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W3F1-2004-0090

October 7, 2004

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Bases Update to the NRC for the Period February 26, 2004 through September 30, 2004

Dear Sir or Madam:

Pursuant to Waterford Steam Electric Station Unit 3 Technical Specification 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 W3F1-2004-0016, dated February 26, 2004. This TS Bases update is well within the update frequency listed in 10 CFR 50.71(e).

There are no commitments associated with this submittal. Should you have any questions or comments concerning this submittal, please contact Ron Williams at (504) 739-6255.

Sincerely,

Ralph A. Dodds
Licensing Manager
RAD/RLW/cbh

Attachment 1 Waterford 3 Technical Specification Bases Revised Pages

A001

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ATTACHMENT 1
To W3F1-2004-0090

Waterford 3 Technical Specification Bases Revised Pages

ATTACHMENT 1
TO W3F1-2004-0090

Waterford 3 Technical Specification Bases Revised Pages

T.S. Bases Change No.	Implementation Date	Affected TS Bases Pages	Topic of Change
32	7/7/2004	B 3/4 6-6	Change No. 32 to TS Bases section 3/4.6.4 was implemented by ER-W3-2004-0373-000. Change deleted the TS Bases, consistent with the TS as amended in TS Amendment 192. The amendment deleted the TS requirements associated with Hydrogen Recombiners and Hydrogen Analyzers. The hydrogen analyzer requirements only were relocated to the TRM.
33	8/2/2004	B 3/4 4-4 B 3/4 4-4a (new page) B 3/4 4-4b (new page) B 3/4 4-4c (new page) B 3/4 4-4d (new page B 3/4 4-4e (new page)	Change No. 33 to TS Bases section 3/4.4.5.1 was implemented by ER-W3-2004-0396-002. Change clarified the TS Bases to be consistent with the TS as amended in TS Amendment 197. The amendment clarified the actions of TS 3.4.5.1, Reactor Coolant System (RCS) Leakage; revised the surveillance requirements (SR) of TS 3.4.5.2, RCS Operational Leakage; deleted duplication in TS 3.3.3.1, Radiation Monitoring Instrumentation; and deleted the containment atmosphere gaseous radioactivity monitoring system from TS 3/4.4.5.1
34	8/13/2004	B 3/4 4-1 B 3/4 4-7 B 3/4 4-8 B 3/4 4-9 (deleted) B 3/4 4-10	Change No. 34 to TS Bases sections 3/4.4.1 and 3/4.4.8, were implemented by ER-W3-2004-0439-000. Change clarified the TS Bases to reflect the new TS pressure / temperature limit curves and analyses, as amended in TS Amendment 196. The amendment consisted of the following changes (1) extended the pressure temperature curves from 16 effective full power years (EFPYs) to 32 EFPYs; (2) changed the maximum heat-up and cooldown rates to 60°F/hr and 100°F/hr, respectively; (3) changed the low temperature overpressure protection enable temperature, and (4) the evaluation of RT_{PTS}.
35	8/16/2004	B 3/4 4-10	Change No. 35 to TS Bases section 3/4.4.8 was implemented by ER-W3-2004-0441-000. Change clarified the TS Bases to be consistent with the TS as amended in TS Amendment 195. The amendment relocated the pressurizer heatup and cooldown limits in TS 3.4.8.2 and the associated ACTION, and Surveillance Requirements to the TRM.

TECHNICAL SPECIFICATION BASES
CHANGE NO. 32 REPLACEMENT PAGE
(1 page)

Replace the following page of the Waterford 3 Technical Specification Bases with the attached page. The revised page is identified by Change Number 32 and contains the appropriate DRN number and vertical line indicating the area of change.

Remove	**Insert**
B 3/4 6-6	B 3/4 6-6

→(DRN 04-971, Ch. 32)

←(DRN 04-971, Ch. 32)

3/4.6.5 VACUUM RELIEF VALVES

The vacuum relief valves protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of Containment Spray System. Multiple equipment failures or human errors are necessary to have inadvertent actuation.

The containment pressure vessel contains two 100% vacuum relief lines installed in parallel that protect the containment from excessive external loading. The vacuum relief lines are 24 inch penetrations that connect the shield building annulus to the containment. Each vacuum relief line is isolated by a pneumatically operated butterfly valve in series with a check valve located on the containment side of the penetration.

