

April 15, 2008

MEMORANDUM TO: Richard P. Raione, Chief
Environmental Projects Branch 2
Division of Site and Environmental Reviews
Office of New Reactors

FROM: H. Brent Clayton, Chief **/RA/**
Environmental Technical Support Branch
Division of Site and Environmental Reviews
Office of New Reactors

SUBJECT: TRIP REPORT – FEBRUARY 28-29, 2008, READINESS
ASSESSMENT (T-2) VISIT FOR A COMBINED LICENSE
APPLICATION AT THE RIVER BEND STATION SITE

This report summarizes the staff's February 28 and 29, 2008, pre-application/readiness assessment (T-2) visit related to the environmental portion of a future combined license (COL) application for the River Bend Station site. Entergy has indicated its intent to submit a COL application for this site. Entergy selected the General Electric's "economic simplified boiling water reactor," or ESBWR, design for the proposed new nuclear station.

The purpose of this visit was to assess the applicant's readiness and its progress toward submitting a COL application by reviewing Entergy's draft environmental report (ER). The visit took place at the offices of Entergy's contractor, Black and Veatch, in Overland Park, Kansas. Enclosure 1 provides a list of attendees. Enclosure 2 is the agenda used during the visit. Enclosure 3 is a summary of the more significant issues that were discussed. Note that this assessment was conducted several months prior to the applicant's planned COL application date and the staff did not expect the environmental report to be fully developed at this stage. Furthermore, the applicant was aware of, and informed the U.S. Nuclear Regulatory Commission staff of many of the issues described in Enclosure 3. In summary, the staff did not identify any issues related to the ER that would indicate it would not be ready by the planned date of application. However, this was not a formal or comprehensive staff review and additional issues could be identified during the staff's formal review after the application is submitted.

The staff is planning a public outreach meeting on a date yet to be determined.

Project No.: 745

Enclosures: As stated

CONTACT: Andrew Kugler, NRO/DSER/RAP2
301-415-2828

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OFFICE	PM:DSER:RAP2:NRO	LA:DSER:RAP2:NRO	BC:DSER:RENV:NRO
NAME	AKugler	ARedden	HBClayton
DATE	04/09/08	04/07/08	04/ 15 /08

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Memo to Richard Raione from Brent Clayton dated April 15, 2008

SUBJECT: TRIP REPORT – FEBRUARY 28-29, 2008, READINESS ASSESSMENT (T-2)
VISIT FOR A COMBINED LICENSE APPLICATION AT THE RIVER BEND
STATION SITE

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List of Attendees – River Bend T-2 Readiness Assessment Visit

Location: Black and Veatch Offices, Overland Park, Kansas
February 28-29, 2008

Name	Affiliation
Larry Drbal	Black and Veatch
Ralph Brooks	Black and Veatch
Bryce Weinand	Black and Veatch
Brian O’Neil	Black and Veatch
Jay Reeder	Black and Veatch
Tony Buckelman	Black and Veatch
Sarah Howard	Black and Veatch
Lisa Fewins	Black and Veatch
Jason DeStigler	Black and Veatch
John Wynne	Black and Veatch
Brandon Richman	Black and Veatch
Bruce Boomer	Black and Veatch
Dusty Miller	Black and Veatch
Dan Churchman	Black and Veatch
Jessica Stephins	ENSR
Kurtis Schlicht	ENSR
Jim Eberwine	Goodwin & Assoc.
Robert Sauer	B&V/Excel
Billy Reid	B&V/Excel
Rick Buckley	Entergy
Dana Millar	Entergy
Jerry Burford	Entergy
Kenneth See	NRC
Andy Kugler	NRC
Philip Brandt	NRC
Michael Masnik	NRC
Richard Emch	NRC
Brent Clayton	NRC
Paul Michalak	NRC
Jessie Muir	NRC
Dan Mussatti	NRC
Steve Breithaupt	PNNL
Tom Secrest	PNNL
Amoret Bunn	PNNL
Mike Sackschewsky	PNNL

The following people were contacted by telephone on Friday, February 29, 2008 as part of the T-2 visit:

Name	Affiliation
Greg Johnson	Black and Veatch
Kyle Turner	McCallum-Turner
Susan Smillie	McCallum-Turner
Doug Schlugel	McCallum-Turner
Joe Sinodis	NAI
Myra Manning	NAI

River Bend Station T-2 Environmental Review Meeting Agenda

February 28, 2008

- 7:45 Coffee and Sign In at Black & Veatch Offices
- 8:00 Welcome and Introductions
- 8:15 Brief Overview of River Bend Project
- 8:30 Breakout to Technical Groups/Start environmental report (ER) Review (NRC)
- 12:00 Lunch
- 1:00 Breakout to Technical Groups – Continue ER review (NRC),
NRC begin meeting with corresponding applicant experts
- 4:45 End of Day Summary

February 29, 2008

- 7:45 Coffee and Sign In at Black & Veatch Offices
- 8:00 Status Summary
- 8:15 Breakout to Technical Groups - Continue ER Review as Needed (NRC),
NRC meet with corresponding applicant experts
- 12:00 Lunch
- 1:00 End of Day Summary
- 1:30 Adjourn

**Additional Information Summarizing the River Bend Station
Readiness Assessment Visit (T-2)
Location: Black and Veatch Offices, Overland Park, Kansas
February 28-29, 2008**

Overall, Entergy appears to be on track for gathering most or all of the needed data that will allow them to submit an adequate environmental report (ER). During the review several issues were identified that warrant attention by Entergy. The following sections describe the results of the visit.

