

August 14, 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 for Barry Zalczman/*
Environmental Technical Support Branch
Division of Site and Environmental Reviews
Office of New Reactors

SUBJECT: TRIP REPORT – JULY 8 - 10, 2008, READINESS ASSESSMENT
(COMBINED C-2 AND C-3) VISIT FOR A FUTURE COMBINED
LICENSE APPLICATION AT EXELON'S VICTORIA COUNTY SITE

This report summarizes the U.S. Nuclear Regulatory Commission (NRC) staff's July 8 - 10, 2008, pre-application/readiness assessment (C-2/C-3) visit related to the environmental portion of a future combined operating license (COL) application for the Victoria County site in Texas. Exelon has indicated its intent to submit a COL application on September 1, 2008, for the Victoria County site. Exelon has selected the Economic Simplified Boiling Water Reactor (ESBWR) design for two proposed new nuclear units. Exelon does not plan to request a limited work authorization.

The purpose of this visit was to assess the prospective applicant's readiness and its progress toward submitting a COL application by becoming familiar with the site-selection process and alternative sites and by reviewing Exelon's draft environmental report (ER). The visit took place at the applicant's representative's (Bechtel's) offices in Frederick, Maryland.

Enclosure 1 provides a list of attendees, separated for the C-2 (site selection and alternative sites review) and the C-3 (records and products assessment) activities. Enclosure 2 is the agenda used during the visit, and Enclosure 3 is a summary of the key issues the staff identified. This readiness assessment was conducted approximately 45 days prior to the applicant's planned COL application date. Furthermore, the applicant was aware of and informed the NRC staff of many issues described in Enclosure 3, especially those related to additional sampling studies that need to be performed. With the exception of the data from such sampling studies, the staff did not identify any issues related to the draft ER that would indicate it would not be ready by the planned date of the application. Exelon indicated that results from ongoing studies mentioned above will be submitted at a later date, which will be identified in the cover letter submitted with the COL application. This readiness assessment was not a formal or comprehensive acceptance review, and additional issues could be identified during the staff's formal acceptance review after the application is received.

CONTACT: Harriet Nash, NRO/DSER/RENV
301-415-4100

H. Clayton

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The public outreach meeting occurred on Thursday, August 7, 2008, at the Community Center in Victoria, Texas.

Project No. 761

Enclosures:

As stated

R. Raione

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Enclosures:
As stated.

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**List of Attendees – Victoria Readiness Assessment
C-2: Site-Selection Process and Alternative Sites; July 8, 2008**

Name	Organization
Harriet Nash	NRC
Andy Kugler	NRC
Paul Michalak	NRC
Dan Mussatti	NRC
Michael Willingham	NRC
Jill Caverly	NRC
Rebekah Krieg	PNNL
Michelle Niemeyer	PNNL
Mark D Williams	PNNL
Amoret Bunn	PNNL
Janelle Downs	PNNL
Ken Ainger	Exelon
Joshua Trembley	Exelon
Thomas P. Mundy	Exelon
Chris Kerr	Exelon
Daniel Milroy	Exelon
Joe Williams	Exelon
Desmond Chan	Bechtel
Ken Clough	Bechtel
Ping Wan	Bechtel
Steve Kline	Bechtel
Louis Kummer	Bechtel
Myron Anderson	Bechtel
Bill Heinmiller	Bechtel
Alice Carson	Bechtel
Kyle Turner	McCallum-Turner
Doug Schlagel	McCallum-Turner
Susan Smillie	McCallum-Turner
Steve Connor	Tetra Tech NUS
Emily McRee	Tetra Tech NUS
Lisa Matis	Tetra Tech NUS
Anne Lovell	Tetra Tech NUS