TECHNICAL SPECIFICATION BASES
CHANGE NO. 33 REPLACEMENT PAGE
(6 pages)

Replace the following pages of the Waterford 3 Technical Specification Bases with the attached pages. The revised pages are identified by Change Number 33 and contains the appropriate DRN number and vertical line indicating the area of change.

Remove	Insert
B 3/4 4-4	B 3/4 4-4
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------------	B 3/4 4-4b
------------	B 3/4 4-4c
------------	B 3/4 4-4d
------------	B 3/4 4-4e

3/4.4.5 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.5.1 LEAKAGE DETECTION SYSTEMS

→ (DRN 04-1223, Ch. 33)

Background

GDC 30 of Appendix A 10 CFR 50 (Ref. 1) requires means for detecting and, to the extent practical, identifying the location of the source of RCS leakage. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

Leakage detection systems must have the capability to detect significant reactor coolant pressure boundary(RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus an early indication or warning signal is necessary to permit proper evaluation of all UNIDENTIFIED LEAKAGE.

Industry practice has shown that water flow changes of 0.5 gpm to 1.0 gpm can readily be detected in contained volumes by monitoring changes in water level or in flow rate. The containment sump used to collect UNIDENTIFIED LEAKAGE and the containment fan cooler (CFC) condensate flow switches are instrumented to alarm for increases of 0.5 gpm to 1.0 gpm in the normal flow rates. This sensitivity is acceptable for detecting increases in UNIDENTIFIED LEAKAGE.

The reactor coolant contains radioactivity that, when released to the containment, can be detected by radiation monitoring instrumentation. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. Radioactivity detection systems are included for monitoring particulate activities, because of their sensitivities and rapid responses to RCS leakage.

Air temperature and pressure monitoring methods may also be used to infer UNIDENTIFIED LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during plant operation, but a rise above the normally indicated range of values may indicate RCS leakage into the containment. The relevance of temperature and pressure measurements is affected by containment free volume and, for temperature, detector location. Alarm signals from these instruments can be valuable in recognizing rapid and sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO.

Applicable Safety Analyses

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary. The system response times and sensitivities are described in the UFSAR (Ref. 3). Multiple instrument locations are utilized, if needed, to ensure the transport delay time of the leakage from its source to an instrument location yields an acceptable overall response time.

The safety significance of RCS leakage varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS leakage into the containment area are necessary. Quickly separating the IDENTIFIED LEAKAGE from the UNIDENTIFIED LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should leakage occur detrimental to the safety of the facility and the public. RCS leakage detection instrumentation satisfies Criterion 1 of 10 CFR 50.36(c)(2)(ii).

← (DRN 04-1223, Ch. 33)

Limiting Condition for Operation

One method of protecting against large RCS leakage derives from the ability of instruments to rapidly detect extremely small leaks. This LCO requires instruments of diverse monitoring principles to be OPERABLE to provide a high degree of confidence that small leaks are detected in time to allow actions to place the plant in a safe condition when RCS leakage indicates possible RCPB degradation.

The LCO is satisfied when monitors of diverse measurement means are available. Thus, the containment sump monitors (either the containment sump level instrumentation or the containment flow instrumentation (weir)), in combination with a particulate radioactivity monitor and a CPC condensate flow switch, provide acceptable monitoring capability for leakage detection.

The required CFC condensate flow switch must be associated with one of the two required OPERABLE CFCs that are in operation.

Applicability

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5 or 6, the temperature is ≤200°F and pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation is much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6.

Actions

The Actions are modified by a Note that indicates the provisions of TS 3.0.4 are not applicable. This allowance is provided because other instrumentation is available to monitor RCS leakage.

Action a

With the containment atmosphere particulate radioactivity monitoring instrumentation inoperable, alternative action is required. Either grab samples of the containment atmosphere must be taken and analyzed, or water inventory balances, in accordance with SR 4.4.5.2.1, must be performed to provide alternate periodic information. With a sample obtained and analyzed or an inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of the radioactivity monitor. Alternatively, continued operation is allowed if the CFC flow switch is OPERABLE, provided grab samples are taken or water inventory balance performed every 24 hours.

The 24 hour interval provides periodic information that is adequate to detect leakage. A Note is added allowing that SR 4.4.5.2.1 is not required to be performed until 12 hours after establishing steady state operation (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown). The 12 hour allowance provides sufficient time to establish stable plant conditions. The 30 day allowed outage time recognizes at least one other form or leakage detection is available.

