Duke Power

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October 6, 2005

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

Subject: Duke Energy Corporation
Catawba Nuclear Station, Units 1 and 2
Docket Numbers 50-413 and 50-414
Proposed Technical Specification Amendment
Technical Specification 3.5.2, Emergency Core Cooling System; 3.6.6, Containment Spray System; 3.6.17, Containment Valve Injection Water System; 3.7.5, Auxiliary Feedwater System; 3.7.7, Component Cooling Water System; 3.7.8, Nuclear Service Water System; 3.7.10, Control Room Area Ventilation System; 3.7.12, Auxiliary Building Filtered Ventilation Exhaust System; & 3.8.1, AC Sources - Operating

References: Letters from Duke Energy Corporation to NRC, same subject, dated November 16, 2004, May 3, 2005, July 6, 2005, and September 13, 2005

The reference letters collectively comprise Duke Energy Corporation's license amendment request submittal to allow the "A" and "B" Nuclear Service Water System (NSWS) headers for each unit to be taken out of service for up to 14 days each for system upgrades.

On September 19, 2005, a meeting was held between Duke Energy Corporation and the NRC concerning this submittal. Subsequent to this meeting, a Request for Additional Information (RAI) was provided to Duke Energy Corporation via electronic mail dated September 22, 2005. The purpose of this letter is to respond to these RAI questions. The attachment to this letter contains our response. The format of the response is to restate each RAI question, followed by our response.

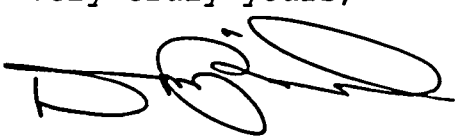
A001

The conclusions reached in the original determination that the amendment contains No Significant Hazards Considerations pursuant to 10 CFR 50.92, and the basis for the categorical exclusion from performing an Environmental Assessment/Impact Statement pursuant to 10 CFR 51.22(c)(9) have not been changed based on the information in the attachment to this letter.

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

Inquiries on this matter should be directed to L. J. Rudy at (803) 831-3084.

Very truly yours,



D.M. Jamil

LJR/s

Attachment

D.M. Jamil 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.

D.M. Jamil, Vice President

Subscribed and sworn to me: 10/6/05
Date

Notary Public

My commission expires: 7/2/2014
Date

SEAL

xc (with attachment):

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ATTACHMENT

CATAWBA RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

(Throughout this attachment, the NRC request for additional information is highlighted in **bold type** and Catawba's response is shown in normal type.)

PRA Questions:

Please clarify two of the September 13, 2005 RAI responses (5 and 1b) for risk as follows:

1. PSB-5 (Referenced in response to RAB-10)

The committed compensatory measure of monitoring weather conditions during the outage implies a potential for recovery which does not exist. Please identify that once the NSW header outage commences, restoration of the header to a functional status cannot be made within sufficient time to provide any meaningful mitigation capability.

Duke Energy Corporation Response:

Once the modifications that replace NSW pipe commence, the affected train cannot be immediately restored to operable status. The time frame for emergency restoration would depend upon the progress of each modification and the direction would be to either return to the original as-built condition in response to an early termination notice or to complete the implementation in response to a late termination notice. The time frame for restoration would most likely be in the range of several days. In any event, the time to complete restoration of the affected header to operable status will not exceed the 14-day AOT provided by this amendment request.

2. RAB-1b

The scope and development of the fire PRA scenarios is not clear, and Duke identified in the September 19, 2005, public meeting that its fire PRA modeling is not as rigorous and complete as a full fire PRA. Please provide a basis for why fire risk is not significant during the NSW header outage, when the plant essentially relies upon one train of equipment, and a single fire which can then fail the remaining train could become risk significant.

Duke Energy Corporation Response:

Although the possibility of fires that affect the operating train of equipment would be more likely to result in a transient than would be the case if both trains were available, the risk is low when compared to the risk that is already accounted for explicitly in the PRA model. First, while a train of NSWS is out of service the remaining train

of equipment would be the "protected" train. This should substantially reduce the risk of fires affecting the operable train. Additionally, Catawba has the Standby Shutdown Facility (SSF) and the turbine driven auxiliary feedwater (AFW) pump, which would not be damaged in the event of a fire damaging the operable train of NSWS. The SSF/turbine driven AFW pump combination provides the capability to shut down the plant and maintain it in a safe condition independent of the NSWS. Both the SSF and the turbine driven AFW pump will be operable and protected while a train of the NSWS is out of service.

