



Entergy Operations, Inc.
Waterloo Road
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6299

Charles A. Bottemiller
Manager
Plant Licensing

GNRO-2007/00019

March 30, 2007

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

Attention: Document Control Desk

Subject: Technical Specification Bases Update to the NRC for Period Dated
March 30, 2007

Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29

Dear Sir and Madam:

Pursuant to Grand Gulf Nuclear Station (GGNS) Technical Specification 5.5.11, Entergy Operations, Inc. hereby submits an update of all changes made to GGNS Technical Specification Bases since the last submittal (GNRO-2006/00054 letter dated September 28, 2006 to the NRC from GGNS). This update is consistent with update frequency listed in 10CFR50.71(e).

This letter does not contain any commitments.

Should you have any questions, please contact James Owens at (601) 437-6219.

Yours truly,

A handwritten signature in black ink, appearing to be "CAB".

CAB/JEO
attachment:
cc:

GGNS Technical Specification Bases Revised Pages
(See Next Page)

cc:

<p>NRC Senior Resident Inspector Grand Gulf Nuclear Station Port Gibson, MS 39150</p>	
<p>U.S. Nuclear Regulatory Commission ATTN: Dr. Bruce S. Mallett (w/2) 611 Ryan Plaza Drive, Suite 400 Arlington, TX 76011-4005</p>	<p>ALL LETTERS</p>
<p>U.S. Nuclear Regulatory Commission ATTN: Mr. Bhalchandra Vaidya, NRR/DORL (w/2) ATTN: ADDRESSEE ONLY ATTN: Courier Delivery Only Mail Stop OWFN/ O-7D1A 11555 Rockville Pike Rockville, MD 20852-2378</p>	<p>ALL LETTERS – COURIER DELIVERY (FEDEX, ETC.) ADDRESS ONLY - ****DO NOT USE FOR U.S. POSTAL SERVICE ADDRESS***** NOT USED IF EIE USED</p>

ATTACHMENT to GNRO-2007/00019

Grand Gulf Technical Specification Bases Revised Pages

dated

March 30, 2007

LDC#	BASES PAGES AFFECTED	TOPIC of CHANGE
07019	B 3.9-25, 26, 27, 28, 28a, 29, 30, and 33	Revise the wording to provide clarification of shut down cooling temperature limits and include a reference to the ER performing the evaluation.
07008	B 3.10-1, 1a, 3, and 3a	Provide clarification on Inservice Leak and Hydrostatic Testing Operations

B 3.9 REFUELING OPERATIONS

B 3.9.8 Residual Heat Removal (RHR)—High Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 5 is to remove decay heat and sensible heat from the reactor coolant, as required by GDC 34. Each of the two shutdown cooling loops of the RHR System is designed to maintain the reactor coolant bulk average temperature as required. Each loop consists of one motor driven pump, two heat exchangers, and associated piping and valves. Both loops have a common suction from the same recirculation loop or suction can be aligned from the fuel pool. Each pump discharges the reactor coolant, after it has been cooled by circulation through the respective heat exchangers, to the reactor via separate feedwater lines or to the upper containment pool via a common single flow distribution sparger, or to the reactor via the low pressure coolant injection path. The RHR heat exchangers transfer heat to the Standby Service Water System. The RHR shutdown cooling mode is manually controlled.

An Alternate Decay Heat Removal System (ADHRS) is also available to provide the required decay heat removal. The ADHRS provides a single subsystem consisting of two motor driven pumps, two heat exchangers, and associated piping and valves. The system utilizes the common RHR shutdown cooling suction line and some fuel pool cooling and cleanup piping. The system is not safety-related and cannot be powered from an onsite diesel generator. The ADHRS heat exchangers transfer heat to the Plant Service Water System (PSW). The ADHRS is manually controlled and isolated from the common portions of the other systems.

In addition to the above subsystems, the volume of water above the reactor pressure vessel (RPV) flange provides a heat sink for decay heat removal.

APPLICABLE SAFETY ANALYSES

With the unit in MODE 5, neither the RHR System nor the ADHRS is required to mitigate any events or accidents evaluated in the safety analyses. The RHR System, or the ADHRS, is required for removing decay heat to maintain the temperature of the reactor coolant.

