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

Subject: Duke Energy Corporation
Catawba Nuclear Station, Unit 1
Docket Number 50-413
Notice of Enforcement Discretion (NOED) Request
Technical Specifications (TS) 3.5.2 (ECCS-Operating)
TS 3.7.12 (Auxiliary Building Filtered Ventilation Exhaust System (ABFVES))

Attached is the written documentation of the background and technical information supporting the Catawba Unit 1 Notice of Enforcement Discretion (NOED) request. This information was discussed with the NRC staff in a telephone conference call on June 10, 1999.

As discussed in detail in Attachment 1, Catawba is requesting discretion from enforcing TS Limiting Condition for Operation (LCO) 3.5.2. This specification governs the Emergency Core Cooling System (ECCS) for Modes 1, 2, and 3. Also, Catawba is requesting discretion from enforcing TS LCO 3.7.12, insofar as the ability to comply with Surveillance Requirement (SR) 3.7.12.4 is concerned. LCO 3.7.12 governs the ABFVES for Modes 1, 2, 3, and 4. SR 3.7.12.4 requires that each ABFVES train be able to maintain the ECCS pump rooms at negative pressure relative to adjacent areas. As shown in the attached justification, Duke Energy maintains that granting of discretionary enforcement in this case is in the best interests of nuclear safety.

This request for enforcement discretion was approved by the Catawba Plant Operations Review Committee (PORC) on June 10, 1999.

Should you have any questions concerning this information, please call L.J. Rudy at (803) 831-3084.

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Very truly yours,

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Attachment

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Attachment 1
Catawba Nuclear Station, Unit 1
Request for Enforcement Discretion
TS 3.5.2 (ECCS-Operating)
TS 3.7.12 (ABFVES)

Duke Energy hereby requests that the NRC grant discretion in enforcing TS LCOs 3.5.2 (ECCS-Operating) and 3.7.12 (ABFVES), relative to compliance with SR 3.7.12.4, and allow the unit to remain in Mode 1 (Power Operation) until work is completed to replace the rotating element for centrifugal charging pump (CCP) 1B. This pump was declared inoperable on June 8, 1999 at 2320 hours. Duke Energy is requesting that the completion time of Condition A of LCO 3.5.2 be extended from the current 72 hours by an additional 4 days, for a total of 7 days, so that this work can be completed. The basis for this request is delineated in the discussion below.

1. TS violated

Catawba is requesting enforcement discretion from TS LCO 3.5.2. This LCO governs the ECCS for Modes 1, 2, and 3. LCO 3.5.2 requires two ECCS trains to be operable. Condition A for this LCO states that with one or more trains inoperable and at least 100% of the ECCS flow equivalent to a single operable ECCS train available, the inoperable train(s) must be restored to operable status within 72 hours. Condition B states that if the required action and associated completion time is not met, the unit must be in Mode 3 within 6 hours and in Mode 4 within 12 hours.

Catawba is also requesting enforcement discretion from TS LCO 3.7.12, insofar as the ability to comply with SR 3.7.12.4 is concerned. This LCO governs the ABFVES for Modes 1, 2, 3, and 4. LCO 3.7.12 requires two ABFVES trains to be operable. Condition A for this LCO states that with one ABFVES train inoperable, the inoperable train must be restored to operable status within 7 days. There is no condition for two ABFVES trains inoperable; therefore, LCO 3.0.3 would apply in the event that both trains are inoperable. SR 3.7.12.4 requires that each ABFVES train be capable of maintaining the ECCS pump rooms at a negative pressure relative to adjacent areas.

2. Circumstances surrounding the situation

The Catawba ECCS is composed, in part, of three separate subsystems: the high head centrifugal charging subsystem, the intermediate head safety injection subsystem, and the low head residual heat removal subsystem. Each subsystem consists of two

redundant, 100% capacity trains that are interconnected such that either train is capable of supplying 100% of the flow required to mitigate accident consequences. The interconnecting and redundant subsystem design provides the operators with the ability to utilize components from opposite trains to achieve the required 100% flow to the core.

