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W3F1-2011-0010

January 24, 2011

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

Subject: Technical Specification Bases Update to the NRC for the Period May 25, 2010 through January 24, 2011
Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

Pursuant to Waterford Steam Electric Station Unit 3 Technical Specification (TS) 6.16, Entergy Operations, Inc. (EOI) hereby submits an update of all changes made to Waterford 3 Technical Specification Bases since the last submittal per letter W3F1-2010-0051 (ADAMS Accession #ML101480065), dated May 27, 2010. This TS Bases update satisfies the requirement listed in 10CFR50.71(e).

There are no commitments associated with this submittal. Should you have any questions or comments concerning this submittal, please contact William J. Steelman at (504) 739-6685.

Sincerely,

WJS/RJP/ssf

Attachment(s): Waterford 3 Technical Specification Bases Revised Pages

A001
NRR

cc: Mr. Elmo E. Collins, Jr.
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Attachment to

W3F1-2011-0010

Waterford 3 Technical Specification Bases Revised Pages

Waterford 3 Technical Specification Bases Revised Pages

T.S. Bases Change No.	Implementation Date	Affected TS Bases Pages	Topic of Change
66	6/15/10	B 2-7	Change No. 66 was implemented by EC 22790 to remove discussion associated with the Waterford 3 Steam Generator Level - High trip. Removal of this information is consistent with the Technical Specification change documented in License Amendment 225. Amendment 225 relocated the Waterford 3 Steam Generator Level - High trip requirements from TS sections 2.2 and 3/4.3.1 to the Technical Requirements Manual (TRM). The TS Bases discussion on the Waterford 3 Steam Generator Level - High trip was also relocated to the TRM Bases.

T.S. Bases Change No.	Implementation Date	Affected TS Bases Pages	Topic of Change
67	12/9/10	B 3/4 3-1c B 3/4 3-1d B 3/4 3-1e B 2-2a B 2-3	Change No. 67 to TS Bases section 3/4.3.1 and 3/4.3.2 Reactor Protective and Engineered Safety Feature Actuation Systems Instrumentation, and TS Bases section 2.2.1 Reactor Trip Setpoints was implemented by EC 26338. The change addresses the License Amendment 228, which clarified TS Table 2.2-1 Notes "1" and "5", TS Table 3.3-1 Notes "a" and "c", TS Table 3.3-1 Action 2, and TS Table 3.3-1 Action 3 that all deal with operation of the Logarithmic Power circuit. The amendment provides improved guidance for when the Logarithmic Power circuit is inoperable or in test. In that condition, the associated functional units of Local Power Density-High, DNBR-Low, and Reactor Coolant Flow-Low should be placed in the bypassed or tripped condition. Clarification included that, with the applicable Plant Protection System (PPS) bistables no longer bypassed (either through automatic or manual action), the functional units may be considered operable.

TECHNICAL SPECIFICATION BASES
CHANGE NO. 66 REPLACEMENT PAGE(S)
(1 page)

Replace the following pages of the Waterford 3 Technical Specification Bases with the attached pages. The revised pages are identified by Change Number 66 and contain the appropriate EC number and a vertical line indicating the areas of change.

Remove	**Insert**
B 2-7	B 2-7

→(EC-22790, Ch. 66)

←(EC-22790, Ch. 66)

Reactor Coolant Flow - Low

→(DRN 03-6, Ch. 20)

The Reactor Coolant Flow - Low trip provides protection against a reactor coolant pump sheared shaft event and a steam line break event with a loss-of-offsite power. A trip is initiated when the pressure differential across the primary side of either steam generator decreases below a nominal setpoint of 19.00 psid. The specified setpoint ensures that a reactor trip occurs to prevent violation of local power density or DNBR safety limits under the stated conditions.

←(DRN 03-6, Ch. 20)

TECHNICAL SPECIFICATION BASES
CHANGE NO. 67 REPLACEMENT PAGE(S)
(5 pages)

Replace the following pages of the Waterford 3 Technical Specification Bases with the attached pages. The revised pages are identified by Change Number 67 and contain the appropriate EC number and a vertical line indicating the areas of change.

