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April 11, 2007

U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Duke Power Company LLC  
d/b/a Duke Energy Carolinas, LLC  
Oconee Nuclear Station  
Docket Numbers 50-269, 270, and 287  
Technical Specification Bases (TSB) Change

On March 19, 2007 Station Management approved revisions to TSB 3.7.4 to include discussion of credit for Atmospheric Dump Valve (ADV) flow path for Steam Generator Tube Rupture (SGTR) in addition to Small Break Loss of Coolant Accident. The ADVs for SGTR were addressed by TS Amendment 309, 309, & 309. The discussion of credit for SGTR was inadvertently not included in TS Amendment 314, 314, & 314.

Attachment 1 contains the new TSB pages, Attachment 2 contains the marked up version of the TSB pages.

If any additional information is needed, please contact Reese Gambrell at 864-885-3364.

Very truly yours,

B. H. Hamilton, Vice President  
Oconee Nuclear Site

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Attachment #1

Proposed Bases revision

Remove Page

B 3.7.4-1  
B 3.7.4-2  
B 3.7.4-3  
B 3.7.4-4

Insert Page

B 3.7.4-1  
B 3.7.4-2  
B 3.7.4-3  
B 3.7.4-4

## B 3.7 PLANT SYSTEMS

### B 3.7.4 Atmospheric Dump Valve (ADV) Flow Paths

#### BASES

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##### BACKGROUND

The ADV flow paths provide a method for cooling the unit to decay heat removal (DHR) entry conditions, should the preferred heat sink via the Turbine Bypass System to the condenser not be available, as discussed in the UFSAR (Ref. 2). This is done in conjunction with the secondary cooling water from the Emergency Feedwater (EFW) System.

The steam generator tube rupture (SGTR) analysis (Ref. 3) credits operator action to depressurize the steam generators by opening each of the ADV flow paths.

In addition, the ADV flow path for each steam generator is credited as a compensatory measure in Technical Specification (TS) 3.5.2, "High Pressure Injection (HPI)." In certain HPI configurations, the ADV flow path for one steam generator is credited to depressurize the steam generator and enhance primary-to-secondary heat transfer during certain small break loss of coolant accidents (LOCAs).

For each steam generator, the ADV flow path is comprised of the atmospheric dump block valve bypass (1" bypass), the atmospheric vent valve (a 12" block valve), the atmospheric dump control valve (i.e., throttle valve), and the atmospheric vent block valve (i.e., isolation valve). The throttle valve and the isolation valve are in parallel and are located downstream of the atmospheric vent valve.

The atmospheric vent valve should be opened prior to opening the throttle valve or isolation valve. This is accomplished by first opening the atmospheric dump block valve bypass.

This equalizes the differential pressure across the atmospheric vent valve. Once the atmospheric vent valve is opened, the cool down rate is controlled using the throttle valve. If additional relief capacity is needed, the isolation valve can be opened. The capacity of the throttle or isolation valve exceeds decay heat loads and is sufficient to cool down the plant.

## BASES

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### APPLICABLE SAFETY ANALYSIS

The SGTR analysis credits operator action to depressurize the steam generators by opening both ADV flow paths (i.e., the ADV flow path for each steam generator) within 40 minutes of identifying the ruptured steam generator. Within this 40-minute time period, the operators are only required to open the bypass valve, the block valve, and the throttle valve. However, later in the event, the analysis also assumes that the operators will open the isolation valves in each ADV flow path.

Operator action to depressurize a steam generator via its ADV flow path is credited in the analysis of certain small break LOCAs with THERMAL POWER  $\leq$  75% RTP and the plant operated with a degraded HPI System. This event credits operator action to open one ADV flow path within 25 minutes of an Engineered Safeguards Protective System (ESPS) actuation.

If enhanced steam generator cooling is not credited in the small break LOCA analysis, two HPI trains are required to mitigate specific small break LOCAs. However, if equipment not qualified as QA-1 (i.e., an ADV flow path for a steam generator) is credited for enhanced steam generator cooling, the safety analyses have determined that the capacity of one HPI train is sufficient to mitigate a small break LOCA on the discharge of the reactor coolant pumps if THERMAL POWER is  $\leq$  75% RTP.

The analysis for degraded HPI credits an ADV flow path for one steam generator as a compensatory measure in the event an HPI train is inoperable and THERMAL POWER is  $\leq$  75% RTP. During this situation, the ADV flow path for one steam generator is credited during certain small break LOCAs to depressurize the steam generator and enhance primary-to-secondary heat transfer. This is done in conjunction with the EFW System providing cooling water to the steam generator. The ADV flow path is comprised of manual valves. Operator action is credited for establishing the ADV flow path within 25 minutes of an ESPS signal.