← (DRN 04-1223, Ch. 33)

If ACTION 'a' cannot be met within the allowed outage time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within the following 30 hours. The allowed outage times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Action b

If the containment sump monitor is inoperable, (both the containment level instrumentation and the containment flow instrumentation (weir)), no other form of sampling can provide the equivalent information.

However, the containment atmosphere radioactivity monitor and the CFC flow switch will provide indication of changes in leakage. Together with the atmosphere monitor, the periodic surveillance for RCS water inventory balance, SR 4.4.5.2.1, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage. A Note is added allowing that SR 4.4.5.2.1 is not required to be performed until 12 hours after establishing steady state operation (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown). The 12 hour allowance provides sufficient time to establish stable plant conditions.

Restoration of the required sump monitor to OPERABLE status is necessary to regain the function in an allowed outage time of 30 days after the monitor's failure. This time is acceptable considering the remaining OPERABLE leakage detection instrumentation and the frequency and adequacy of the RCS water inventory balance required by the ACTION.

If ACTION 'b' cannot be met within the allowed outage time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within the following 30 hours. The allowed outage times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Action c

If the required CFC condensate flow switch is inoperable, alternative action is again required. Either SR 4.4.5.1.a (containment atmosphere particulate radiation monitor CHANNEL CHECK) must be performed, or water inventory balances, in accordance with SR 4.4.5.2.1, must be performed to provide alternate periodic information. Provided a CHANNEL CHECK is performed every 8 hours or an inventory balance is performed every 24 hours, reactor operation may continue while awaiting restoration of the CFC condensate flow switch to OPERABLE status.

The 24 hour interval provides periodic information that is adequate to detect RCS leakage. A Note is added which states that SR 4.4.5.2.1 is not required to be performed until 12 hours after establishing steady state operation (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown). The 12 hour allowance provides sufficient time to establish stable plant conditions.

← (DRN 04-1223, Ch. 33)

If ACTION c cannot be met, when contingency Actions cannot be completed within the Action time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within the following 30 hours. The allowed outage times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Action d

If the required containment atmosphere particulate radioactivity monitor and the required containment fan cooler condensate flow switch are inoperable, the only means of detecting RCS leakage is the containment sump monitor. This condition does not provide the required diverse means of RCS leakage detection. The ACTION is to restore either of the inoperable monitors to OPERABLE status within 30 days to regain the intended leakage detection diversity. The 30 day allowed outage time ensures the plant is not operated in a reduced configuration for a lengthy time period. Also 30 days is acceptable because contingency actions are required to be taken in Action a or c.

For example, if the containment atmosphere particulate radioactivity monitor and the CFC condensate flow switch are declared inoperable, ACTION a, c, and d will have to be entered and contingency Actions performed per ACTION a and c. ACTION d requires one monitor to be restored within 30 days or to commence a plant shutdown. If prior to the 30 days, the containment atmosphere particulate radioactivity monitor is restored to OPERABLE status, ACTION a and d can be exited; however, the Actions of ACTION c are still applicable.

If ACTION d cannot be met within the allowed outage time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 with 6 hours and to MODE 5 within the following 30 hours. The allowed outage times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Action e

If the required containment sump monitor is inoperable (both the containment sump level and flow (weir) instrumentation) and either the required containment atmosphere particulate radioactivity monitor or the required containment fan cooler condensate flow switch is inoperable, there is only one means of detecting RCS leakage. In this condition, the containment sump monitor, which is the best method for detecting RCS leakage, is inoperable along with one of the other leakage detection methods. This condition does not provide the required diverse means of RCS leakage detection. The ACTION is to restore either of the inoperable monitors to OPERABLE status within 1 hour to regain the intended leakage detection diversity. The 1 hour allowed outage time ensures the plant is not operated with two RCS leakage detection monitors inoperable for a lengthy time period.

If ACTION e cannot be met within the allowed outage time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within the following 30 hours. The allowed outage times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

← (DRN 04-1223, Ch. 33)

Because of the short duration of the allowed outage time, the contingency Actions of a, b, or c do not have to be completed while the requirements of Action e are being followed. If one of the monitors are restored to OPERABLE status, Action e may be exited and the requirements of Action a, b, or c, whichever is applicable must be complied with.

Action f

If all required monitors are inoperable, no automatic means of monitoring leakage are available and immediate plant shutdown is required. ACTION must be initiated within 1 hour to be in MODE 3 within the next 6 hours and MODE 5 in the following 30 hours. These times are consistent with TS 3.0.3.