Remove	**Insert**
B 3/4 3-1c	B 3/4 3-1c
B 3/4 3-1d	B 3/4 3-1d
B 3/4 3-1e	B 3/4 3-1e
B 2-2a	B 2-2a
B 2-3	B 2-3

3/4.3.1 and 3/4.3.2 REACTOR PROTECTIVE AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEMS INSTRUMENTATION (Continued)

When one of the inoperable channels is restored to OPERABLE status, subsequent operation in the applicable MODE(S) may continue in accordance with the provisions of
ACTION 19.

Because of the interaction between process measurement circuits and associated functional units as listed in the ACTIONS 19 and 20, placement of an inoperable channel of Steam Generator Level in the bypass or trip condition results in corresponding placements of Steam Generator ΔP (EFAS) instrumentation. Depending on the number of applicable inoperable channels, the provisions of ACTIONS 19 and 20 and the aforesaid scenarios for Steam Generator ΔP (EFAS) would govern.

The Surveillance Requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. The quarterly frequency for the channel functional tests for these systems comes from the analyses presented in topical report CEN-327: RPS/ESFAS Extended Test Interval Evaluation, as supplemented.

Testing frequency for the Reactor Trip Breakers (RTBs) is described and analyzed in CEN NPSD-951. The quarterly RTB channel functional test and RPS logic channel functional test are scheduled and performed such that RTBs are verified OPERABLE at least every 6 weeks to accommodate the appropriate vendor recommended interval for cycling of each RTB.

RPS\ESFAS Trip Setpoints values are determined by means of an explicit setpoint calculation analysis. A Total Loop Uncertainty (TLU) is calculated for each RPS/ESFAS instrument channel. The Trip Setpoint is then determined by adding or subtracting the TLU from the Analytical Limit (add TLU for decreasing process value; subtract TLU for increasing process value). The Allowable Value is determined by adding an allowance between the Trip Setpoint and the Analytical Limit to account for RPS/ESFAS cabinet Periodic Test Errors (PTE) which are present during a CHANNEL FUNCTIONAL TEST. PTE combines the RPS/ESFAS cabinet reference accuracy, calibration equipment errors (M&TE), and RPS/ESFAS cabinet bistable Drift. Periodic testing assures that actual setpoints are within their Allowable Values. A channel is inoperable if its actual setpoint is not within its Allowable Value and corrective action must be taken. Operation with a trip set less conservative than its setpoint, but within its specified ALLOWABLE VALUE is acceptable on the basis that the difference between each trip Setpoint and the ALLOWABLE VALUE is equal to or less than the Periodic Test Error allowance assumed for each trip in the safety analyses.

>(EC-26338, Ch. 67)

The Core Protection Calculator, High Logarithmic Power (HLP), and Reactor Coolant System Flow use a single bistable to initiate both the permissive and automatic operating bypass removal functions. A single bistable cannot both energize and de-energize at a single, discrete value due to hysteresis. The CPC automatic bypass removal and permissive for the

<(EC-26338, Ch. 67)

3/4.3.1 and 3/4.3.2 REACTOR PROTECTIVE AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEMS INSTRUMENTATION (Continued)

>(EC-26338, Ch. 67)
HLP trip bypass occur at the bistable setpoint (nominally 10^{-4}% power). However, the HLP automatic bypass removal and permissive for CPC trip bypass occur at the reset value of the bistable. Also note if the bistable setpoint is changed as part of the Special Test Exception 3.10.3, the same dead band transition is applicable.
<(EC-26338, Ch. 67)

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the safety analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be verified by any series of sequential, overlapping, or total channel measurements, including allocated sensor response time, such that the response time is verified. Allocations for sensor response times may be obtained from records of test results, vendor test data, or vendor engineering specifications. Topical Report CE NPSD-1167-A, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the topical report. Respose time verification for other sensor types must be demonstrated by test. The allocation of sensor response times must be verified prior to placing a new component in operation and reverified after maintenance that may adversely affect the sensor response time.
>(EC-26338, Ch. 67)

