Entergy

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Rick J. King
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RBG-45975

June 7, 2002

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

SUBJECT: River Bend Station, Unit 1
Docket No. 50-458
Supplement to Amendment Request
License Amendment Request (LAR) 2002-04, Deletion of Turbine Building High Temperature inputs to Main Steam Line Isolation Logic

REFERENCES: (1) Letter RBG-45901 to USNRC from P. D. Hinnenkamp dated February 6, 2002

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the River Bend Station, Unit 1 (RBS) Technical Specifications (TSs) to remove the requirement for Main Steam Isolation Valve (MSIV) isolations on certain area temperatures in TS Table 3.3.6.1-1.

In a teleconference on May 24, 2002, Entergy and the NRC staff discussed specific request for additional information (RAI) draft questions. Entergy is providing this letter as a supplement to the original submittal in order to address those questions.

Attachment 1 provides the proposed questions and Entergy's response to each as discussed in the conference call. Entergy will relocate the Turbine Building High Temperature inputs to Main Steam Line Isolation Logic, Technical Specification Table 3.3.6.1-1 Functions 1.f., 1.g., 1.h. and 1.i into the River Bend Technical Requirements Manual. This commitment is summarized in Attachment 2. There are no other technical changes proposed. The original no significant hazards considerations included in Reference 1 is not affected by any information contained in this supplemental letter.

A001

If you have any questions or require additional information, please contact Greg Norris at 225-336-6391.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 7, 2002.

Sincerely,

RJK/GPN

Attachments:
a) Supplemental Information
b) List of Regulatory Commitments

cc: U. S. Nuclear Regulatory Commission
Region IV
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NRC Senior Resident Inspector
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U.S. Nuclear Regulatory Commission
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RBG-45975

Bcc:

File Nos.: G9.5, G9.42

File: RBF1-02-0090

File: LAR 2002-04

Attachment 1

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Supplemental Information

Question 1:

The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. The Commission has provided guidance for the content of TS in it's "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" (Final Policy Statement) 58 FR 39132, July 22, 1993. As a result, TS requirements which fall within or satisfy any of the criteria in 10 CFR 50.36 must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to licensee controlled documents where 10 CFR 50.59 or other regulations provide adequate regulatory control.

In the application dated, February 6, 2002, the licensee proposed to relocate the requirements associated with functions 1.f, 1.g, 1.h, and 1.i of TS Table 3.3.6.1-1, "Primary Containment and Drywell Isolation Instrumentation," to River Bend Station procedures. These functions are associated with turbine building area temperature switches. Please provide details associated with where these functions are being relocated in order for the Commission to determine that 10 CFR 50.59 or other regulations will provide adequate regulatory control.

Response:

In the February 6, 2002 submittal to the NRC, Entergy proposed the relocation of specific Main Steam Line Isolation functions into station procedures. It was Entergy's intent within that request to relocate these functions into station Annunciator Response Procedures as a part of the pending plant modifications, and to maintain descriptions within the Updated Safety Analysis Report (USAR). Both the procedures and USAR are in the 10 CFR 50.59 program at River Bend Station.

Based on the discussions during the May 24, 2002 conference call, Entergy concluded that it was appropriate, for the purposes of this relocation request, to place these Main Steam Line Isolation functions into the Technical Requirements Manual (TRM) at River Bend. This will provide for consistent relocation of the data into one document that is maintained by 10 CFR 50.59, as an intermediate step, prior to proceeding with the desired plant modifications. Therefore, Entergy will relocate the Turbine Building High Temperature inputs to Main Steam Line Isolation Logic, Technical Specification Table 3.3.6.1-1 Functions 1.f., 1.g., 1.h. and 1.i into the River Bend Technical Requirements Manual.

Question 2:

In accordance with Criterion 4 of 10 CFR 50.36(c) (2) (ii), a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety should remain in TS.

a) Please provide justification that operating experience and probabilistic risk assessment has shown that the TS functions identified above are not significant to public health and safety.

