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July 28, 2006

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Subject: Additional Information Request
River Bend Station - Unit License No. NPF-47 Docket No. 50-458

File Nos.: G9.5, G15.4.1
RBG-46602
RBF1-06-0123

Ladies and Gentlemen:

Entergy Operations, Inc. (EOI) River Bend Station (RBS) is providing additional information as requested during the Regulatory Conference held on July 20, 2006, and as confirmed with Mr. Wayne Walker of your staff. The information being provided to the two specific information requests is directly related to a Preliminary White Finding in Inspection Report 50-458/2006-011.

Should you have questions regarding the attached information, please contact Mr. David Lorring of my staff at (225) 381-4157.

Sincerely,


RJK/rlb

Attachments:

- (1) Additional Information
- (2) Flow Path Depicting Data Retrieval and Evaluation

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CC:

U.S. Nuclear Regulatory Commission
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Discussion

Based upon available instrumentation and information, Entergy Operations, Inc. (EOI) River Bend Station (RBS) remains confident in our ability to properly classify a seismic event thereby assuring the health and safety of the public is maintained. In addition, the self-revealing nature of a seismic event, of an OBE or SSE magnitude, would be sufficient to cause operators to initiate actions to classify the event¹.

The station believes that we have demonstrated that this finding does not rise to a failure or degradation of the risk significant planning standard [10CFR50.54 (b) (4)] because the unavailability of the seismic instrumentation would not prevent declaration of an SAE.

- Other seismic instrumentation and means were available to permit classification, albeit delayed.²
- Training and procedures provide adequate measures
- Actual operating experience demonstrates proper behaviors
- Other EALs would result in a NOUE, ALERT and SAE (related to actual plant damage)

The retrieval and analysis of instrumentation data from installed Triaxial Response Spectrum Recorders (scratch plates) is sufficiently covered by training and procedures, thereby ensuring predictable performance. This would enable the station to distinguish whether or not an OBE or SSE event occurred. Declaration by this method would take approximately 3 ½ to 4 hours.

¹ EIP-2-001, "Other Plant Conditions Exist that Warrant Precautionary Activation of Emergency Response Facilities and Monitoring Teams (As determined by the OSM/Recovery Manager/Emergency Director)".

² EIP-2-001,

- "An indication, report or condition is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence, or the report's accuracy is removed..."
- "For Emergency Action Levels based on plant instrumentation, the indication shall be a valid indication. When all indications for a certain parameter have been lost, the Emergency Director should use his best judgment and other plant indications to classify the emergency..."

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This letter provides the station's response to two specific information requests as listed below.

REQUEST No. 1

Assuming a seismic event has occurred, provide the estimated time period to obtain seismic monitoring instrumentation "scratch plate" data and determine whether or not an Operating Basis Earthquake or Safe Shutdown Earthquake has occurred from conversion of the data.

River Bend developed a response timeline assuming seismic activity had been detected by instrumentation or felt motion. This timeline was principally based upon process/procedure reviews and discussions with knowledgeable individuals. All times are estimates based upon what are believed to be reasonable assumptions—what could normally or reasonably be expected (since predictability is desired).

Key individuals involved in this effort were:

- Operations Shift Manager/Assistant Operations Manager
- Civil Structural Engineers (qualified seismic analysts)/System Engineer
- I&C Technician

The timeline demonstrated that River Bend Station has the capability to obtain and analyze seismic monitoring instrumentation "scratch plates" within approximately 3 ½ to 4 hours, including the declaration.

Below are the key assumptions used in the timeline development:

- Engineering seismic analysts are qualified in accordance with Engineering Support Personnel Task Qualification Guide Qualification Card Number EOI-C-QC-ESPD-DSEQ.
- I&C Technicians are qualified in accordance with Lesson Plan, RLP-IC-00512.01 and On the Job Training and Evaluation Task Number 934-003, 913-043, 919-712, and TR ROJT-IC-512JB.02.
- Engineering and I&C Personnel are not on station when the seismic event is detected (felt or otherwise). Declaration would occur sooner if on site.
- Necessary support personnel (I&C, Engineering, etc.) arrive on site within one hour of notification.