General

One generic issue was identified – Entergy appeared to be under the impression that any reference that it cited would have to be made publicly available in the U.S. Nuclear Regulatory Commission's (NRC's) document management system. So instead of citing copyrighted journal articles and books, Entergy left many facts and statements un-attributed. NRC staff should be able to provide definitive guidance to applicants on this issue in the future.

Site Selection Process

The proposed plant would be a regulated plant subject to the regulations of the Louisiana Public Service Commission. Entergy's four candidate sites are the four operating nuclear power plants owned by Entergy in the region (River Bend, Grand Gulf, Waterford, and Arkansas Nuclear One). While Figure 9.3-1 indicates that Entergy used a process similar to that shown in Section 9.3 of the staff's Environmental Standard Review Plan (ESRP, NUREG-1555), the text provides little or no information regarding the identification of candidate areas or potential sites, or the process to narrow potential sites down to a smaller group of candidate sites. In addition, it appears that Entergy used judgment to eliminate from consideration any greenfield or non-nuclear brownfield sites. But this argument does not appear to be well-supported. In summary, the process as described in the ER does not appear to follow either ESRP Section 9.3 or the Electric Power Research Institute's siting guide (which is referenced by Entergy).

Alternatives (Other Than Site Selection)

Section 9.2.1 is supported by information regarding the structure of the Entergy power system from Section 8.1. However, it doesn't appear that the information in Section 8.1 is in sufficient detail to support Section 9.2.1.

Some of the sections related to alternative energy (such as 9.2.2.7) rely on information from the NRC's Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS, NUREG-1437). However, Entergy doesn't make a case to explain why the information (which is well over 10 years old) would apply here.

The explanation of the plant design power level for both coal (9.2.3.1) and gas (9.2.3.2) are unclear. The discussions appear to use a roughly 2000 megawatt electric (MWe) target, even though the nuclear plant will be around 1600 MWe.

In Section 9.4.2, regarding intake structures, there are no drawings and no information provided concerning alternative intake designs. Regarding the discharge, water supply, and water treatment, there is a small amount of discussion on some possible alternatives. But the discussion does not appear to make a strong case for the conclusion.

Need for Power

The Entergy Electrical System Planning Department prepares annual updates to the Strategic Supply Resource Plan, which evaluates the need for power over the next 10 years. This plan is provided to various local and state agencies but is not subject to approval by any regulatory body. Involvement by the Louisiana Public Service Commission is not likely to occur prior to the staff's issuance of its environmental impact statement for a combined license (COL). Entergy relied heavily on the need for power analysis it provided as part of the Grand Gulf early site permit application, and it estimated that there is about a 95-percent overlap for the two sites. Overall, Entergy has seen an annual demand growth of about 1.2 percent between 1994 and 2005, and growth of at least this much is anticipated from the present until any new reactor comes on line. The applicant provided relatively little data about demand side management programs or potential.

Cost-Benefit Analysis

Although the staff did not identify any significant issues with the overall cost-benefit analysis, the staff would expect a stronger basis to be provided for the assumptions and conclusions. The staff noted that the ER did not provide analysis about the availability of raw materials, and comparisons would be improved if all costs and benefits were put on a dollar basis where possible. In addition, Entergy's estimate of the cost of a new nuclear power plant uses the same numbers we've seen in all of the preceding applications. However, there are indications that many companies are raising their estimates of this cost in light of recent significant increases in the costs of materials. This recent information calls into question the older estimates.

Cultural Resources

The applicant appears to have completed the cultural resource work necessary to support the COL application. The draft ER did not include a description of the overall setting or the historical and cultural context, but this information was present in the report submitted to the State Historic Preservation Officer (SHPO), and could be easily included in the final ER. The applicant has complete phase I evaluations of the site, and has provided a description of the cultural resources found during the initial investigations. These results have been provided to SHPO, and it appears that the interactions with the SHPO have been thorough and complete. Procedures are being prepared by Entergy or are in place for the protection of historic and cultural resources (e.g., an unanticipated discoveries plan). Potentially affected Native American tribes have all been contacted. The potential for adverse view-shed effects on local historic properties was discussed. The impacts from a new plant may be significantly different from those of the existing plant because of the size of the natural draft cooling tower.

Meteorology, Radiological Impacts, and Accidents

Entergy recently replaced the computer system for the meteorological monitoring tower, a concern the staff had raised during the T-1 visit. However, the staff noted that the draft ER

doesn't describe the on-site monitoring program. In addition, questions remain about the quality of the past data from the 10-meter height instruments because of the proximity of trees and trailers to the tower. The quality of this data is of particular importance because the applicant's dose analyses are very close to the 10 CFR Part 50, Appendix I limits.