**List of Attendees – Victoria Readiness Assessment
C-3: Records and Products Assessment; July 9 - 10, 2008**

Name	Organization
Harriet Nash	NRC
Andy Kugler	NRC
Paul Michalak	NRC
Mark Tonacci	NRC
Dan Mussatti	NRC
Michael Willingham	NRC
Jill Caverly	NRC
Pat Vokoun	NRC
Jessie Muir	NRC
Michelle Moser	NRC
Rebekah Krieg	PNNL
Eva Hickey	PNNL
Michelle Niemeyer	PNNL
Mark D Williams	PNNL
Amoret Bunn	PNNL
Janelle Downs	PNNL
Ken Ainger	Exelon
Joshua Trembley	Exelon
Thomas P. Mundy	Exelon
Chris Kerr	Exelon
Daniel Milroy	Exelon
Joe Williams	Exelon
Desmond Chan	Bechtel
Ken Clough	Bechtel
Ping Wan	Bechtel
Steve Kline	Bechtel
Alice Carson	Bechtel
Kit Ng	Bechtel
Ken Jha	Bechtel
Steve Routh	Bechtel
Ellen Mussman	Bechtel
Girish Patel	Bechtel
Bill Gottobrio	Bechtel
Garrett Day	Bechtel
Owais Abdulghani	Bechtel
Craig Talbot	Bechtel
Ron Gibson	Bechtel
Steve Connor	Tetra Tech NUS
Emily McRee	Tetra Tech NUS
Lisa Matis	Tetra Tech NUS
Anne Lovell	Tetra Tech NUS
Krista Dearing	Tetra Tech NUS
Kathy Roxlau	Tetra Tech NUS
Pixie Baxter	Tetra Tech NUS
Larry Bryan	Tetra Tech NUS
Phil Moore	Tetra Tech NUS

**Victoria Readiness Assessment
Combined C-2 and C-3
Location: Frederick, Maryland
July 8 - 10, 2008**

Tuesday, July 8

- 0730 Meet in Bechtel offices
- 0800 Welcome and Introductions
 - Opening Remarks
 - Meeting Logistics and Resources
- 0830 Status of Environmental Report Preparation
- 0915 Site Selection Presentations and Discussions (Kyle Turner)
- 1130 Lunch
- 1215 Continue Site Selection Discussion
- 1300 NRC/PNNL team reads through ER sections
- 1530 Discussions in Breakout Teams
- 1600 Full Team Discussion
- 1730 Adjourn

Wednesday, July 9

- 0730 Meet in Bechtel offices
- 0800 Review of logistics for additional attendees
- 0815 NRC continue review of draft ER sections
- 1130 Lunch
- 1215 Continue review of draft ER sections/Breakout Sessions
- 1630 NRC team summarizes thoughts
- 1720 Overview of activities and organization of next day

Thursday, July 10

- 0730 Meet in Bechtel offices
- 0800 NRC continue review of draft ER sections/Breakout sessions
- 1300 NRC team summarizes thoughts
- 1330 Close-out meeting and concluding remarks
- 1400 Adjourn

**Additional Information Summarizing the NRC's Readiness Assessment Activities
(C-2/C-3) for Exelon's Victoria County Site
July 8 - 10, 2008**

Summary of C-2: Site Selection and Alternative Sites Review

For the site-selection process, Exelon developed a proprietary task plan (ARP1 TP 001), which the staff reviewed. The task plan was derived from the Electric Power Research Institute's (EPRI) siting guidance and contains information related to the objectives of the site-selection study, including financial and scheduling information.

Based on a merchant plant business plan, the applicant defined the region of interest (ROI) as a 67-county sub-region in the eastern portion of the Electric Reliability Council of Texas (ERCOT) region. Within the ROI, the applicant first identified candidate areas based on water availability, proximity to load center, and transmission access. Within the candidate areas, the applicant identified potential sites, which were narrowed down to candidate sites from which the proposed and alternative sites were selected.

Potential sites were identified and either selected to be candidate sites or eliminated while the search for additional potential sites was still ongoing. To identify potential sites Exelon used several search sources: the Governor's Economic Development and Tourism Division (responses to a solicitation letter sent by the Governor's Office), county economic development offices, real estate brokers, and individual property owners. Later in the site-selection process, the applicant screened the ROI for areas that were in close proximity to water, electrical loads, transmission, infrastructure, and workforce while remote from population centers. Exelon sent real estate brokers into those refined candidate areas searching for potential sites based on water availability and minimum acreage; the draft environmental report (ER) does not describe this search process in detail. In addition, Exelon considered two existing nuclear sites (Comanche Peak and South Texas Project) and eliminated them based on current plans for new units at these sites.