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- One of two sets of required test equipment is available to read the scratch plates
- Scratch plates are required to determine magnitude of the seismic activity (does not credit availability of any specific alarms only that the event was detected)
- Alarm Response Procedure is utilized as appropriate (ARP-680-002)³
- The following activities are appropriately conducted in parallel:
 - Operators refer to and implement Emergency Implementing Procedure, EIP-2-001.
 - Operations requests additional personnel—Engineering, Maintenance (I&C), and Emergency Planning,⁴ etc.
 - I&C personnel instructed to obtain scratch plate data supporting the conduct of STP-557-3700
 - Engineering personnel will begin efforts to convert seismic data once on site.
 - Operations will contact the National Earthquake Information Center to obtain seismic magnitude information and confirmation of the seismic event.
 - Other information sources such as the USAR, Technical Specifications, and Technical Requirements Manual will also be reviewed as deemed necessary by operations.
 - Operators are dispatched to walk-down the plant with emphasis on key safety-related equipment.

Timeline Summary

The timeline begins with a seismic event being detected either by operable instrumentation or “felt” by operators. A basic premise in this scenario is that the station must pull the “scratch plates” to determine the magnitude of the event,

³ EN-OP-115, Conduct of Operations states in Section 4, Responsibilities, Sections (1) (e) that, “All Operators...Maintain a constant awareness of plant status and aggressively pursue the satisfactory resolution of abnormal conditions”. The Alarm Response Procedures guide operators in verifying abnormal conditions or changes in plant status, and then specify the appropriate subsequent actions or procedures.

⁴ OSP-0046 Section 4.3.1, “...following...a dynamic loading event...earthquake or seismic event,...OSM/CRS shall contact the Duty Manager...for analysis and actions as applicable by...Civil Structural...”

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thereby enabling a determination of Operating Basis Earthquake (.05 g) or Safe Shutdown Earthquake (.1 g).

Operators, upon detecting a seismic event, would respond by reviewing appropriate Alarm Response Procedures (ARP-680-002)⁵. This action is supported by prior operating experience and behaviors that are continually enforced during an operator's training on shift and in the simulator and is not unique to a seismic event response. It is expected that Operations would notify the Duty Manager in accordance with OSP-0046, Operations Notifications,⁶ and a request for additional resources would occur. Having either received a valid alarm or "felt" a seismic event, it is reasonable to conclude that operators would at least declare a Notice of Unusual Event (NOUE) which would begin the offsite notification process,⁷ if presented with an event the magnitude of an OBE/SSE.

River Bend Station's alarm response procedures (ARPs) would cause operators to refer to Emergency Implementing Procedure, EIP-2-001, Classification of Emergencies, and to request Engineering and Maintenance resources to perform Surveillance Test Procedure, STP-557-3700, Seismic Event Report. Moreover, an evaluation of impact to plant systems and structures would be conducted. Operations would dispatch personnel to walk down the plant observing for possible damage, paying particular attention to systems and components required to safely shutdown the plant and maintain it shutdown and would report observations to design engineering for evaluation when engineering resources arrive.

It is postulated that within approximately 15 minutes, requests for resources would have been made and personnel would begin traveling to the site. Based upon discussion with I&C, it is reasonable to expect that a qualified individual could be expected to arrive on site (assuming that those already on site are not qualified), within approximately one hour. In parallel, engineering resources would be traveling to the site and could be expected to arrive in approximately one hour as well.

⁵ EN-OP-115, Conduct of Operations states in Section 4, Responsibilities, Sections (1) (e) that, "All Operators...Maintain a constant awareness of plant status and aggressively pursue the satisfactory resolution of abnormal conditions". The Alarm Response Procedures guide operators in verifying abnormal conditions or changes in plant status, and then specify the appropriate subsequent actions or procedures.

⁶ OSP-0046 Section 4.3.1, "...following...a dynamic loading event...earthquake or seismic event,...OSM/CRS shall contact the Duty Manager...for analysis and actions as applicable by...Civil Structural..."

