

April 5, 2005

Mr. Paul D. Hinnenkamp
Vice President - Operations
Entergy Operations, Inc.
River Bend Station
5485 US Highway 61N
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - REQUEST FOR ADDITIONAL
INFORMATION ON PROPOSED UPGRADED EMERGENCY ACTIONS
LEVELS (EALs) (TAC NO. MC1617)

Dear Mr. Hinnenkamp:

By letter dated December 19, 2003, you submitted proposed EALs using the methodology outlined in Nuclear Energy Institute 99-01, "Methodology for Development of Emergency Action Levels." In response to the NRC staff questions posed in a Request for Additional Information (RAI) dated June 23, 2004, Entergy Operations, Inc. (Entergy) submitted, by letter dated November 12, 2004, a complete revision to the initial submittal. On December 17, 2004, the NRC staff issued a second RAI related to your revised submittal. Attachment 1 provides the RAI questions in a slightly modified form; they have not been changed substantively.

On February 24, 2005, the NRC staff conducted a phone call with Entergy staff to discuss the second RAI; during that call, Entergy staff proposed that a follow-up call to be conducted in mid-March 2005 to discuss the RAI further and to establish the time frame for Entergy to provide its response to the RAI. However, Entergy staff cancelled the call citing the need for more time to prepare the possible responses to the RAI. At present, the call has not been rescheduled. However, on March 23, 2004, Les England of Entergy staff, agreed to provide responses to the enclosed questions by April 15, 2005.

Also, as discussed during our conference call on February 24, 2005, please ensure consistency between Entergy plants in your responses on generic EAL issues, as applicable. If you have any questions, please contact me at (301) 415-1347.

Sincerely,

/RA/

Michael Webb, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosure: As stated

cc w/encl: See next page

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Enclosure: As stated
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RIVER BEND STATION, UNIT 1 (RBS)

REQUEST FOR ADDITIONAL INFORMATION

ON PROPOSED EMERGENCY ACTION LEVELS (EALs)

USING NUCLEAR ENERGY INSTITUTE (NEI) 99-01 (REVISION 4) METHODOLOGY

DATED NOVEMBER 12, 2004

ABNORMAL RADIATION LEVELS / RADIOLOGICAL EFFLUENTS CATEGORY

1. [Initiating Condition (IC) AU1 / EAL 1] Attachment 5, Difference #1 states that the RBS uses “4 times,” instead of “2 times” the alarm setpoint, since the alarm setpoint is 50 percent of the Offsite Dose Calculation Manual (ODCM). However, the proposed EALs and Bases for EAL 1, in Attachments 3 and 4 respectively, state “2 times” the alarm setpoint. Resolve this inconsistency.
2. [IC AU1 / EALs 1 and 2] The licensee Basis in Attachment 4 refers to an alarm setpoint and high alarm setpoint interchangeably. Resolve this inconsistency.
3. [IC AU1 / EAL 3] The licensee Basis states that “EAL 3 is particularly applicable for gaseous release pathways.” This statement is inconsistent with the RBS EAL 3 threshold, which addresses gaseous or liquid releases, and with the NEI 99-01 IC AU1 Basis and the RBS proposed EAL IC AA3 and Basis, which focuses on unmonitored pathways (e.g., spills of radioactive liquids in storm drains determined to exceed 200 times ODCM limit). Resolve this inconsistency.
4. [IC AU2 / EAL 1.b] Per NEI 99-01 AU2, increasing the area radiation monitor readings in combination with an uncontrolled water level decrease constitute an Unusual Event. Licensee AU2 indicates that the radiation monitor(s) is alarming, rather than having increasing readings. Per NEI 99-01, ICAA2, a valid monitor alarm, by itself, constitutes an Alert. Resolve this inconsistency with the NEI 99-01 guidance.
5. [IC AA1 / EAL 1] Licensee states “> 200 times” the alarm setpoint. However, under Attachment 5, Difference #1 for IC AU1 / EAL 1, the licensee states that the RBS's alarm setpoint is 50 percent of the ODCM. As such, licensee IC AA1 / EAL 1 threshold should reflect “> 400 times” the alarm setpoint. Resolve this inconsistency.
6. [IC AA1 – EAL 2] Resolve, in a deviation statement, the basis for establishing the EAL threshold at 200 times the alarm setpoint, since the Licensee Basis for EAL 2 in Attachment 4 states that the effluent monitor alarm setpoints are set to be $\leq 1/3$ of the ODCM limit. Under Attachment 5, Difference #1 for IC AA1 – EAL 2, the licensee states that the RBS's EAL threshold is based on 200 times the alarm setpoint, which would equate to only one third of the NEI 99-01 threshold of 200 times the ODCM limit allowed per NEI 99-01. Per the licensee EAL 2 Basis in Attachment 4, the threshold value used is a lower value than the 200 times the ODCM limit allowed by NEI 99-01. Provide the rationale for complying with the 200 times ODCM threshold in the NEI 99-01 guidance.
7. [IC AA2] The term “unplanned” was added to IC statement in Attachments 2 and 4, but was not included in the proposed EAL table in Attachment 3. In addition, the licensee