The ABFVES filters air exhausted from all potentially contaminated areas of the auxiliary building, which includes the ECCS area and non safety portions of the auxiliary building. The ABFVES, in conjunction with other normally operating systems, also provides ventilation for these areas of the auxiliary building. The ABFVES consists of two independent and redundant trains. Following receipt of a safety injection signal, the system isolates non safety portions of the ABFVES and exhausts air only from the ECCS pump rooms. Either ABFVES train is designed to be capable of maintaining a negative pressure in any of the ECCS pump rooms, regardless of train designation.

On June 8, 1999, Operations was alerted by annunciation of a high differential pressure (dp) on seal water injection filter 1B. Upon shifting the filters, Operations noticed that valve 1NV-294 (CCP A and B Discharge Flow Control Valve) was indicating full open with no noticeable increase in charging line flow. The unit operating parameters returned to normal when CCP 1A was placed in service and CCP 1B was secured. A brief synopsis is indicated below:

Date/Time	Event Description
6/5/99	CCP 1B placed in service.
6/8/99/~0900	CCP motor 1B stator temperatures started to increase.
~1700	Seal injection filter 1B dp increased at a more rapid rate.
1938	1NV-294 opened more than normal.
1941	1NV-294 was full open.
2030	Seal water injection filter 1B high dp annunciator alarm came in.
2045-2050	1NV-294 and 1NV-309 (Seal Water Injection Flow Control Valve) were taken to manual in an attempt to increase charging flow. No effect was observed.

2217	CCP 1A was placed in service. CCP 1B was secured.
2227-2251	1NV-309 and 1NV-294 were returned to automatic control.
2320	CCP 1B was declared inoperable.

A Failure Investigation Process (FIP) Team was subsequently initiated to investigate the event. The team evaluated a number of possible scenarios for the observed conditions. These included:

- Failure of CCP 1B
- CCP 1B drain valve diverting flow
- CCP 1B recirculating back through CCP 1A
- CCP 1B recirculating back to the Volume Control Tank
- Decrease in available suction flow to CCP 1B
- Obstruction in the CCP 1B discharge
- CCP 1B motor running at reduced speed
- CCP 1B speed reducer failure
- Gas voids in CCP 1B

All failure modes were subsequently discounted, with the exception of the failure of CCP 1B itself. A work order was written to replace the pump rotating element. In order to replace the rotating element, the equipment access hatch above the pump will have to be removed to allow the removal of equipment too large to be carried through the pump room door. Additionally, it may be necessary to allow the pump room door to be secured open for the placement and removal of equipment required to support disassembly and reassembly of the pump. Either the open hatch or the open door will create a breach in the pump room ventilation boundary of sufficient size such that neither ABFVES train will be capable of maintaining a negative pressure in the pump room relative to adjacent areas as required by SR 3.7.12.4.

3. The safety basis for the request, including the evaluation of the safety significance and potential consequences of the proposed action.

There is minimal safety consequence associated with this request. Granting of enforcement discretion will not have any significant adverse safety impact, as CCP 1A is fully operable and remains capable of fulfilling its design basis accident mitigation

function. Catawba is maintaining all ECCS Train A components fully operable, and with the exception of CCP 1B, all ECCS Train B components will remain fully operable.

During the maintenance activities, while the CCP 1B room pressure boundary is breached and the ABFVES is incapable of maintaining a negative pressure in that room relative to adjacent areas, the pump will be isolated. Therefore, the potential of significant leakage of containment sump fluids in the room through the pump seal is eliminated. Any minor leakage present in the room will be compared to limits established in the dose analysis for containment sump fluid leakage outside of the ECCS pump room areas. If leakage values exceed the limits established by the dose analysis, then corrective action will be initiated to bring the leakage to within allowable values prior to the ventilation boundary being breached.

The alteration of the CCP 1B room boundary will not adversely affect the performance of the ABFVES filters. System flow rates will remain below the required TS limits and HEPA and carbon bed iodine removal efficiencies will not be affected. Additionally, even with the ventilation boundary of the CCP 1B room breached, the ABFVES will still be capable of maintaining a negative pressure in the other ECCS pump rooms. Therefore, the Catawba dose analysis results will not be adversely affected and dose rates will remain within the values established by regulations. Duke Energy estimates that the total length of time that the CCP 1B room hatch is removed will be approximately 8 to 10 hours.