Plant Systems Questions:

1. (a) It is the NRC staff's current impression that more "one-time" TS changes may be needed to support the planned NSW work at Catawba, but in the September 19, 2005, public meeting it appeared that the next step for Duke is to apply for a permanent TS change for managing header outages and that additional one-time changes may not be needed. If this is the case and the docket is not clear on this point, please provide additional clarification about the future plans for the NSW system at Catawba.

Duke Energy Corporation Response:

Following the two 14-day AOT evolutions requested by this submittal, the installed modifications will allow for continued implementation of crossover modifications in either online or outage time frames. An example of these crossover modifications is the installation of additional piping connections to allow each diesel generator to receive cooling water from either the "A" or the "B" NSWS header. These modifications will facilitate future single header operation of the NSWS between the NSWS pumphouse and the auxiliary building. Pending completion of this modification work, Duke Energy Corporation anticipates submitting a request for a permanent change to the TS. This permanent change would add a new Condition to the NSWS TS allowing for single header operation. Although the Required Action Completion Time associated with this new proposed Condition has not yet been determined, a preliminary estimate yields a value on the order of 30 days. With this new proposed Condition in place, the need for additional "one-time" TS changes to support NSWS maintenance activities will be eliminated.

(b) The licensee needs to provide a compelling argument that supports the request to perform the planned maintenance

with both units operating, and to fully justify why it would not be more appropriate to coordinate the planned maintenance with the next one or two refueling outages. In its September 13, 2005 submittal, Duke provided some discussion about economic considerations and efficiencies of doing the work in a back-to-back fashion, but their argument should include safety as the primary consideration. For example, if there should be a grid disturbance (LOOP) and both units should trip during this refurbishment evolution, would the plant risk be substantially greater than if only one unit is operating and the other one is in a refueling outage? What about the case where the fuel has been off-loaded to the spent fuel pool for the shutdown unit in preparation for performing the required NSWS refurbishment? What about performing the complete refurbishment (both headers) during the next refueling outage rather than spreading it over the next two refueling outages? Please consider all of the options and propose the best course of action considering first the safety implications, and second other factors such as economic, scheduling, etc.

Duke Energy Corporation Response:

Duke Energy Corporation requested these TS changes to be applicable to both units because we believe that it is in the best interest of nuclear safety to perform the planned NSWS refurbishment with both units on line. The NSWS is shared between the two Catawba units; therefore, the planned refurbishment could not be performed under the existing TS requirements without the need for an AOT extension. If the refurbishment were performed with one unit in a refueling outage, then a TS change would still be required for the operating unit. If the refurbishment were performed over two refueling outages, then two separate AOT extensions would be required (one for each outage). Performing the refurbishment with both units on line will eliminate the need for future amendment requests. In addition, the overall adverse impact to control room personnel would be more severe if the refurbishment is conducted while one unit is in a refueling outage due to the simultaneous combination of outage activities and refurbishment activities. Finally, the NRC has previously approved similar amendments for Catawba in conjunction with modification activities associated with the NSWS.

Relevant considerations include:

- Performing the entire refurbishment during a single outage would require significantly extending the time the shutdown

unit is in a mode where the NSWS is not required. At least 30 days would be necessary for NSWS refurbishment (14 days per train and approximately 2 days for the transition between trains). Alternatively, performing the refurbishment activity over two outages would significantly delay the ability for single header operation, since the necessary modifications would have to be slotted into both units' scheduled refueling outages, as opposed to the proposed January 2006 timeframe.

- By performing the refurbishment with both units on line, there will be an enhanced ability of Operations and plant management to exclusively focus on NSWS activities.
- There is a reduced probability of severe weather associated with high winds during the proposed timeframe.
- There is an increased probability of grid stability during the proposed timeframe.
- During a typical refueling outage, it is necessary to bring in approximately 1000 non-permanent personnel (i.e., vendors and contractors). Consequently, there would be increased challenges posed by transient personnel and combustibles during a refueling outage in protecting equipment for the operating unit.
- There is an increased availability of skilled resources to perform the NSWS work during January as opposed to the refueling outage season.
- There are increased risks of not being able to perform switchyard work for two outages (due to operating unit restrictions) if the refurbishment were to be conducted during outages.
- There would be significant economic impact and delays associated with including the NSWS refurbishment in future refueling outages without a commensurate increase in nuclear safety. For the proposed 14-day AOT, the Incremental Core Damage Probability was shown to be 5.8E-6 and the Incremental Large Early Release Probability was shown to be 1.9E-7. If this were a request for a permanent change to the TS under Regulatory Guide 1.174, this would be in the range of a "small change".