Basis under Attachment 4 incorrectly references IC E-AU1, instead of licensee IC EU1 for spent fuel licensed for dry storage. Resolve these inconsistencies.

8. [IC AA2 – EAL 1] Licensee IC AA2 – EAL1 states that a valid alarm, or a reading of ≥ 2000 mrem/hr, warrants declaration of an Alert. However, the licensee states in IC AU2 that a monitor alarm combined with an uncontrolled water level decrease is an Unusual Event. As written, licensee IC AA2 is less conservative than licensee IC AU2. Resolve this inconsistency per the NEI 99-01 guidance. In addition, the licensee IC AA2 Basis states that “a value of 2000 mrem/hour is high enough to avoid unnecessary emergency classification for refueling events that do not cause damage to irradiated fuel, and low enough for a judgment decision of an uncontrolled water level lowering event.” Provide technical justification (i.e., calculation or analysis) supporting the 2000 mrem/hour threshold value and provide the comparison with alarm setpoints.
9. [IC AA2 – EAL 1] Specify location and type (area or airborne) for each radiation monitor listed. In addition, provide justification for the addition of the qualifier in licensee EAL 1 Basis, which states, “Elevated readings on ventilation monitors may be indication of a radioactivity release from the fuel, confirming that damage has occurred, but would be classified using [IC] AA1.” Per NEI 99-01, building ventilation monitors should be considered in site-specific monitor listing for classification under IC AA2 – EAL 1.
10. [IC AA3 – EAL 1] Revise the site-specific list to address the continuous occupancy requirements for the central alarm station (CAS) and/or secondary alarm station (SAS) per the RBS Physical Security Plan, or identify that the CAS or SAS is contained within the main control room envelope.
11. [IC AA3 – EAL 2] Provide the technical justification in Basis for limiting site-specific areas to any emergency closed cooling system (ECCS) or the reactor core isolation cooling pump rooms. Specifically address why access would not be needed to remote shutdown area(s), electrical distribution panels, emergency diesel generators, etc. to maintain plant safety functions, or other areas containing safety or safe shutdown equipment. In addition, in the EAL Basis under Attachment 4, the licensee established a threshold of $> 1E4$ rem/hour based on corporate radiation protection (RP) procedures that require specific actions prior to an expected dose of 5 rem (assuming worker could perform activities within 30 minutes). The licensee also identifies that, per procedure RP-105, stay times are required for activities that will result in exposure of > 500 mrem/entry. Provide further justification for why a threshold of 500 mrem/hour would not be more applicable per the NEI 99-01 guidance regarding site-specific values.
12. [ICs AS1 and AG1] The NEI 99-01 IC states that the total effective dose equivalent or thyroid committed dose equivalent doses exceed the specified threshold. The licensee has chosen to state in the IC that the dose is equal to or greater than (\geq) the specified threshold, but retained greater than ($>$) the specified dose threshold in EALs 2 and 3. Resolve this inconsistency.
13. [ICs AS1 and AG1] The NEI 99-01 Basis states that the methodology and source term used should be the same as those associated with the effluent monitor EALs in ICs AU1 and AA1. In the Basis under Attachment 4, the licensee states that a clad damage source term was used, which is inconsistent with the ODCM source term used in ICs AU1 and AA1. Resolve any inconsistencies with the NEI 99-01 guidance, and provide a

proposed change to comply or further technical justification for the deviations. In addition, provide calculational results under References, which serve to document calculations performed for EAL 1 in ICs AS1 and AG1.