Surveillance Requirements

SR 4.4.5.1.a, 4.4.5.1.b - Channel Check

SR 4.4.5.1.a requires the performance of a CHANNEL CHECK of the required containment atmosphere particulate radioactivity monitor. SR 4.4.5.1.b requires the performance of a CHANNEL CHECK on the required containment sump level monitor. The CHANNEL CHECK is not required to be performed on the containment sump flow monitor (weir). The check gives reasonable confidence the channel is operating properly. The frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.

SR 4.4.5.1.a - Channel Functional Test

SR 4.4.5.1.a requires the performance of a CHANNEL FUNCTIONAL TEST of the required containment atmosphere particulate radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string. A successful test of the required contacts of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The frequency of 92 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.

SR 4.4.5.1.a, SR 4.4.5.1.b, and SR 4.4.5.1.c - Channel Calibration

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. The frequency of 18 months is a typical refueling cycle and considers channel reliability. Operating experience has shown this frequency is acceptable.

← (DRN 04-1223, Ch. 33)

→ (DRN 04-1223, Ch. 33)

Monitoring Containment Sump In-Leakage Flow

During automatic operation of the containment sump pumps (after a containment sump pump has operated), the flow calculation performed by the plant monitoring computer based on a level change will no longer be accurate since the level in the sump will be lowering. A 20 minute time period has been conservatively determined based on engineering calculations for this equipment operation. In addition, upon reboot of the plant monitoring computer, a period of 10 minutes is required for the leak rate calculation to become available. It has been determined these time periods (independent or combined) of calculation sump in-leakage flow inaccuracies, the instrumentation remains adequate to detect a leakage rate, or its equivalent, of one gpm in less than one hour; therefore, the containment sump level instrumentation and the corresponding flow calculation is considered to remain operable.

References

1. 10 CFR 50, Appendix A, Section IV, GDC 30.
2. Regulatory Guide 1.45, Revision 0, dated May 1973.
3. UFSAR, Sections 5.2.5 and 12.3.

← (DRN 04-1223, Ch. 33)

3/4.4.5.2 OPERATIONAL LEAKAGE

Industry experience has shown that while a limited amount of leakage is expected from RCS, the unidentified portion of this leakage can be reduced to a threshold value of less than 1 gpm. This threshold value is sufficiently low to ensure early detection of additional leakage.

The 10 gpm IDENTIFIED LEAKAGE limitation provides allowances for a limited amount of leakage from known sources whose presence will not interfere with the detection of UNIDENTIFIED LEAKAGE by the leakage detection systems.

The Surveillance Requirements for RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowable limit.

The total steam generator tube leakage limit of 1 gpm for all steam generators ensures that the dosage contribution from the tube leakage will be limited to a small fraction of Part 100 limits in the event of either a steam generator tube rupture or steam line break. The 1 gpm limit is consistent with the assumptions used in the analysis of these accidents. The 0.5 gpm leakage limit per steam generator (720 gal/day) ensures that steam generator tube integrity is maintained in the event of a main steam line rupture or under LOCA conditions.

PRESSURE BOUNDARY LEAKAGE of any magnitude is unacceptable since it may be indicative of an impending gross failure of the pressure boundary. Therefore, the presence of any PRESSURE BOUNDARY LEAKAGE requires the unit to be promptly placed in COLD SHUTDOWN.

3/4.4.6 CHEMISTRY

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining

TECHNICAL SPECIFICATION BASES
CHANGE NO. 34 REPLACEMENT PAGE
(4 pages)

Replace the following pages of the Waterford 3 Technical Specification Bases with the attached pages. The revised pages are identified by Change Number 34 and contains the appropriate DRN number and vertical line indicating the area of change.

Remove	**Insert**
B 3/4 4-1	B 3/4 4-1
B 3/4 4-7	B 3/4 4-7
B 3/4 4-8	B 3/4 4-8
B 3/4 4-9	----------
B 3/4 4-10	B 3/4 4-10

BASES

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.20 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 1 hour.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODE 4, and in MODE 5 with reactor coolant loops filled, a single reactor coolant loop or shutdown cooling train provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops or trains (either shutdown cooling or RCS) be OPERABLE.