Additionally, the ADV flow path for each steam generator is credited as a compensatory measure in TS 3.5.2, "High Pressure Injection (HPI)." Typically, single failures are not considered once the plant has entered a condition defined in the TS. However, the Completion Time permitted when the HPI system is degraded, is an extended period of time. In the event an accident occurred during this extended Completion Time and a single failure were to occur in the degraded HPI system, the ability of a plant to mitigate the consequences of specific small break LOCAs continues to be assured by the ADV flow path for one steam generator.

The ADV flow paths satisfy Criterion 3 of 10 CFR 50.36 (Ref. 1).

## BASES

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### LCO

The ADV flow path for each steam generator is required to be OPERABLE. The failure to meet the LCO can result in the inability to depressurize the steam generators following a SGTR.

The ADV flow path for each steam generator is required to be OPERABLE. Failure to meet the LCO can result in the inability to depressurize a steam generator following a small break LOCA. This function is required to support operation with a degraded HPI System when THERMAL POWER is  $\leq 75\%$  RTP.

An ADV flow path is considered OPERABLE when it is capable of providing a controlled relief of the main steam flow, and each valve which comprises the ADV flow path is capable of opening and closing.

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### APPLICABILITY

The ADV flow path for each steam generator is required to be OPERABLE in MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal. In MODE 4, steam generators are relied upon for heat removal whenever an RCS loop is required to be OPERABLE or operating to satisfy LCO 3.4.5, "RCS Loops - MODE 4" or available to transfer decay heat to satisfy LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled." The steam generators do not contain a significant amount of energy in MODE 4 when the unit is not relying upon a steam generator for heat transfer, and MODES 5 and 6; therefore, the ADV flow paths are not required to be OPERABLE in these MODES and condition.

With the ADV flow paths required to be OPERABLE at all times that the steam generators are being relied upon for heat removal, it is assured that the ADV flow paths will be available for use for mitigation of a SBLOCA and a SGTR. These are the only two conditions in which the use of the ADV flow paths is credited in the analyses of any accident.

**BASES**

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**ACTIONS**

**A.1 and A.2**

With one or both of the ADV flow path(s) inoperable, the Unit must be placed in a condition in which the LCO does not apply. To achieve this status, the Unit must be placed in at least MODE 3 within 12 hours, and at least MODE 4 without reliance on a steam generator for heat removal within 24 hours. 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.

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**SURVEILLANCE  
REQUIREMENTS**

**SR 3.7.4.1**

To perform a controlled cool down of the RCS, the valves that comprise the ADV flow path for each steam generator must be able to perform the following functions:

- a) the atmospheric dump block valve bypass and the atmospheric vent valve must be capable of being opened and closed; and
- b) the atmospheric dump control valve and atmospheric vent block valve must be capable of being opened and throttled through their full range.

This SR ensures that the valves that comprise the ADV flow path for each steam generator are cycled through the full control range at least once per 18 months. Performance of inservice testing or use of an ADV flow path during a unit cool down satisfies this requirement. This surveillance does not require the valves to be tested at pressure. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

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**REFERENCES**

- 1. 10 CFR 50.36.
  - 2. UFSAR, Section 10.3.
  - 3. UFSAR, Section 15.9.
  - 4. UFSAR, Section 15.12
  - 5. UFSAR, Section 15.14
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Attachment #2

Markup of current Bases



MARKUP

BASES

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LCO

The ADV flow path for each steam generator is required to be OPERABLE. The failure to meet the LCO can result in the inability to depressurize the steam generators following a SGTR.

The ADV flow path for each steam generator is required to be OPERABLE. Failure to meet the LCO can result in the inability to depressurize a steam generator following a small break LOCA. This function is required to support operation with a degraded HPI System when THERMAL POWER is  $\leq 75\%$  RTP.

An ADV flow path is considered OPERABLE when it is capable of providing a controlled relief of the main steam flow, and each valve which comprises the ADV flow path is capable of opening and closing.

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APPLICABILITY

The ADV flow path for each steam generator is required to be OPERABLE in MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal. In MODE 4, steam generators are relied upon for heat removal whenever an RCS loop is required to be OPERABLE or operating to satisfy LCO 3.4.5, "RCS Loops - MODE 4" or available to transfer decay heat to satisfy LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled." The steam generators do not contain a significant amount of energy in MODE 4 when the unit is not relying upon a steam generator for heat transfer, and MODES 5 and 6; therefore, the ADV flow paths are not required to be OPERABLE in these MODES and condition.

~~In addition, the ADV flow path for each steam generator is required to be OPERABLE when required by Required Actions of TS 3.5.2, "High Pressure Injection (HPI)." For all other conditions, the ADV flow paths for these Units are not credited in the analyses of any accident.~~

↑  
INSERT 1

INSERT 1

With the ADV flow paths required to be OPERABLE at all times that the steam generators are being relied upon for heat removal, it is assured that the ADV flow paths will be available for use for mitigation of a SBLOCA and a SGTR. These are the only two conditions that use of the ADV flow paths is credited in the analyses of any accident.