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

14. [IC HU1] The licensee Basis discussions for EALs 1 and 2 under Attachment 4 are reversed from the order in the EALs and NEI 99-01 Bases. Resolve this inconsistency.
15. [IC HU4] The term “boundary” was omitted from the IC statement in Table 13.3-1 under Attachment 2, but was included in the proposed EALs and Basis under Attachments 3 and 4 respectively, per the NEI 99-01 guidance. Resolve this inconsistency.
16. [IC HU5 – EAL 1] The licensee Basis under Attachment 4 states that “Normally occupied areas ” include the control room, CAS, and auxiliary control room as normally occupied areas in structures needed for plant operations. The NEI 99-01 definition of “normal plant operations,” which the licensee stated that it will adopt in its response to RAI 28.b, indicates that actions at the plant outside normally occupied areas would justify event classification. Provide the justification for the Basis statement defining “normally occupied areas.”
17. [IC HA4] Table 13.3-1 under Attachment 2 incorrectly lists HA3 as the IC, instead of HA4, as listed in Attachments 3 and 4, for a fire or explosion affecting the operability of the plant safety systems required to establish or maintain safe shutdown. Resolve this inconsistency.
18. [ICs HA4 and HA6] Table H2 in Attachment 3 does not contain footnote “*”, provided in the Basis (Attachment 4), which indicates that the Fuel Handling Building and associated tunnel may be considered to address the impact in the event of the loss of spent fuel cooling or spent fuel (e.g., freshly off-loaded reactor core). Resolve this inconsistency.
19. [HU6 / HA6] The response to Specific Comment 31 states that the high alarm indicating 4 inches above floor level is used as the qualifier for the Unusual Event, and that an upgrade to an Alert would occur when flooding resulted in degraded performance or water level has risen above electrical components creating a safety hazard (95' elevation is used if entry into the area is required). Table H1 in both ICs HU6 and HA6 provides the same Maximum Safe Operating Values/Indicators which is inconsistent with the RAI response. The Bases discussion in Attachment 4 does not reflect the RAI response, which does not discuss Maximum Safe Operating Values/Indicators. Resolve these inconsistencies. In addition, clarify whether RBS emergency operating procedures (EOPs) provide specific thresholds for Maximum Normal Operating Values, which would be more indicative of the potential impact on safety-related equipment under IC HU6 – EAL 6.
20. [IC HG1 – EAL 1] The EAL statement in the Bases under Attachment 4 contains the qualifier “any of the following,” but does not provide a listing of applicable plant equipment. The proposed EAL under Attachment 3 does not contain this qualifier. Resolve this inconsistency.

EVENTS RELATED TO ISFSI's

21. [IC EU1 – EALs 1 and 2] In response to Specific Comment 16, the licensee only provided specific thresholds in EALs for extreme temperature and an internal over-pressure for complete blockage of the air vents. Provide the specific thresholds for an earthquake (independent spent fuel storage installation design basis per Bases), explosive over-pressure (60 psig per RAI response), flood, and hurricane force winds.
22. [IC EU1 – EALs 1 and 2] The EAL thresholds under Attachment 3 do not contain the sentence, “Any one or more of the following,” as stated in licensee Basis under Attachment 4. Resolve this inconsistency.

SYSTEM MALFUNCTION (Cold Shutdown Refueling)