(continued)

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

Although the RHR System does not meet a specific criterion of the NRC Policy Statement, it was identified in the NRC Policy Statement as an important contributor to risk reduction. Therefore, the RHR System is retained as a Specification. The ADHRS is included in the Specification to provide requirements for decay heat removal capability during an outage while the RHR System is out of service.

LCO

Only one RHR shutdown cooling subsystem is required to be OPERABLE in MODE 5 with irradiated fuel in the RPV and the water level \geq 22 ft 8 inches above the RPV flange. Only one subsystem is required because the volume of water above the RPV flange provides backup decay heat removal capability.

The current requirements for decay heat removal are: In MODE 5 with no interface between vessel bulk coolant and spent fuel pool, the requirement is \leq 155°F.

In MODE 5 with vessel bulk coolant interfacing with the spent fuel pool, the requirement is \leq 140°F.

An OPERABLE RHR shutdown cooling subsystem consists of an RHR pump, two heat exchangers, valves, piping, instruments, and controls to ensure an OPERABLE flow path. The required RHR shutdown cooling subsystem must have a OPERABLE diesel generator capable of supplying electrical power.

Additionally, each RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one decay heat removal subsystem (either RHR or ADHRS) can maintain and reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required. A Note is provided to allow a 2 hour exception for the operating subsystem to not be in operation every 8 hours.

APPLICABILITY

One RHR shutdown cooling subsystem must be OPERABLE in MODE 5, with irradiated fuel in the RPV and the water level \geq 22 ft 8 inches above the top of the RPV flange, to provide decay heat removal. RHR System requirements in other MODES

(continued)

BASES

APPLICABILITY (continued) are covered by LCOs in Section 3.4, Reactor Coolant System (RCS); Section 3.5, Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling (RCIC) System; and Section 3.6, Containment Systems. RHR Shutdown Cooling System requirements in MODE 5, with the water level < 22 ft 8 inches above the RPV flange, are given in LCO 3.9.9, "Residual Heat Removal (RHR) - Low Water Level."

ACTIONS

A.1

With no RHR shutdown cooling subsystem OPERABLE, an alternate method of decay heat removal must be established within 1 hour. In this condition, the volume of water above the RPV flange provides adequate capability to remove decay heat from the reactor core. However, the overall reliability is reduced because loss of water level could result in reduced decay heat removal capability. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed. The method used to remove the decay heat should be the most prudent choice based on unit conditions.

B.1. B.2. B.3. and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending the loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes

(continued)

BASES

ACTIONS

B.1, B.2, B.3, and B.4 (continued)

ensuring secondary containment is OPERABLE, one standby gas treatment subsystem is OPERABLE, and secondary containment isolation capability (i.e., at least one isolation valve and associated instrumentation in each associated penetration not isolated that is assumed to be isolated to mitigate radioactivity releases are OPERABLE or other acceptable administrative controls to assure isolation capability). This may be performed as an administrative check, by examining logs or other information, to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, a surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

C.1 and C.2

If no decay heat removal subsystem (RHR shutdown cooling subsystem or ADHRS) is in operation, an alternate method of coolant circulation is required to be established within 1 hour. The Completion Time is modified such that 1 hour is applicable separately for each occurrence involving a loss of coolant circulation.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or ADHRS), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE
REQUIREMENTS

SR 3.9.8.1

This Surveillance demonstrates that the RHR shutdown cooling subsystem or ADHRS is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Frequency of 12 hours is

(continued)

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.9.8.1

sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.

REFERENCES

AEEM-90/0135, MAEC-90/0236, ER-GG-2007-0028

B 3.9 REFUELING OPERATIONS

B 3.9.9 Residual Heat Removal (RHR) - Low Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 5 is to remove decay heat and sensible heat from the reactor coolant, as required by GDC 34. Each of the two shutdown cooling loops of the RHR System is designed to maintain the reactor coolant bulk average temperature as required. Each loop consists of one motor driven pump, two heat exchangers, and associated piping and valves. Both loops have a common suction from the same recirculation loop. Each pump discharges the reactor coolant, after it has been cooled by circulation through the respective heat exchangers, to the reactor via separate feedwater lines, to the upper containment pool via a common single flow distribution sparger, or to the reactor via the low pressure coolant injection path. The RHR heat exchangers transfer heat to the Standby Service Water System. The RHR shutdown cooling mode is manually controlled.