Exclusionary criteria (based on water availability, site acreage, and transmission access) were applied to eliminate potential sites generated by the response to the Governor's Office's letter, but those exclusionary criteria were not used to eliminate potential sites that were identified later during the search. Therefore, at least one candidate site does not meet all exclusionary criteria because it was identified as a potential site later in the process. Also later in the process, avoidance and suitability criteria (based on different factors that were not weighted) were applied to analyze 16 potential sites that had not already been eliminated using the earlier exclusionary criteria. However, the draft ER provided only a brief couple of sentences (without comparative tables) describing why individual potential sites were eliminated using avoidance and suitability criteria; not all reasons discussed with the applicant were evident in the draft ER. Rather than waiting until all the potential sites were identified and then comparing them, the applicant generated internal memoranda or e-mails as the potential sites were identified to document whether to further consider some sites. At various stages throughout the process, 22 total potential sites were identified, and 17 of those were eliminated resulting in 5 candidate sites.

The five candidate sites that were identified by the above process were:

- Buckeye
- Green (Matagorda)
- McCan (Victoria)
- Alpha
- Bravo

Exelon hired McCallum-Turner to conduct site selection based on the five candidate sites. McCallum-Turner assigned weighting factors to selection criteria and evaluated the five sites against the weighted criteria. The McCallum-Turner site-selection report evaluates Buckeye, Green, and McCan sites in sufficient detail but does not describe why Alpha and Bravo sites were not selected. The draft ER documents five candidate sites but does not provide sufficient detail regarding elimination and ranking of the five candidate sites. Overall, regarding the site-selection process, the U.S. Nuclear Regulatory Commission (NRC) staff is concerned with the fact that not all sites were considered using the same site-selection criteria as well as the lack of detail and documentation in the draft ER regarding the elimination of some sites.

Regarding orientation for the alternative sites, the NRC staff visited the Green site earlier as documented in the C-1 trip report, and Exelon provided photographic tours of the other sites as part of the C-2 readiness assessment. The draft ER's evaluations of impact levels are inadequate or inconsistent among sites and among disciplines. For example, information regarding wetlands is insufficient for determining impact levels at all alternative sites, and socioeconomic analytical methods for the proposed site differed from those for the alternative sites. Two alternative sites were evaluated using slightly different criteria to assign impact levels than were used for the other sites. Some impact evaluations were based on whether permits could be obtained rather than using the definition for impact as given in the Environmental Standard Review Plan (ESRP) (NUREG-1555). Finally, the draft ER does not cite references regarding species information at the alternative sites. However, the applicant appears to be on track to resolve these issues by the planned submittal date.

Summary of C-3: Records and Products Assessment

The amount of progress Exelon made since the C-1 visit in February 2008 has been extensive. Overall, the applicant seems to be on track with the draft ER, but some changes are still expected. Additionally, the recommended period of sampling for several disciplines, such as aquatic ecology, terrestrial ecology, groundwater, and meteorology, will not have been completed, or will not be completed in time to include in the ER. The applicant plans to submit these data, possibly as a supplement to the ER, as soon as the analyses are completed.

A summary of issues and concerns by subject area is provided as follows.

Alternative Cooling System Designs

This section appeared to be on track; however, in portions of the section, the basis for not including an alternative design was not explained in sufficient detail. Also, it is not clear why specific technologies were not considered when the water source was the barge canal but were considered when alternative water sources were identified.

Need for Power

No issues were discussed at this stage. The applicant appears to be on track for submittal this fall.

Cost-Benefit Analysis

Exelon has not monetized its costs and benefits in the draft ER. Exelon appears to be on track to include much of this in the application and may send supplemental information later.

Cultural Resources

The applicant submitted the Phase 1A report, which defined the areas of potential effects (APEs), to the Texas Historical Commission (THC) in April, and the THC met with them in May to discuss the purpose of the APEs and the Phase 1B methodology. The THC concurred with the determination of the APE and they also concurred with the Phase 1B methodology. The Phase 1B study was conducted between May 12 and June 17, 2008; Exelon anticipates submitting results to the THC in the fall of 2008 and to NRC after submission of the ER.

The Phase 1A and Phase 1B studies for the offsite areas still need to be completed. The offsite field work is scheduled to start before the end of July 2008. The applicant is not including the historical context for the Phase 1B report in the ER, but such context is discussed in a report to the THC that will be available to the NRC.

Exelon has not contacted Native American tribes but has prepared letters to send, and the applicant has received information from the THC.