Response:

As stated in the February 6, 2002 submittal to NRC, during operation in the summer months at River Bend, the ambient temperatures of the Turbine Building south steam tunnel, turbine deck, and mezzanine steam piping areas have historically trended close to their isolation set points. This reduced operating margin during peak summer temperatures has resulted in half isolation signals occurring due to reasons other than actual steam leaks to the area. The proposed technical specification changes would allow Entergy to take actions to alleviate the potential for unwarranted plant transients. Thus, the proposed changes decrease the plant Core Damage Frequency risk by reducing the probability of plant transients, while continuing to provide protection to the public health and safety in the event of actual steam leaks in these areas.

The River Bend plant PRA does not explicitly model the action of the turbine building high temperature function to isolate the MSIV's. The impact of this function is implicitly included in the scram initiator values within the PRA. The River Bend plant PRA uses scram initiator frequencies which are based upon a Bayesian updating combination of plant specific and industry scram data. The source for the generic industry data is NUREG/CR-3862. Per this document, the generic frequency for scrams with a loss of the Power Conversion System (T2 transient) is 1.66/year, of which 0.27/year is assumed due to MSIV isolations. MSIV isolations due to high turbine building ambient temperatures would be only a small contributor to the 0.27/year value. When considering River Bend specific data, the value based on a Bayesian update combining generic and RBS specific data for the T2 initiator frequency is reduced from 1.66/year to 0.361/year.

To quantify the risk significance of the turbine building main steam isolation function on high turbine building temperature, a very conservative bounding risk analysis was performed setting the value of the T2 initiator to zero vice the RBS specific value of 0.361/year. This resulted in a decrease in the zero-maintenance Core Damage Frequency from 7.155E-06/year to 7.148E-06/year. This corresponds to a contribution to the plant risk of 7E-09/year from T2 scram initiators. This was calculated using the EOOS program, using Revision 3 of the River Bend Level 1 PRA with a truncation limit of 1E-09. This demonstrates that T2 transients are not significant contributors to River Bend plant risk, based upon the metric of Core Damage Frequency. Note also that MSIV isolation transients are only one contributor to the overall T2 initiator frequency. Engineering judgment would support the conclusion that T2 transients are not significant contributors to risk, since this type of transient does not impact the availability of offsite power sources and does not impact the ability of the plant Normal Service Water and Standby Service Water systems to serve as Ultimate Heat Sinks.

Relocation of this function from the Technical Specifications to the TRM would have no impact on plant risk. Additionally, the function provided by isolation of main steam isolation valves on high turbine building temperature is not a risk significant function.

River Bend has had the following scrams which are due to isolation of the Main Steam Isolation Valves (and classified as T2 scrams for PRA purposes):

LER 86-044: MSIV closure due to Moisture Separator Reheater steam leak.

LER 86-045: Loss of Condenser vacuum due to failure of the turbine steam seal system to supply adequate sealing steam.
LER 89-035: RPS trip due to MSIV closure test and a defective test switch
LER 93-017: MSIV isolation due to personnel error
LER 94-030: MSIV isolation due to personnel error

The proposed request is pertinent only to LER 86-044. The other four LER's would have been unaffected by the proposed change.

LER 86-044 documents a Reactor Trip which occurred on 8 July 1986. With the plant operating at 65% power, a reactor trip was received as a result of a turbine building high temperature isolation trip signal. The source of the high temperature was a steam leak from a man-way flange gasket in a non-safety related Main Steam Moisture Separator reheated drain receiver tank. This event would not have been a precursor to a Main Steam Line Break outside Containment.

If the proposed Amendment had been in place for the 8 July 1986 event, the operators would have received an alarm which would have resulted in the detection of the steam leak that was present and the plant would have been manually shutdown. Thus, there would have been no impact significant to public health and safety associated with the subject License Amendment Request.

As stated in SAR section 15.6.4, the pressure and temperature transient associated with a Main Steam Line Break outside containment are insufficient to cause fuel damage. MSIV closure is assumed to occur due to high main steam flow. As stated in the BASES of RBS Technical Specification, credit for these instruments is not taken in any transient or accident analysis.

Review of BWR Operating Experience indicates that Limerick also experienced an event due to a high ambient temperature signal that resulted in MSIV isolation and subsequent reactor scram. On September 10, 1990, Limerick Unit 2 experienced a Reactor Protection System (RPS) actuation due to closure of Main Steam Isolation Valves. The MSIV isolation signal occurred due to a spurious trip signal on the "D" channel of the steam Leak Detection System when a temperature switch momentarily spiked. This is the type of unwarranted plant transient which the proposed long-term action under 50.59 to remove the automatic isolation function is intended to mitigate against.