2. Relating to your plans to use the CCW pumps from the inoperable train for providing CCW flow in the event that power is lost for the operable CCW pumps. Please evaluate the hydraulic characteristics of the CCW system when cross-connected in that fashion and confirm that there would be sufficient NPSH for the CCW pumps and that the system would be capable of functioning in that manner.

Duke Energy Corporation Response:

The alignment for using the inoperable train for providing CCW flow is not significantly different hydraulically from the normal alignment. The primary difference is the use of a 20-inch diameter section of piping, containing two 20-inch butterfly valves, that connects the two CCW trains 20-inch supply headers upstream of the heat exchangers. The additional 20-inch piping section is relatively short, and losses through the piping and valves are not significant (less than 1 psi). Aligning the cross-connecting header does not increase the flow demands on the system. The return flow path to the running pumps will be identical to the normal alignment required to support equipment in service. Therefore, NPSH is not a concern due to using the normal suction piping alignment and associated surge tanks. Normal operation requires only one CCW pump to supply system demand. Since there are two CCW pumps per train, ample capacity will be available to support the alignment.

Electrical Questions:

1) Does the transmission system operator (TSO) perform real-time contingency analysis to determine grid conditions that would make the offsite system inoperable in the event of various contingencies? What actions will be taken if the offsite system becomes inoperable during the 14 day AOT?

Duke Energy Corporation Response:

The condition of the electrical grid is routinely evaluated by the TSO (Duke Power Company - Power Delivery) through the Real Time Contingency Analysis. This is a computer program that runs every 15 minutes and is monitored by the Transmission Control Center (TCC). If grid conditions deteriorate, the TCC operator alerts the nuclear facility control room and the appropriate abnormal operating procedure is entered. This information can be obtained manually by the TCC and is performed more frequently whenever the system configuration changes. Once the degraded condition is known, it can be compared with the other out of service risk significant components as required under this AOT, and the LOOP vulnerability can be analyzed with ORAM-Sentinel (an electronic risk assessment tool).

Each NSWS train will be taken out of service independently to allow one train per unit to be operable at all times during the AOT. Should the offsite power system become lost during this 14-day AOT, the diesel generators for each unit that are not associated with the inoperable NSWS train will

be fully operable. These diesel generators will retain automatic start capability. They would be used to power the 4.16 kV safety busses for their respective trains until the grid could be restored. The diesel generators for each unit associated with the NSWS train that is inoperable will be available for use as well, although technically inoperable. Modifications will be put in place (in advance of the 14-day AOT) to allow those diesel generators with inoperable NSWS cooling supplies to be cooled from the Fire Protection System by manual valve realignment. The diesel generators may then be manually started upon grid unavailability to supply their respective busses. Thus, it is planned that both 4.16 kV safety busses per unit will be powered by their respective diesel generators if offsite power is lost during this 14-day AOT.

The Catawba TS would be utilized to determine the Required Actions if the offsite power system were to become inoperable during this 14-day AOT. There are two possible cases:

1. Both offsite power sources inoperable: Catawba enters TS LCO 3.0.3 because both trains of NSWS, Auxiliary Building Filtered Ventilation Exhaust System, Control Room Area Ventilation System, and Control Room Area Cooling Water System will be considered inoperable. Additionally, Catawba enters LCO 3.8.1, Condition C because both offsite power sources would be inoperable, which normally allows 24 hours to restore one offsite circuit to operable status. Catawba also enters LCO 3.8.1, Condition H in this case, because three or more AC sources would be inoperable (including the single inoperable diesel generator). This requires entry into LCO 3.0.3 as well. LCO 3.0.3 is the most limiting TS in this case.

2. One offsite power source inoperable: The operable NSWS train will remain operable if the inoperable offsite power source is the opposite train's power supply. However, Catawba will have a 12-hour Completion Time to restore the offsite power source to operable status. This is because one diesel generator is already inoperable due to the 14-day AOT (refer to LCO 3.8.1, Condition D). If the single inoperable offsite power source applies to only one unit, and offsite power is available for that train on the other unit, it is possible to use the shared auxiliary transformers "A" or "B" (SATA or SATB) to restore power to the inoperable circuit from the other unit. Utilizing SATA and SATB is not an option if both units have lost an offsite power source. If the inoperable offsite power source is on the same train as the inoperable NSWS train, Catawba still

enters LCO 3.8.1, Condition D (which allows 12 hours to restore the offsite power source to operable status). This TS requirement applies if either offsite power source and either diesel generator are inoperable.

2) Discuss how the grid stability will be maintained during the 14 day AOT.

Duke Energy Corporation Response:

The grid stability will be maintained throughout the 14-day AOT by the established processes and procedures in use by the TCC and Grid Operations on a continual basis. Specific attributes of these processes and procedures are described in the responses to Electrical Questions 1 and 3.