Meteorology/Air Quality

All related items appeared to be discussed in the draft ER so no further discussions were held for this subject area. Although the draft ER discusses only 10 months of data, one full year of data collection has been completed, and the analysis of the entire 12 months will be available in the ER submitted this fall. In addition, severe weather data have been compiled, and regional data from the Victoria County airport were obtained to verify the data collected on site. The applicant appears to be on track for submittal of this section.

Hydrology

Monthly water level monitoring data were available in the draft ER from October 2007 to May 2008 for some groundwater wells. Data submitted for wells monitored between June and October 2008 will be submitted after the application has been received. Monitoring at some wells began later; therefore, the last data will be obtained in February 2009. The draft ER contains results of two rounds of water quality monitoring data for some of the onsite wells (approximately nine) spaced six months apart (November 2007 and May 2008). The applicant stated that there were no plans for additional groundwater quality measurements.

The applicant developed a Groundwater Modeling System (GMS) model (MODFLOW) for the site that it is using for cooling pond design (e.g. use of liners, leakage), environmental impact conclusions (e.g. need for dewatering around the power block), and onsite groundwater travel times. The draft ER only contains a brief description of the model, but the applicant plans to provide a detailed description of the model in the Final Safety Analysis Report or in an appendix. The draft ER lacks sufficient detail on the CORMIX modeling used for thermal plume mixing simulations.

The draft ER does not contain updated information on the amount of subsidence in this part of Victoria County. The most recent data cited in the draft ER are from the early 1900s up to the 1973. This is a concern because there are oil and natural gas wells located on and around the site. The applicant mentioned that the plan is to decommission the on-site oil and gas wells. There are several small inconsistencies between the sections in the draft ER for many of the hydrologic details (e.g. size and volume of the reservoirs, estimated annual precipitation collected in cooling basin). A detailed map showing the route and pipelines used for supply water from the point below the Guadalupe/San Antonio River to the on-site reservoirs is not included in the hydrology sections in the draft ER. More details are needed to support the conclusions regarding the National Pollutant Discharge Elimination System permit and on the Best Management Practices.

Aquatic Ecology

Consultation with other agencies on ecological resources for preconstruction activities still seems to be limited for the extent of the activities that are proposed. Letters were sent to agencies for information about occurrence of threatened or endangered species; however, the letters may not have stated the upcoming activities that would take place without NRC consultation. Only National Marine Fisheries Service had responded to date, and they indicated that they would not need to be involved further.

Exelon plans to use the Port of Victoria for offloading equipment. No dredging is planned for barge canal, which will be the location for moving heavy equipment during construction and will be the location for discharge of cooling pond effluent. The U.S. Army Corps of Engineers (USACE) is responsible for managing the dredging of the canal and has a designated dredge spoils area in their Operations and Maintenance Plan.

Water for the cooling pond would be obtained through the Guadalupe-Blanco River Authority (GBRA) canal system. It is unclear whether impingement and entrainment are being evaluated at the point where water flows from the Guadalupe River into the GBRA canal system (on the other side of the salinity barrier) or at the point of the new intake structure on the GBRA canal. This would affect the Clean Water Act Section 316(b) permit.

The description of aquatic resources in the draft ER includes results of monitoring from the last three to six months. No data for benthic macroinvertebrates, ichthyoplankton, or aquatic vegetation are discussed in the draft ER. The application will be received with only two seasons (six months) of onsite aquatic data. The additional six months of data will be submitted after the application has been received.

Terrestrial Ecology

Results of small mammal and herpetological surveys were not yet available for this version of the draft ER but are planned to be included in the application. Wetlands characterization was completed and included in the ER, but no formal USACE delineation will be available for inclusion in the draft ER. Additional surveys were planned for late summer sampling of birds.

Requests for species occurrence information were sent to U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD). Consultation with other agencies on ecological resources for preconstruction activities seems to be limited for the extent of the activities that are proposed. The applicant was aware of an agreement among USFWS, TPWD, and the landowner to manage vegetation for suitable habitat for the Federally endangered Attwater's greater prairie-chicken but assumed that no experimental releases of birds had taken place on the property. The applicant will follow up with agencies regarding the possible presence of the Attwater's greater prairie-chicken in the vicinity.