The staff raised a concern related to the calculations for occupational doses during construction because Entergy didn't use any measurements to support the calculations. Entergy noted that it was doing additional work on impacts related to the fuel cycle and that the new unit may require changes to its radiological environmental monitoring program.

Regarding severe accidents, the staff noted that Entergy relied heavily on the analysis in the NRC's Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437) as opposed to site-specific analyses. In addition, at the time of the visit there were no MACCS2 code runs to support the evaluation of severe accident mitigation alternatives.

Hydrology

The staff's primary concern in the area of hydrology is related to the level of documentation. Based on discussions with Entergy and its contractors, it appears that the necessary analyses are being performed. But the analyses are not well documented in the draft ER. For example, the staff would expect the figures and tables to be improved and better documented. In addition, the staff would expect supporting information to be added for statements in the draft ER about hydrologic/flood analyses. If the supporting information is being provided in another document (e.g., the safety analysis report), the staff expects the source to be referenced. The concern with the level of documentation is also applicable for the ground water characterization, discharges from storm water and construction dewatering, and water quality analyses. Regarding the last item, the staff would expect more documentation regarding the dilution ratios for total dissolved solids, Zinc and Chromium limits, and comparisons of water quality data in the Mississippi River upstream and downstream of the RBS.

The level of documentation for mixing zone analyses is a notable exception to the concern expressed above. However, some of the data being used for the analyses is not up to date (bathymetry) or is from another location on the river (velocity). The staff expects Entergy to provide a justification of the applicability of these data to the analyses. Sensitivity analyses may help to address the issue by looking at the range/bounds of the inputs.

Aquatic and Terrestrial Ecology

Entergy appears to be on track for being able to provide the necessary ecological information in its COL application, and it has produced additional information since the T-1 visit, such as salt drift calculations. However, there are a number of issues that warrant attention, including:

- The discussion of the site and vicinity in Sections 2.3 and 2.4 appears to be incomplete and lacks information typically expected to describe the site and vicinity. The description of on-site resources is also difficult to follow. While the terrestrial habitat maps appear to be adequate, the legends are missing and information on the map does not readily correspond to the text. The discussion of wetlands is difficult to follow because there is no complete discussion of water tributaries and bayous on-site and within the vicinity, thus the associated wetlands are difficult to understand. This makes it difficult to

understand the ecological resources and support the impact assessments for construction and operation.

- Intake and discharge structures are at approximately river mile (RM) 262 on the Mississippi River. Impingement and entrainment data are from a facility on RM 129.9. The relevance of this information to the River Bend site is not apparent. Entergy has not been able to acquire the data on impingement and entrainment from the Big Cajun plant across the river. However, Big Cajun will be renewing permits with the state shortly, and the impingement and entrainment studies may become public information at that point.
- Water bodies on-site are not clearly described. There are significant differences in the names of water bodies on-site in the hydrology and ecology sections.
- The discussion of the intake and discharge structures in Section 3 does not provide enough information to support the impact assessments for construction and operation.
- Different sections in the draft ER provide different numbers (ranging from 4 to 6) for the cycles of concentration. Resolution is needed to support the analysis of water quality impacts.
- Impacts to the Gulf sturgeon are not discussed in the draft ER. The staff notes that the Gulf sturgeon was identified for evaluation by the National Marine Fisheries Service during the evaluation of the early site permit for the Grand Gulf site, which is upstream of the River Bend site.
- Some issues that were identified during the T-1 visit have not yet been addressed. These include the limited nature of wildlife and plant surveys, the status of wetland jurisdiction determinations with the U.S. Army Corps of Engineers, and the lack of plans for pre- and post-construction wildlife monitoring.

Land Use, Socioeconomics, and Environmental Justice

The staff identified a concern that the analyses of impacts focuses very heavily on West Feliciana Parish (host to the site) and does not appear to include the expected level of analyses for other surrounding areas. While some of the socioeconomics analyses are well-supported by the baseline information described in Chapter 2, the analyses of other areas are more qualitative than would be expected. Some areas for which greater quantification would be expected include taxes, impacts to support services such as police and medical, and traffic. In some areas (e.g., use of local planning studies, consultations with “non-official” community representatives, and labor force assumptions), the staff did not see the expected level of supporting bases. The staff also reiterated a concern, identified during the T-1 visit, that the environmental justice impacts appear to be developed on a Parish-wide basis as opposed to the expected census block or census tract level.

Transmission Lines

The applicant has performed a “Route Selection Study” for a new transmission line. However, this study has not yet been integrated into the ER. The study was performed using information from geographical information systems, without making contact with state and local agencies or

walking down the route. Because the applicant is not going to be the transmission line owner/operator, this approach is likely what the staff can expect in the future. In addition, the staff recognizes that the recent change in the definition of construction in 10 CFR 51.4 will lead to significant changes in the type and depth of NRC review related to transmission lines. Entergy in essence plans to provide the staff with a representative transmission line route, recognizing that the actual route selected by the system operator may be different. To the extent additional information related to the impacts of the transmission lines can be addressed (e.g., additional information on how the right-of-way will be maintained), that information should be provided in the ER.