In MODE 5 with reactor coolant loops not filled, a single shutdown cooling train provides sufficient heat removal capability for removing decay heat; but single failure considerations, and the unavailability of the steam generators as a heat removing component, require that at least two shutdown cooling trains be OPERABLE.

→(DRN 03-375, Ch. 19)

The operation of one reactor coolant pump or one shutdown cooling (low pressure safety injection) pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control. If no coolant loops are in operation during shutdown operations, suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 or 3.1.1.2, as applicable, is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

←(DRN 03-375, Ch. 19)

→(DRN 04-1241, Ch. 34)

The restrictions on starting a reactor coolant pump in MODES 4 and 5, with one or more RCS cold legs less than or equal to 200°F are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against ovepressure transients and will not exceed the limits of Appendix G by either (1) restricting the water volume in the pressurizer and thereby providing a volume for the primary coolant to expand into or (2) by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures.

←(DRN 04-1241, Ch. 34)

As used in this specification, the term 'cold leg temperature' is intended to be representative of that entering the reactor vessel beltline. During periods with the reactor coolant pumps in operation, the T_{COLD} temperature indication meets this intent. However, during periods when the reactor coolant pumps are not in service, the T_{COLD} temperature indicator is in a stagnant segment of piping and the indication may not necessarily be indicative of that entering the reactor vessel beltline. During the condition when the reactor coolant pumps are operating, the lowest T_{COLD} of a loop with an operating reactor coolant pump is used to monitor the P-T limits. However, during periods when the shutdown cooling system is in operation and following coastdown of the last RCP, the shutdown cooling temperature is the 'cold leg temperature' used to monitor P-T limits.

→(DRN 04-1241, Ch. 34)

The heatup and cooldown limit curves Figures 3.4-2 and 3.4-3 are composite curves which were prepared by determining the most conservative case, with either the inside or outside wall controlling, for any heatup rate of up to 60°F per hour or cooldown rate of up to 100°F per hour. The heatup and cooldown curves were prepared based upon the most limiting value of the predicted adjusted reference temperature at the end of the service period indicated on Figures 3.4-2 and 3.4-3. The limitations on the Reactor Coolant System heatup rate is restricted due to stress limitations in the Reactor Coolant Pump. As part of the LOCA support scheme, the Reactor Coolant Pump has a ring around the suction nozzle of the pump. The support skirt is welded to the ring. Due to this design, the heatup rate must be limited to maintain acceptable thermal stresses.

The reactor vessel materials have been tested to determine their initial RT_{NDT}. Reactor operation and resultant fast neutron (E greater than 1 MeV) irradiation will cause an increase in the RT_{NDT}. Therefore, an adjusted reference temperature, based upon the fluence, copper and nickel content of the material in question, can be predicted using FSAR Table 5.3-1 and the recommendations of Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials." The heatup and cooldown limit curves Figures 3.4-2 and 3.4-3 include predicted adjustments for this shift in RT_{NDT} at the end of the applicable service period, as well as adjustments for possible errors in the pressure and temperature sensing instruments.

←(DRN 04-1241, Ch. 34)

The actual shift in RT_{NDT} of the vessel material will be established periodically during operation by removing and evaluating, in accordance with ASTM E185-82 and 10 CFR Part 50 Appendix H, reactor vessel material irradiation surveillance specimens installed near the inside wall of the reactor vessel in the core area. The surveillance specimen withdrawal schedule is shown in FSAR Table 5.3-10. Since the neutron spectra at the irradiation samples and vessel inside radius are essentially identical, the measured transition shift for a sample can be applied with confidence to the adjacent section of the reactor vessel. The heatup and cooldown curves must be recalculated when the delta RT_{NDT} determined from the surveillance capsule is different from the calculated delta RT_{NDT} for the equivalent capsule radiation exposure.

→(DRN 04-1241, Ch. 34)

TABLE B 3/4.4-1 Deleted

←(DRN 04-1241, Ch. 34)

PRESSURE/TEMPERATURE LIMITS (Continued)

→(DRN 04-1241, Ch. 34)

The maximum RT_{NDT} for all Reactor Coolant System pressure-retaining materials, with the exception of the reactor pressure vessel, has been determined to be 90°F. The Lowest Service Temperature limit line shown on Figures 3.4-2 and 3.4-3 is based upon this RT_{NDT} since Article NB-2332 of Section III of the ASME Boiler and Pressure Vessel Code requires the Lowest Service Temperature to be RT_{NDT} + 100°F for piping, pumps, and valves. Below this temperature, the system pressure must be limited to a maximum of 20% of the system's hydrostatic test pressure of 3125 psia (as corrected for elevation). Instrument uncertainty is not included in the Figures 3.4-2 and 3.4-3.