In the applicable logarithmic power modes, with the Logarithmic Power circuit inoperable or in test, the associated functional units of Local Power Density-High, DNBR-Low, and Reactor Coolant Flow-Low should be placed in the bypassed or tripped condition. With logarithmic power greater than 10^{-4}% bistable setpoint and Local Power Density-High, DNBR-Low, and Reactor Coolant Flow-Low no longer bypassed (either through automatic or manual action), these functional units may be considered OPERABLE.
<(EC-26338, Ch. 67)

TABLE 3.3-1, Functional Unit 13, Reactor Trip Breakers

The Reactor Trip Breakers Functional Unit in Table 3.3-1 refers to the reactor trip breaker channels. There are four reactor trip breaker channels. Two reactor trip breaker channels with a coincident trip logic of one-out-of-two taken twice (reactor trip breaker channels A or B, and C or D) are required to produce a trip. Each reactor trip breaker channel consists of two reactor trip breakers. For a reactor trip breaker channel to be considered OPERABLE, both of the reactor trip breakers of that reactor trip breaker channel must be capable of performing their safety function (disrupting the flow of power in its respective trip leg). The safety function is satisfied when the reactor trip breaker is capable of automatically opening, or otherwise opened or racked-out.

If a racked-in reactor trip breaker is not capable of automatically opening, the ACTION for an inoperable reactor trip breaker channel shall be entered. The ACTION shall not be exited unless the reactor trip breaker capability to automatically open is restored, or the reactor trip breaker is opened or racked-out.

>(EC-12084, Ch. 57)

TABLES 3.3-3 and 4.3-2, Functional Unit 6, Loss of Power (LOV)

The Loss of Power Functional Unit 6 in Tables 3.3-3 and 4.3-2 refers to the undervoltage relay channels that detect a loss of bus voltage on the 4kV (A3 & B3) and 480V (A31 & B31) safety buses and a sustained degraded voltage condition on 4kV (A3 & B3) safety buses. The intent of these relays is to ensure that the Emergency Diesel Generator starts on a loss of voltage or a sustained degraded voltage condition. The response time SR in TS 3.3.2 ensures that Bus A3 and B3 undervoltage relays trip and generate a Loss of Voltage (LOV) signal in 2 seconds for initiation of the EDG start. The response time for Bus AB3 and AB31 relays is not as critical as the Bus A3 and B3 undervoltage relays. Bus AB3 and AB31 undervoltage relays [4KVEREL3AB-1A(1B)(1C) and SSDEREL31AB-1A(1B)(1C)] strip bus loads upon an undervoltage condition to preclude any perturbations which might affect the A and B buses and prepare the bus to be energized by an EDG with subsequent loading by the sequencer. Bus AB3 and AB31 undervoltage relays do not provide an EDG start signal. Therefore, TS 3/4.3.2, Tables 3.3-3 and 4.3-2 functional unit 6 requirements, are not applicable to AB3 Bus and AB31 Bus undervoltage relays.

If an AB Bus undervoltage relay becomes inoperable, initiate a condition report and consider operability of the associated EDG based on the AB Bus loads when evaluating the failure.

<(EC-12084, Ch. 57)

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that: (1) the radiation levels are continually measured in the areas served by the individual channels; (2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded; and (3) sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," December 1980 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

2.2.1 REACTOR TRIP SETPOINTS (Continued)

A Total Loop Uncertainty (TLU) is calculated for each RPS instrument channel. The Trip setpoint is determined by adding or subtracting the TLU from the Analytical Limit (add TLU for decreasing process value; subtract TLU for increasing process value). The Allowable Value is determined by adding an allowance between the Trip Setpoint and the Analytical Limit to account for RPS cabinet Periodic Test Errors (PTE) which are present during a CHANNEL FUNCTIONAL TEST. PTE combines RPS cabinet reference accuracy, calibration equipment errors (M&TE), and RPS cabinet bistable drift. Periodic testing assures that actual setpoints are within their Allowable Values. A channel is inoperable if its actual setpoint is not within its Allowable Value and corrective action must be taken. Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that the difference between each Trip Setpoint and the Allowable Value is equal to or less than the PTE allowance assumed for each trip in the safety analyses.