3) Does your TSO notify the plant operators when degraded grid conditions could occur and what action will be taken if degraded grid conditions occur?

Duke Energy Corporation Response:

The Service Level Agreement requires Power Delivery (TCC) to notify Nuclear Generation (Operations) when the transmission power supply is degraded to a degree that it may impact operations in the switchyard or the nuclear station. Notification is provided as soon as possible and, in any event, within 30 minutes of the initial identification of a condition or alarm typical of a potential degraded condition.

Additionally, joint unit commitment meetings are held twice daily between representatives from Grid Operations and representatives from Nuclear Generation and Fossil Generation on the status of the load situation over the next 72 hours. Nuclear Generation has individuals within the Nuclear General Office assigned as the Duty Engineer and Duty Coordinator. Either the Duty Coordinator and/or the Duty Engineer will attend the joint unit commitment meetings. The meeting is intended for Nuclear Generation to provide nuclear system status to the System Operations Center (SOC) and to receive information from the SOC concerning system load and operating conditions, as well as the status of the Fossil/Hydro system. As part of this meeting, the projected power supply is obtained for the next 72 hours from the SOC Lead Coordinator. Depending upon how the projected power supply system is categorized by the SOC, the Nuclear Generation Duty Engineer will initiate Degraded Power Supply Notifications to the station as required per

established written procedures. The goal of the meetings and the Degraded Power Supply Notifications is to provide the most lead time possible in communicating potential/actual degraded power supply conditions that could lead to grid instabilities.

For weekends and holidays, the Nuclear Generation Duty Engineer will contact the SOC operator on the board to provide and receive the information that is covered in the normal joint unit meetings.

In emergency situations when there is no time to contact the Nuclear Generation Duty Engineer, the SOC will contact the Senior Reactor Operator in the Catawba control room. The SOC has a dedicated automatic ring down phone line to Catawba to facilitate rapid communications between the control room operators and the SOC.

The TCC also has two sets of low voltage alarms to monitor Catawba switchyard voltage. The normal low voltage setpoint is set at the minimum switchyard voltage plus a margin for a unit trip contingency. The emergency low voltage setpoint is set at the minimum switchyard voltage for the nuclear plant. These setpoints are listed and described in the "TCC/SOC Nuclear Plant Grid Voltage Requirements" guideline that is part of the TCC Work Practice Manual. The TCC will notify the Senior Reactor Operator in the control room if the normal low voltage setpoint is reached and conditions continue to worsen such that violation of the minimum switchyard voltage is imminent. The TCC has a dedicated automatic ring down phone line to Catawba to facilitate rapid communications between the control room operators and the TCC.

All three nuclear sites, including Catawba, have a 2-out-of-3 (2/3) degraded voltage relay logic for monitoring their essential busses. The operators will receive an alarm in the control room (after a short time delay) when this 2/3 degraded voltage logic is satisfied. If the degraded voltage logic still exists after 10 minutes have passed, separation from the offsite power grid and connection to the diesel generator will automatically occur for the train that is considered operable at that time during the AOT. The diesel generators serving the train with inoperable NSWS cooling during this AOT are available (though not operable), as discussed in the response to Question 1 above. They would be manually started to supply their respective emergency busses after diesel generator cooling is aligned to the Fire Protection System.

In addition, procedures are in place at the TCC for notifying the control room if unacceptable Real Time Contingency Analysis program results are verified by using Real Time Contingency Analysis and other means. Both the TCC and the nuclear units also have computer alarms for switchyard voltage, set at values that indicate a problem could exist, which prompt verification that the Real Time Contingency Analysis program is in service and to review its results. The TCC and SOC have procedures in place to expedite clearing such a condition. Site procedures clearly describe contingency actions when operators determine or are notified by the grid operator that predicted offsite voltage levels during post-trip conditions are insufficient. When notified of a confirmed degraded grid by the TCC, plant procedures direct the affected units to enter LCO 3.0.3 and start a 2-hour time clock. If the TCC/SOC cannot correct the situation within 2 hours, the procedures will then direct the operators to have Maintenance Instrument and Electrical defeat the 5-second time delay logic associated with the Loss of Coolant Accident (LOCA) portion of the degraded bus voltage circuit. Once the time delay is defeated, the units would immediately initiate a blackout signal and the operable diesel generators would automatically load upon the receipt of the LOCA signal. Should this occur, Catawba would remain in LCO 3.0.3 due to requirements related to power supplies to shared systems. Continued operation would only be allowed via a Notice of Enforcement Discretion from the NRC.