←(DRN 04-1241, Ch. 34)

The limitations imposed on the pressurizer spray water temperature differential are provided to assure that the pressurizer is operated within the design criteria assumed for the fatigue analysis performed in accordance with the ASME Code requirements.

→(DRN 04-1241, Ch. 34)

The OPERABILITY of the shutdown cooling system relief valve or an RCS vent opening of greater than 5.6 square inches ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 200°F. Each shutdown cooling system relief valve has adequate relieving capability to protect the RCS from overpressurization when the transient is either (1) the start of an idle RCP with the secondary water temperature of the steam generator less than or equal to 100°F above the RCS cold leg temperatures or (2) inadvertent safety injection actuation with injection into a water-solid RCS. The limiting transient includes simultaneous, inadvertent operation of three HPSI pumps, three charging pumps, and all pressurizer backup heaters in operation. Since SIAS starts only two HPSI pumps, a 20% margin is realized.

The restrictions on starting a reactor coolant pump in MODE 4 and with the reactor coolant loops filled in MODE 5, with one or more RCS cold legs less than or equal to 200°F, are provided in Specification 3.4.1.3 and 3.4.1.4 to prevent RCS pressure transients caused by energy additions from the secondary system which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures. Maintaining the steam generator less than 100°F above each of the Reactor Coolant System cold leg temperatures (even with the RCS filled solid) or maintaining a large surge volume in the pressurizer ensures that this transient is less severe than the limiting transient considered above.

←(DRN 04-1241, Ch. 34)

TECHNICAL SPECIFICATION BASES
CHANGE NO. 35

Replace the following page of the Waterford 3 Technical Specification Bases with the attached page. The revised page is identified by Change Number 35 and contains the appropriate DRN number and vertical line indicating the area of change.

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PRESSURE/TEMPERATURE LIMITS (Continued)

→(DRN 04-1241, Ch. 34)

The maximum RT_{NDT} for all Reactor Coolant System pressure-retaining materials, with the exception of the reactor pressure vessel, has been determined to be 90°F. The Lowest Service Temperature limit line shown on Figures 3.4-2 and 3.4-3 is based upon this RT_{NDT} since Article NB-2332 of Section III of the ASME Boiler and Pressure Vessel Code requires the Lowest Service Temperature to be RT_{NDT} + 100°F for piping, pumps, and valves. Below this temperature, the system pressure must be limited to a maximum of 20% of the system's hydrostatic test pressure of 3125 psia (as corrected for elevation). Instrument uncertainty is not included in the Figures 3.4-2 and 3.4-3.

←(DRN 04-1241, Ch. 34)

→(DRN 04-1233, Ch. 35)

The limitations imposed on the pressurizer spray water temperature differential are provided to assure that the pressurizer is operated within the design criteria assumed for the fatigue analysis performed in accordance with the ASME Code requirements.

←(DRN 04-1233, Ch. 35)

→(DRN 04-1241, Ch. 34)

The OPERABILITY of the shutdown cooling system relief valve or an RCS vent opening of greater than 5.6 square inches ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 200°F. Each shutdown cooling system relief valve has adequate relieving capability to protect the RCS from overpressurization when the transient is either (1) the start of an idle RCP with the secondary water temperature of the steam generator less than or equal to 100°F above the RCS cold leg temperatures or (2) inadvertent safety injection actuation with injection into a water-solid RCS. The limiting transient includes simultaneous, inadvertent operation of three HPSI pumps, three charging pumps, and all pressurizer backup heaters in operation. Since SIAS starts only two HPSI pumps, a 20% margin is realized.

The restrictions on starting a reactor coolant pump in MODE 4 and with the reactor coolant loops filled in MODE 5, with one or more RCS cold legs less than or equal to 200°F, are provided in Specification 3.4.1.3 and 3.4.1.4 to prevent RCS pressure transients caused by energy additions from the secondary system which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures. Maintaining the steam generator less than 100°F above each of the Reactor Coolant System cold leg temperatures (even with the RCS filled solid) or maintaining a large surge volume in the pressurizer ensures that this transient is less severe than the limiting transient considered above.

←(DRN 04-1241, Ch. 34)