⁷ As additional information from instrumentation, offsite sources or plant inspections is available and evaluated, the event will be upgraded as appropriate.

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Upon arrival, I&C would be instructed to prepare for the performance of STP-557-3700 and other applicable STPs to restore seismic instruments to service. The technicians would be instructed to pull the "scratch plates" to determine whether or not an OBE or SSE occurred. Being qualified to perform this task, I&C would retrieve appropriate test equipment and procedures to accomplish the task (two sets of viewing equipment are on hand and it is assumed that one would be available). During this same period, engineering would be obtaining appropriate procedures (STP-557-3700 and Instrumentation Technical Manuals) and seismic calculations to evaluate the data obtained from the scratch plates (Calculations 201.130-124, Revision 01A and 201.130-168, Revision 0).

Using the STPs, it would be expected that the scratch plates⁸ from the following recorders would be retrieved:

- ERS-NBR2D
- ERS-NBR2E
- ERS-NBR2F
- ERS-NBR2G

The data retrieved from any one of these Triaxial Response Spectrum Recorders would be used to determine whether an OBE or SSE had occurred. Location of the recorders does not diminish the validity of their spectrums since all are installed and corrected for their location to accurately indicate OBE or SSE.

I&C technicians could be reasonably expected to provide scratch plate magnitude data in Gs to operations and engineering in approximately two and one half hours (includes reasonable response time). The seismic analysts (civil engineers) would interpret the data by looking for the suspect readings first and making an initial call relative to an OBE or SSE. Engineers would use the station's seismic analysis calculations and associated curves to complete this evaluation. This could be expected to occur within approximately one hour after being provided with the scratch plate data from I&C.⁹

⁸ It is assumed that I&C would obtain scratch plates from installed recorders and would (as detailed in equipment manual) protect and return plates for analysis by engineering as they are retrieved from the first recorder. Ultimately, all plates would be evaluated in accordance with STPs.

⁹ To completely read all four response spectrum recorders' data would take an elapsed time of approximately 3 to 4 hours. However, this quantity of data reduction would not be required to determine whether an OBE or SSE had occurred since the suspect values would be reviewed first.

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Conclusion

River Bend Station personnel could be expected to obtain the scratch plate results, interpret the results, and determine whether an OBE or SSE had occurred within approximately 3 ½ to 4 hours.

Provided in Attachment 2 is a flow path depicting the data retrieval and evaluation.

REQUEST No. 2

Discuss what information may be obtained from the National Earthquake Information Center (USGS) and the approximate time period to obtain it.

Discussion

River Bend Station personnel called the National Earthquake Information Center to discuss the following: 1) If an earthquake occurs, how long before magnitude information will be available, 2) Can an earthquake's impact be projected to the River Bend Station location? and 3) Can you provide conversions from Richter to Gs?

The seismologist responded by stating that for the region that River Bend Station is located in, most disturbances are so small that they would not necessarily flag them for monitoring (computer process). However, if an event was called in to the center, they could flag it and provide information in approximately 15 to 20 minutes. Regarding magnitude information and scale, he stated that generally for earthquakes they would have the information available online in about 15 to 20 minutes and that the magnitude is provided in Richter. He went on to state that projections could be done by using an available computer application on their website and it could be done sometime after the earthquake information was available for input (assume 15 to 20 minutes). With respect to converting Richter to Gs, he stated that they generally did not do that but we could contact his supervisor to discuss the request further¹⁰.

¹⁰ RBS System Training Manual contains a conversion chart used to convert Richter to acceleration in Gs. Therefore, this information would be available if accessed and could be used to approximate Gs for use in OBE/SSE determination from reading scratch plates.

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Conclusion

River Bend Station personnel have conversed with the National Earthquake Information Center on a number of occasions and have received varying responses with regard to the ability to convert Richter to Gs. This capability seems to reside in a very few individuals and may not be immediately available. However, regarding the ability to provide earthquake magnitude and locations, the information should be readily available (especially for an event of as historic significance as an OBE or SSE would be if it occurred at River Bend Station).

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Flow Path Depicting Data Retrieval and Evaluation
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