Review of BWR Operating Experience also demonstrates that plants are capable of acting in response to turbine building steam leaks without reliance on MSIV isolations on high turbine building temperature. Duane Arnold on 6 January 1991 experienced a steak leak on a 2 inch extraction steam drain line while at 95% power. A controlled shutdown was initiated, with a manual scram inserted prior to challenging the Main Steam Line Isolation setpoint of 200°F. Power was reduced from 95% to approximately 60% before inserting the manual scram. Peach Bottom Unit 2 experienced a weld leak on a one inch vent line which led to a manual scram of the reactor. Reactor power was reduced from 100% to 43% before the scram was initiated 39 minutes after the leak was reported. In neither case was the function of automatic main steam isolation upon high turbine building temperatures required to protect the health and safety of the public.

These events, supplemented by the radiological analyses discussed is Section 2.b below, demonstrate that the function of isolating MSIV's upon high turbine building temperature is not significant for protection of the health and safety of the public.

Thus, review of BWR Operating Experience and application of risk insights from the River Bend PRA lead to the conclusion that the functions proposed for removal from RBS Technical Specifications (and relocation to the TRM) are not significant to public health and safety.

b) In the application dated February 6, 2002, the licensee indicated that although the turbine building area temperature switches (whose associated requirements are proposed to be relocated out of the TS) are used to detect a main steam line break of a magnitude of 25 gallons per minute equivalent steam leak, for small breaks of this, no credit is taken for the automatic isolation of the main steam isolation valves by the switches. In addition, the application stated that the onsite and offsite dose consequences for a manual isolation have been calculated to remain orders of magnitude below the acceptance criteria for this type of event because virtually no water carryover (and resulting iodine) is expected to occur. Please provide details associated with where these calculations have been performed and what acceptance criteria were evaluated against.

Response:

For the purposes of this evaluation, leaks propagating to a sufficiently large size as to require a reactor shutdown will be considered to be an "abnormal operating occurrence" or "infrequent event". Per existing procedures, the reactor operators check the temperature in the areas monitored by the Turbine Building LDS temperature monitors once per shift, and as such, increases in area temperatures are readily identified. Thus, a number of failures to identify a leak would have to occur prior to a leak developing to the point of initiating a high area temperature isolation. Therefore, this event is regarded as an infrequent event. The RBS USAR lists the unacceptable results of infrequent events. Of the unacceptable results listed the one applicable to this evaluation is a release of radioactivity which results in dose consequences that exceed a small fraction of the criteria of 10CFR100. Consistent with other analyses using "small fraction of 10 CFR Part 100 limits" as an acceptance criteria this will be assumed to be 10% of the 10 CFR Part 100 limits. For dose to the control room operator, the limits in 10 CFR 50, Appendix A, General Design Criteria 19 are used.

The radiological consequences evaluation was performed using similar assumptions as the evaluation of a main steam line break outside of containment. The major difference involves the source term released. The main steam line break outside of containment assumes that the a large amount of mass leaving the steam piping over a short period of time and is comprised of steam, reactor water flashed to steam, and reactor water that does not flash to steam. In the case of the steam leak, the mass leaving the steam piping is characterized as a small amount of mass leaving the steam piping over a long

period of time (one hour to reach the alarm setpoint plus 30 minutes for operator action and is comprised of all steam.

The onsite and offsite dose were calculated with the TRANSACT computer program using the method described above. The following table summarizes the results and provides a comparison to the acceptance criteria.

Location – Organ	Acceptance Limit (REM)	Calculated Dose (REM)
EAB – Whole Body	2.5	9.659×10^{-4}
EAB – Thyroid	30.0	1.168×10^{-2}
MCR – Whole Body	5.0	4.650×10^{-5}
MCR – Skin	30.0	5.722×10^{-4}
MCR – Thyroid	30.0	4.738×10^{-2}

Attachment 2

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List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)	
	ONE-TIME ACTION	CONTINUING COMPLIANCE
Entergy will relocate the Turbine Building High Temperature inputs to Main Steam Line Isolation Logic, Technical Specification Table 3.3.6.1-1 Functions 1.f., 1.g., 1.h. and 1.i into the River Bend Technical Requirements Manual.	X	