Duke Energy has evaluated this NOED request from a probabilistic risk standpoint concerning the extended inoperability of CCP 1B and has found that the incremental increase in risk would be acceptable. In order to determine the impact of core damage risk, a calculation has been performed using the zero-maintenance model developed from Revision 2 of the Catawba Probabilistic Risk Assessment (PRA). The zero-maintenance PRA model is similar to the Revision 2 Catawba PRA model except that all maintenance events have been set to zero and seismic events have been excluded. This calculation shows that with CCP 1B out of service the change in Core Damage Frequency (CDF) is 6.1E-09/day. The Incremental Conditional Core Damage Probability (ICCDP) for a 3-day Allowable Outage Time (AOT) is 1.8E-08. The ICCDP for a 7-day AOT is 4.2E-08. The difference between the two ICCDPs is 2.4E-08. This value represents the increase in risk associated with the extension of the AOT to 7 days. The increase is considered a very small change as discussed in Section 2.4.2 of Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis." The CDF from Revision 2

of the Catawba PRA is 7.2E-5/yr (6.4E-5/yr excluding the seismic events).

From Revision 2 of the Catawba PRA, the major contributors to Large Early Release Frequency (LERF) are an interfacing systems loss of coolant accident, a steam generator tube rupture (as an initiating event or an induced tube rupture), and large isolation failures due to seismic events or a station blackout. The sequences associated with a train of centrifugal charging in maintenance do not contribute significantly to these plant damage states. The impact on LERF is therefore very small. In addition, if the increase in LERF were the same as the increase in CDF (2.4E-08), the change would still be considered very small as discussed in Section 2.4.2 of RG 1.174. The calculated LERF for Revision 2 of the Catawba PRA is approximately 4E-07/yr. It has been determined that the breaching of the CCP 1B room pressure boundary and the resultant effect on ABFVES performance has no effect on either the CDF or the LERF.

4. The basis for the licensee's conclusion that noncompliance will not be of potential detriment to the public health and safety and that no significant hazard consideration is involved.

NRC granting of this request for enforcement discretion will not have any adverse consequences from the standpoint of public health and safety. Relief from the applicable LCO 3.5.2 and 3.7.12 requirements to support online pump replacement is preferable to the transient that would be incurred if Unit 1 were forced to shut down while the pump work is in progress. Duke Energy has evaluated the consequences of this request from a probabilistic risk standpoint and the results were found to be acceptable. During the period covered by this request, all ECCS Train A components and all ECCS Train B components with the exception of CCP 1B will continue to remain fully operable and capable of fulfilling their required safety functions. Should any unplanned adverse situation occur which renders CCP 1A inoperable, Unit 1 would be shut down in accordance with LCO 3.0.3.

There [illegible] gnificant hazards considerations associated with this req[illegible] for enforcement discretion. This is demonstrated as follows:

This request for enforcement discretion does not involve a significant increase in the probability or consequences of an accident previously evaluated. Granting of this request will have no effect on accident probabilities, since the CCPs are not considered accident initiating equipment and no physical changes are being made to the plant which would impact accident

probabilities. Granting of this request would not result in any adverse impact from the standpoint of availability or reliability of CCP 1A. Also, this request was evaluated and found to be acceptable from a risk standpoint. Therefore, there will be no significant increase in any accident consequences.

This request for enforcement discretion does not create the possibility of a new or different kind of accident from any accident previously evaluated. No new accident causal mechanisms are created as a result of the NRC granting of this request for enforcement discretion. No changes are being made to the plant which will introduce any new accident causal mechanisms.

This request for enforcement discretion does not involve a significant reduction in a margin of safety. Margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The performance of these fission product barriers will not be degraded by the NRC's granting of this request. No safety margins will be impacted. The risk implications of this request were evaluated and found to be acceptable.

5. The basis for the licensee's conclusion that the noncompliance will not involve adverse consequences to the environment.

This request for enforcement discretion will not result in any significant changes in the types, or significant increase in the amounts, of any effluents that may be released offsite. In addition, no significant increase in individual or cumulative occupational radiation exposures will be involved as a result of the request. Therefore, it can be concluded that the NRC's granting of this request for enforcement discretion will not involve any adverse consequences to the environment.