>(EC-18510, Ch. 64)

The DNBR - Low and Local Power Density - High are digitally generated trip setpoints based on Limiting Safety System Settings of 1.26 and 21.0 kW/ft, respectively. Since these trips are digitally generated by the Core Protection Calculators, the trip values are not subject to drifts common to trips generated by analog type equipment. The Allowable Values for these trips are therefore the same as the Trip Setpoints. The CPC power adjustment addressable constant BERR1 is used such that the CPC DNBR trip setpoint of 1.26 using the CE-1 critical heat flux correlation assures that the bounding safety limit DNBR of 1.24 for the WSSV-T and ABB-NV correlations will not be exceeded during normal operations and AOOs.

<(EC-18510, Ch. 64)

To maintain the margins of safety assumed in the safety analyses, the calculations of the trip variables for the DNBR - Low and Local Power Density -High trips include the measurement, calculational and processor uncertainties and dynamic allowances as defined in the latest applicable revision of CEN-305-P, "Functional Design Requirements for a Core Protection Calculator" and; CEN-304-P, "Functional Design Requirements for a Control Element Assembly Calculator."

>(EC-26338, Ch. 67)

The Core Protection Calculator, High Logarithmic Power (HLP), and Reactor Coolant System Flow use a single bistable to initiate both the permissive and automatic operating bypass removal functions. A single bistable cannot both energize and de-energize at a single, discrete value due to hysteresis. The CPC automatic bypass removal and permissive for the HLP trip bypass occur at the bistable setpoint (nominally 10^{-4}% power). However, the HLP automatic bypass removal and permissive for CPC trip bypass occur at the reset value of the bistable. Also, note if the bistable setpoint is changed as part of the Special Test Exception 3.10.3, the same dead band transition is applicable.

<(EC-26338, Ch. 67)

Manual Reactor Trip

The Manual Reactor Trip is a redundant channel to the automatic protective instrumentation channels and provides manual reactor trip capability.

Linear Power Level - High

>(DRN 04-1243, Ch. 38)

The Linear Power Level - High trip provides reactor core protection against rapid reactivity excursions. This trip initiates a reactor trip at a linear power level of less than or equal to 108% of RATED THERMAL POWER.

<(DRN 04-1243, Ch. 38)

Logarithmic Power Level - High

>(EC-26338, Ch. 67)

The Logarithmic Power Level - High trip is provided to protect the integrity of fuel cladding and the Reactor Coolant System pressure boundary in the event of an unplanned criticality from a shutdown condition. A reactor trip is initiated by the Logarithmic Power Level - High trip at a logarithmic power level of less than or equal to 0.257% of RATED THERMAL POWER unless this trip is manually bypassed by the operator. The operator may manually bypass this trip when the logarithmic power level is above 10^{-4}% of RATED THERMAL POWER; this bypass is automatically removed when the logarithmic power level decreases to 10^{-4}% of RATED THERMAL POWER*.

<(EC-26338, Ch. 67)

Pressurizer Pressure - High

The Pressurizer Pressure - High trip, in conjunction with the pressurizer safety valves and main steam safety valves, provides Reactor Coolant System protection against overpressurization in the event of loss of load without reactor trip. This trip's setpoint is at less than or equal to 2350 psia which is below the nominal lift setting of 2500 psia for the pressurizer safety valves and its operation avoids the undesirable operation of the pressurizer safety valves.

Pressurizer Pressure - Low

The Pressurizer Pressure - Low trip is provided to trip the reactor and to assist the Engineered Safety Features System in the event of a Loss of Coolant Accident. During normal operation, this trip's setpoint is set at greater than or equal to 1684 psia. This trip's setpoint may be manually decreased, to a minimum value of 100 psia, as pressurizer pressure is reduced during plant shutdowns, provided the margin between the pressurizer pressure and this trip's setpoint is maintained at less than or equal to 400 psi; this setpoint increases automatically as pressurizer pressure increases until the trip setpoint is reached.

>(EC-26338, Ch. 67)

<(EC-26338, Ch. 67)