An Alternate Decay Heat Removal System (ADHRS) is also available to provide the required decay heat removal. The ADHRS provides a single subsystem consisting of two motor driven pumps, two heat exchangers, and associated piping and valves. The system utilizes the common RHR shutdown cooling suction line and some fuel pool cooling and cleanup piping. The system is not safety-related and cannot be powered from an onsite diesel generator. The ADHRS heat exchangers transfer heat to the Plant Service Water System (PSW). The ADHRS is manually controlled and isolated from the common portions of the other systems.

APPLICABLE
SAFETY ANALYSES

With the unit in MODE 5, neither the RHR System nor the ADHRS is required to mitigate any events or accidents evaluated in the safety analyses. The RHR System, or the ADHRS, is required for removing decay heat to maintain the temperature of the reactor coolant.

Although the RHR System does not meet a specific criterion of the NRC Policy Statement, it was identified in the NRC Policy Statement as an important contributor to risk reduction. Therefore, the RHR System is retained as a

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BASES

APPLICABLE
SAFETY ANALYSES
(continued)

Specification. The ADHRS is included in the Specification to provide requirements for decay heat removal capability during an outage while the RHR System is out of service.

LCO

In MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level < 22 ft 8 inches above the RPV flange both RHR shutdown cooling subsystems must be OPERABLE, or the ADHRS may be substituted for one of the RHR subsystems.

The current requirements for decay heat removal are: In MODE 5 with no interface between vessel bulk coolant and spent fuel pool, the requirement is $\leq 155^{\circ}\text{F}$.

In MODE 5 with vessel bulk coolant interfacing with the spent fuel pool, the requirement is $\leq 140\text{F}$.

An OPERABLE RHR shutdown cooling subsystem consists of an RHR pump, two heat exchangers, valves, piping, instruments, and controls to ensure an OPERABLE flow path. An OPERABLE ADHRS consists of two pumps, two heat exchangers, valves, piping, instruments and controls to ensure an OPERABLE flow path. At least one of the required RHR shutdown cooling subsystems must have a OPERABLE diesel generator capable of supplying electrical power.

Additionally, each RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one decay heat removal subsystem (either RHR or ADHRS) can maintain and reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required. A Note is provided to allow a 2 hour exception for the operating subsystem to not be in operation every 8 hours.

APPLICABILITY

Two decay heat removal subsystems are required to be OPERABLE in MODE 5, with irradiated fuel in the RPV and the water level < 22 ft 8 inches above the top of the RPV flange, to provide decay heat removal. RHR System requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS); Section 3.5,

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BASES

APPLICABILITY
(continued)

Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling (RCIC) System; and Section 3.6, Containment Systems. RHR Shutdown Cooling System requirements in MODE 5, with the water level \geq 22 ft 8 inches above the RPV flange, are given in LCO 3.9.8, "Residual Heat Removal (RHR) - High Water Level."

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BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.9.9.1

This Surveillance demonstrates that one RHR shutdown cooling subsystem or ADHRS is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR subsystem in the control room.

REFERENCES

AECM-90/0135, MAEC-90/0236, ER-GG-2007-0028.

B 3.10 SPECIAL OPERATIONS

B 3.10.1 Inservice Leak and Hydrostatic Testing Operation

BASES

BACKGROUND

The purpose of this Special Operations LCO is to allow certain reactor coolant pressure tests to be performed in MODE 4 when the metallurgical characteristics of the reactor pressure vessel (RPV) require the pressure testing at temperatures > 200°F (normally corresponding to MODE 3) or to allow completing these reactor coolant pressure tests when the initial conditions do not require temperatures > 200°F. Furthermore, the purpose is to allow continued performance of control rod scram time testing required by SR 3.1.4.1 or SR 3.1.4.4 if reactor coolant temperatures exceed 200°F when the control rod scram time testing is initiated in conjunction with an inservice leak or hydrostatic test. These control rod scram time tests would be performed in accordance with LCO 3.10.4, "Single Control Rod Withdrawal - Cold Shutdown," during MODE 4 operation.

Inservice hydrostatic testing and system leakage pressure tests required by Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Ref. 1) are performed prior to the reactor going critical after a refueling outage. Recirculation pump operation and a water solid RPV (except for an air bubble for pressure control) are used to achieve the necessary temperatures and pressures required for these tests. The minimum temperatures (at the required pressures) allowed for these tests are determined from the RPV pressure and temperature (P/T) limits required by LCO 3.4.11, "Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits." These limits are conservatively based on the fracture toughness of the reactor vessel, taking into account anticipated vessel neutron fluence.

