on the bottom of the page which expired with Unit 2 entry into Mode 5 following Cycle 11, as well as the asterisk associated with the note.

On May 3, 2000, Catawba submitted a one-time emergency license amendment request (ADAMS Accession Number ML003712857) to modify Surveillance Requirement (SR) 3.6.9.1 in response to inoperable ignitors. The NRC subsequently approved this request via license amendment number 178 for NPF-52, dated May 5, 2000 (ADAMS Accession Number ML003713019). Prior to the submittal of this license amendment request, SR 3.6.9.1 read as follows: "Energize each HIS train power supply breaker and verify $\geq$ 34 ignitors are energized in each train." The proposed changes of this supplement will be to fully retract the one-time emergency TS change and to restore this SR as it was previously.

Attachment 1 provides a re-marked copy of the affected TS page, as well as associated TS Bases pages, showing the proposed changes. Due to the administrative nature of this

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supplement, the No Significant Hazards Consideration Determination contained in the original submittal does not require revision in support of this request. This amendment request supplement contains no NRC commitments.

Pursuant to 10 CFR 50.91, a copy of this proposed amendment supplement is being sent to the appropriate State of South Carolina official.

Should you have any questions concerning this information, please call M.J. Sawicki at (803) 701-5191.

Very truly yours,

James R. Morris

Attachments

James R. Morris affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

James R. Morris, Vice President

Subscribed and sworn to me: May 5 2009
Date

Notary Public

My commission expires: 1/31/2018
Date

SEAL

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RGC File
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Summary:

This supplement further modifies what was presented in the previous license amendment request, which had only removed the note and asterisk associated with the now-obsolete emergency TS change. This allows the SR to accurately represent the content as it existed before the emergency TS change was implemented. The attachment pages update the write-ups submitted previously.

ATTACHMENT 1

MARKED-UP TS AND BASES PAGES FOR CATAWBA

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Energize each HIS train power supply breaker and verify ≥ 34 (Unit 1) or 33* (Unit 2) ignitors are energized in each train. Delete	92 days
SR 3.6.9.2	Verify at least one hydrogen ignitor is OPERABLE in each containment region.* Delete	92 days
SR 3.6.9.3	Energize each hydrogen ignitor and verify temperature is ≥ 1700°F* Delete	18 months

Delete

* For Unit 2 Cycle 11 operation only, or until the next Unit 2 entry into MODE 5 which allows affected ignitor replacement, this SR is not applicable to each train's ignitor located beneath the reactor vessel missile shield.

BASES

BACKGROUND (continued)

When the HIS is initiated, the ignitor elements are energized and heat up to a surface temperature ≥ 1700°F*. At this temperature, they ignite the hydrogen gas that is present in the airspace in the vicinity of the ignitor. The HIS depends on the dispersed location of the ignitors so that local pockets of hydrogen at increased concentrations would burn before reaching a hydrogen concentration significantly higher than the lower flammability limit. Hydrogen ignition in the vicinity of the ignitors is assumed to occur when the local hydrogen concentration reaches 8.5 volume percent (v/o) and results in 100% of the hydrogen present being consumed.

APPLICABLE SAFETY ANALYSES

The HIS causes hydrogen in containment to burn in a controlled manner as it accumulates following a degraded core accident (Ref. 3). Burning occurs at the lower flammability concentration, where the resulting temperatures and pressures are relatively benign. Without the system, hydrogen could build up to higher concentrations that could result in a violent reaction if ignited by a random ignition source after such a buildup.

The hydrogen ignitors are not included for mitigation of a Design Basis Accident (DBA) because an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water is far in excess of the hydrogen calculated for the limiting DBA loss of coolant accident (LOCA). The hydrogen ignitors have been shown by probabilistic risk analysis to be a significant contributor to limiting the severity of accident sequences that are commonly found to dominate risk for units with ice condenser containments. As such, the hydrogen ignitors satisfy Criterion 4 of 10 CFR 50.36 (Ref. 4).

LCO

Two HIS trains must be OPERABLE with power from two independent, safety related power supplies.

For this unit, an OPERABLE HIS train consists of 34 (Unit 1) or 33* (Unit 2) of 35 ignitors energized on the train.

* During Unit 2 Cycle 11 operation only, or until the next Unit 2 entry into MODE 5 which allows affected ignitor replacement, each train's ignitor located beneath the reactor vessel missile shield may be inoperable without impacting the OPERABILITY of its respective train.

BASES

ACTIONS (continued)

length of time after the event that operator action would be required to prevent hydrogen accumulation from exceeding this limit, and the low probability of failure of the OPERABLE HIS train. Alternative Required Action A.2, by frequent surveillances, provides assurance that the OPERABLE train continues to be OPERABLE.

B.1* Delete

Condition B is one containment region with no OPERABLE hydrogen ignitor. Thus, while in Condition B, or in Conditions A and B simultaneously, there would always be ignition capability in the adjacent containment regions that would provide redundant capability by flame propagation to the region with no OPERABLE ignitors.

Required Action B.1 calls for the restoration of one hydrogen ignitor in each region to OPERABLE status within 7 days. The 7 day Completion Time is based on the same reasons given under Required Action A.1.

C.1

The unit must be placed in a MODE in which the LCO does not apply if the HIS subsystem(s) cannot be restored to OPERABLE status within the associated Completion Time. This is done by placing the unit in at least MODE 3 within 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 plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

Delete

This SR confirms that ≥ 34 (Unit 1 of 35** Unit 2) of 35 hydrogen ignitors can be successfully energized in each train. The ignitors are simple resistance elements. Therefore, energizing provides assurance of

Delete

* For Unit 2 Cycle 11 operation only, or until the next Unit 2 entry into MODE 5 which allows affected ignitor replacement, each train's ignitor located beneath the reactor vessel missile shield may be inoperable without requiring entry into this Condition.

** For Unit 2 Cycle 11 operation only, or until the next Unit 2 entry into MODE 5 which allows affected ignitor replacement, this SR is not applicable to each train's ignitor located beneath the reactor vessel missile shield.