6. Proposed compensatory measures

In conjunction with this request, Catawba has taken or will take the following compensatory measures:

- The continued operability of CCP 1A will be ensured for the period during which the request is applicable. Precautionary signs have been placed in the vicinity of CCP 1A, diesel generator 1A, and essential switchgear 1ETA. The CCP 1A breaker has been roped off as a protected area. Vibration levels associated with CCP 1A will be closely monitored while the NOED is in effect. Monitoring of parameters associated

with CCP 1A will be increased to twice per shift while the NOED is in effect.

- Operations has initiated action to review Standby Shutdown System (SSS) activation plans. The SSS is designed to mitigate the consequences of certain postulated fire, security, and station blackout incidents by providing capability to maintain hot standby conditions and by controlling and monitoring vital systems from locations external to the main control room. The standby makeup pump is part of the SSS design. The standby makeup pump provides for the capability to maintain reactor coolant pump seal integrity under conditions requiring SSS operation to preclude the possibility of a reactor coolant pump seal loss of coolant accident.
- No planned work on Train A or B ECCS components or their supporting systems will be undertaken while the NOED is in effect.
- During the period that the CCP 1B room pressure boundary is breached, appropriate compensatory measures will be established to quantify minor leakage in the room and to ensure that it remains within allowable limits.
- For periods where the CCP 1B room door is secured open, a dedicated individual will be stationed at the door with instructions to reclose the door upon notification that a safety injection signal has occurred.

7. Justification for the duration of the non-compliance

The duration of the non-compliance is limited to the time required to replace the CCP 1B rotating element assembly plus margin to accommodate unforeseen circumstances. Catawba is therefore requesting that the current 72 hour completion time associated with LCO 3.5.2, Condition A, be extended to 7 days. Catawba is also requesting that the NRC exercise discretion in enforcing the requirements of SR 3.7.12.4 with respect to the CCP 1B room during the 7-day AOT requested for LCO 3.5.2. This will provide for adequate time to complete the pump repairs. As stated in items 3 and 4, there is no safety significance or potential detriment to the health and safety of the public.

8. Statement that the request has been approved by the facility organization that normally reviews safety issues.

This request was reviewed and approved by the Catawba Plant Operations Review Committee in a special meeting on June 10, 1999.

9. How one of the NOED criteria for appropriate plant conditions specified in Section B is satisfied.

This request is intended to avoid an undesirable unit shutdown transient as a result of requiring compliance with the TS and, thus, minimize potential safety consequences and operational risks.

10. If a follow-up license amendment is required, the NOED request must include marked-up TS pages showing the proposed TS changes.

No follow-up license amendment is required in conjunction with this NOED request.

11. Other related information for NRC consideration pertaining to this NOED request.

Catawba Selected Licensee Commitments (SLCs) 16.9-8 and 16.9-10 also delineate requirements for the CCPs. The SLC Manual is Chapter 16 of the Updated Final Safety Analysis Report. SLC 16.9-8 is titled "Boration Systems Flow Paths-Operating." SLC 16.9-10 is titled "Boration Systems Charging Pumps-Operating." These SLCs were formerly part of the TS and were relocated to the SLC Manual with the conversion to the Improved TS in January 1999. SLC 16.9-8 requires at least two boron injection flow paths utilizing charging pumps to be operable. SLC 16.9-10 also requires at least two charging pumps to be operable. Each of these SLCs has a 72-hour AOT for one inoperable flow path or charging pump. The remedial actions for these SLCs state that with only one flow path/charging pump operable, at least two flow paths/charging pumps must be restored to operable status within 72 hours, or the unit must be in at least hot standby and borated to a shutdown margin equivalent to at least 1% delta k/k at 200F within the next 6 hours.

Catawba wishes to inform the NRC that with the granting of this NOED request, these commitments will not be met on a one-time basis for the duration of this request.

Finally, Catawba wishes to inform the NRC that following the completion of the pump rotating assembly replacement, a single point pump verification will be performed. A complete flow test of the system will be conducted during the first outage opportunity which facilitates full flow testing.