23. [IC CU3] The licensee Basis (second paragraph) under Attachment 4 reflects an error in the NEI 99-01 guidance, where an escalation to an Alert (CA3) is appropriate for an unplanned event resulting in reactor coolant system (RCS) temperature exceeding technical specification (TS) cold shutdown temperature limit for greater than 20 minutes, rather than the proposed 30 minutes, with CONTAINMENT CLOSURE not established. Resolve this inconsistency.
24. [IC CU5 – EAL 1.a / IC CA5 – EAL 1.a / IC SU1 – EAL 1 / IC SS1 – EAL 1 / IC SG1 – EAL 1] List site-specific (preferred) transformers.
25. [IC CA3 – EAL 2] The qualifier “or RCS inventory reduced” was deleted from the licensee EAL under Attachment 3 as not applicable for a boiling water reactor, but retained in the licensee Basis under Attachment 4. Resolve this inconsistency.
26. [IC CA5] Under mode applicability, Table 13.3-1 (Attachment 2) lists Plant Modes 4 and 5, while Attachments 3 and 4 list Modes 4, 5 and Defueled. Resolve this inconsistency.
27. [IC CS2 – EALs 1.b and 2.b / IC CG1 – EAL 2.b] Since RBS does not have an existing calculation for the Containment High Range Radiation Monitor reading setpoint, a value that reflects the reactor shutdown and depressurized was chosen. However, the licensee Basis states that the calculation is not applicable for refueling values. Provide the monitor readings based on site-specific calculations performed per the NEI 99-01 guidance, which conservatively estimates a dose rate indicative of core uncover (i.e., level at top of active fuel).
28. [IC CG1] The licensee Basis (Second paragraph) references EAL 2 in the refueling mode, versus EAL 1 identified in the NEI 99-01 Bases. Resolve this inconsistency.

SYSTEM MALFUNCTION

29. [IC SU9 – EAL 1] Provide the site-specific Offgas Post-Treatment Monitor reading indicating fuel clad degradation greater than TS allowable limits.
30. [IC SS1] The IC statement in Table 13.3-1 (Attachment 2) is missing the term “AC” [alternating current] contained in the IC statement in Attachments 3 and 4, and NEI 99- 01. Resolve this inconsistency.

31. [IC SG1 – EAL 1.b] The licensee has identified criterion, “RPV [reactor pressure vessel] level cannot be maintained > -186 inches,” as indication of continuing degradation of core cooling, which reflects a fuel clad loss per the fission product barrier matrix. The licensee Basis and NEI 99-01 guidance state that the indication must be based on imminent loss or potential loss of fission product barriers. A potential loss of the fuel clad barrier per licensee EAL FC2 is defined as RPV level < -162 inches. Resolve this inconsistency.
32. [IC SG3 – EAL 1] Per licensee and NEI 99-01 Basis guidance, the indication that core cooling is extremely challenged is intended to mean that the reactor vessel water level cannot be restored and maintained above Minimum Steam Cooling RPV Water Level as described in the EOP bases. Provide justification for designating “Entry into SAP [severe accident procedure] Containment Flooding” as meeting this criterion. In addition, the licensee Basis states that considerations include the inability to remove heat via the main condenser or the suppression pool. Clarify whether the criterion that heat capacity temperature limit is exceeded was intended to imply that the main condenser is unavailable.

FISSION PRODUCT BARRIER DEGRADATION

33. [EAL RC1] The drywell pressure >1.68 psid is identified by the licensee as a loss of the RCS Barrier, and, per licensee Bases, as in excess of ECCS initiation setpoint. Per NEI 99-01 guidance, the setpoint (in psig) is equivalent to, not in excess of, the drywell pressure indicating automatic initiation of ECCS due to a loss of coolant accident. Resolve this inconsistency.
34. [EAL RC3] Provide a basis for selecting a setpoint of 141EF Main Steam Tunnel temperature as an indication for a main steam line break for an RCS Loss.
35. [EALs PC4 and FC3] The analysis performed using containment dose rate figures provided in licensee Basis under Attachment 4 appears to use approximately 3 to 4 hours after shutdown to determine the radiation monitor threshold. Clarify the exact time and technical basis used for "time after shutdown."
36. [EAL RC4] The licensee Basis states that a default drywell radiation monitor reading of 100 rem/hour was established based on comparable industry EALs. The use of the drywell monitor in EAL RC4 is inconsistent with EALs PC4 and FC3, which use the Containment radiation monitor(s), in lieu of the drywell monitor, due to shine from the reactor vessel and RCS piping. Resolve this inconsistency. In addition, provide a current drywell radiation monitor reading for normal plant operation with coolant noble gas and iodine inventory within TS allowable limits, which would be indicative of the radiation shine from the piping and components in the drywell. Also, clarify why a site-specific reading was not calculated as specified in the NEI 99-01 guidance.

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