Socioeconomics and Environmental Justice

The draft ER describes a six-county region of interest (ROI) using some conservative assumptions, which might not be representative of where the construction and operations workforce would actually live. Most data are at the ROI level, but the ER also includes county-level discussions. Discussions on city-level impacts for Victoria are absent in some sections. The 2000 census was used as a basis and has been augmented with 2006 data. There are small inconsistencies among chapters 2, 4 and 5. Exelon appears to be on track to fix these inconsistencies before submittal.

Land Use

The applicant is now planning on using the existing barge dock at the Port of Victoria, thus the heavy haul road would be about a mile longer than previously planned. The applicant has talked to the Port Authority but has not performed a detailed engineering study yet. It appears this section will be complete at the time the application is submitted.

Sometime in the second half of 2009 Exelon will make the decision whether to build Victoria County Station, which will dictate whether the land is purchased. The applicant has also initiated discussions to obtain the mineral rights to the site.

Transmission Lines

American Electrical Power (AEP), the owner of the future transmission lines, will be responsible for the certification process for the final corridor with the State of Texas. All the information currently available related to the impacts on the transmission line corridor is from a desk-top analysis. The schedule for the AEP's review has not yet been determined. Further, at this point, AEP would not commit to the routing. As a result, Exelon contracted Photo Science to perform a macro-corridor study, which addresses all lines except the Cholla line that would use the existing corridor. First, a macro-corridor is identified based on interconnections and a geographic information system with three types of layers – buildings, environmental concerns (parks etc), and engineering (avoids lakes, reservoirs etc). The next step is a weighting process regarding potential for avoidance areas (cultural, ecological, urban, etc). The result is a preferred route through a three-mile-wide macro-corridor. Exelon provided the report to the AEP and is confident AEP results will be similar to those of the macro-corridor study. Regardless, the applicant would need a process to address the concerns that are in the ESRP.

Radiological Impacts, Uranium Fuel Cycle, and Accidents

Review of the sections for impacts to construction workers and impacts to the public and biota indicated that the analysis appeared to be adequate; however, the detail necessary to address all of the issues in the ESRP on these sections is not all available in the draft ER. Discussions were held with the applicant to ask questions regarding the details that were missing in the draft ER. The same comments are true for the detail on the radiological waste systems and the environmental monitoring. The uranium fuel cycle discussion in the draft ER appears to be complete. Regarding accidents, there were questions regarding the source term in the design control document and the source term used for accident analysis.

Non-radiological Waste)

Some permits, such as those for air and hazardous waste, are not mentioned in the non-radiological section but are mentioned in Table 1.2-1. Exelon plans to use a municipal solid waste landfill, but there is no indication of whether the landfill is capable of taking waste from the Victoria County site. Similarly, the draft ER does not include estimated amounts of solid, hazardous wastes and whether that landfill is capable of accepting the waste.

Cumulative

The cumulative impacts section was not completed in time for the C-3 readiness assessment. The applicant verbally provided the NRC team with some examples of activities to be included in the cumulative impact analysis, and the NRC staff asked about inclusion of a few more items.

Conclusion

The applicant has made significant progress since the C-1 trip in late February and expects to be on target for a September 1, 2008 submittal. Exelon indicated that there are several areas where the full amount of data recommended by the ESRPs (NUREG-1555) will not be available, and it plans to submit these data, possibly as a revision to the ER, after the analysis has been completed. The areas where data will be missing at the time the applicant proposes to submit the ER include onsite and offsite cultural resources, two seasons of sampling for aquatic and terrestrial ecology, and 3-4 months of groundwater well samples for some wells and 9-10 months of samples for others.

A total of 48 of 57 sections of the draft ER were made available during the C-3 readiness assessment. Exelon anticipates completing the remaining sections by September 1, 2008. The sections related to cumulative impacts were not complete as was the separation of the preconstruction activities and impacts from the construction activities and impacts. The cumulative impact sections will be submitted with the ER; however, the separation of the preconstruction and construction activities and impacts will likely be provided in response to a request for additional information.

With exception of the ongoing data collection and results that will be submitted after the COL application, the applicant appears to be on schedule for the planned COL application date of September 1, 2008. However, readiness assessment activities are not as comprehensive as the formal acceptance review so additional issues could be identified after the application is received.