With increased reactor vessel fluence over time, the minimum allowable vessel temperature increases at a given pressure. Periodic updates to the RCS P/T limit curves are performed as necessary, based on the results of analyses of irradiated surveillance specimens removed from the vessel. Hydrostatic and leak testing will eventually be required with minimum reactor coolant temperatures > 200°F. However, even with required minimum reactor coolant temperatures < 200°F,

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BASES

BACKGROUND
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maintaining RCS temperatures within a small band during the test can be impractical. Removal of heat addition from recirculation pump operation and reactor core decay heat is coarsely controlled by control rod drive hydraulic system flow and reactor water cleanup system non-regenerative heat exchanger operation. Test conditions are focused on maintaining a steady state pressure, and tightly limited temperature control poses an unnecessary burden on the operator and may not be achievable in certain instances.

Scram time testing required by SR 3.1.4.1 and SR 3.1.4.4 requires reactor steam dome pressure > 950 psig. The hydrostatic and/or RCS leakage tests require pressure of approximately 1,000 psig.

Other testing may be performed in conjunction with the allowances for inservice leak or hydrostatic tests and control rod scram time tests.

APPLICABLE
SAFETY ANALYSES

Allowing the reactor to be considered in MODE 4 when the reactor coolant temperature is > 200°F, during or as a consequence of, hydrostatic or leak testing, or as a consequence of control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test, effectively provides an exception to MODE 3 requirements, including OPERABILITY of primary containment and the full complement of redundant Emergency Core Cooling Systems (ECCS). Since the hydrostatic or leak tests are performed nearly water solid, at low decay heat values, and near MODE 4 conditions, the stored energy in the reactor core will be very low. Under these conditions, the potential for failed fuel and a subsequent increase in

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BASES

LCO
(continued)

> 200°F, while the ASME inservice test itself requires the safety/relief valves to be gagged, preventing their OPERABILITY. Additionally, even with required minimum reactor coolant temperatures < 200°F, RCS temperatures may drift above 200°F during the performance of inservice leak and hydrostatic testing or during subsequent control rod scram time testing, which is typically performed in conjunction with inservice leak and hydrostatic testing. While this Special Operations LCO is provided for inservice leak and hydrostatic testing, and for scram time testing initiated in conjunction with an inservice leak or hydrostatic test, parallel performance of other tests and inspections is not precluded.

If it is desired to perform these tests while complying with this Special Operations LCO, then the MODE 4 applicable LCOs and specified MODE 3 LCOs must be met. This Special Operations LCO allows changing Table 1.1-1 temperature limits for MODE 4 to "NA" and suspending the requirements of LCO 3.4.10, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown." The additional requirements for secondary containment LCOs to be met will provide sufficient protection for operations at reactor coolant temperatures > 200°F for the purposes of performing an inservice leak or hydrostatic test, and for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test.

This LCO allows primary containment to be open for frequent unobstructed access to perform inspections, and for outage activities on various systems to continue consistent with the MODE 4 applicable requirements that are in effect immediately prior to and immediately after this operation.

APPLICABILITY

The MODE 4 requirements may only be modified for the performance of, or as a consequence of, inservice leak or hydrostatic tests or as a consequence of control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test, so that these operations can be considered as in MODE 4, even though the reactor coolant temperature is > 200°F. The additional requirement for

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BASES

APPLICABILITY secondary containment OPERABILITY according to the imposed
(continued) MODE 3 requirements provides conservatism in the response of
the unit to any event that may occur. Operations in all
other MODES are unaffected by this LCO.

ACTIONS A Note has been provided to modify the ACTIONS related to
inservice leak and hydrostatic testing operation.
Section 1.3, Completion Times, specifies once a Condition
has been entered, subsequent divisions, subsystems,
components, or variables expressed in the Condition
discovered to be inoperable or not within limits, will not
result in separate entry into the Condition. Section 1.3
also specifies that Required Actions of the Condition
continue to apply for each additional failure, with
Completion Times based on initial entry into the Condition.
However, the Required Actions for each requirement of the
LCO not met provide appropriate compensatory measures for

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