

May 20, 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 25 - 27, 2008, READINESS
ASSESSMENT (C-1) VISIT FOR A FUTURE COMBINED
LICENSE APPLICATION AT THE EXELON-VICTORIA COUNTY SITE

This report summarizes the U.S. Nuclear Regulatory Commission (NRC) staff's February 25 - 27, 2008, pre-application/readiness assessment (C-1) visit related to the environmental portion of a future combined license (COL) application for the Victoria County site. Exelon has indicated its intent to submit a COL application for this site. Exelon has selected the Economic Simplified Boiling Water Reactor (ESBWR) design for the proposed new nuclear station.

The purpose of this visit was to assess the applicant's readiness and progress toward submitting a COL application; the visit also allowed the NRC staff to begin gathering information regarding the applicant's plans for the COL application and to become familiar with the site. The visit took place at the Howard Johnson Plaza and Convention Center in Victoria, Texas. In addition, the NRC staff visited the proposed Victoria County site and alternative site located in Matagorda County, Texas, and toured parts of the canal system with the Guadalupe-Brazos River Authority about 15 miles away from the proposed Victoria County site. NRC staff also participated in off-site discussions with the Texas Historical Commission, Victoria County officials, Victoria Economic Development Corporation, Victoria Salvation Army, Refugio School District, and Greg Spears Realty.

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 NRC staff of some of the issues described in Enclosure 3. NRC staff did not review any information regarding radiological issues and accidents. Exelon faces challenges in the area of data collection, analysis and external agency coordination necessary for the applicant to meet its September 1, 2008, application submittal date. However, Exelon believes they will be able to submit an acceptable environmental report by September and provide supplemental information later.

CONTACT: Harriet Nash, NRO/DSER/RENV
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R. Raione

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The next readiness assessment visit, a combined C-2 and C-3 trip, is scheduled for the week of July 7, 2008, in Frederick, Maryland at the applicant's contractor's offices. The public interface meeting has not been scheduled yet.

Project No. 761

Enclosures:
As stated

R. Raione

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ADAMS ACCESSION NO.: **ML081140478 *See Previous Concurrence**

OFFICE	PM:DSER:RENV:NRO	LA:DSER:RAP1:NRO	BC:RENV:NRO
NAME	HNash*	ARedden*	HBClayton
DATE	04/29/08	04/24/08	05/20/08

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List of Attendees – Victoria County Readiness Assessment Visit

NAME	AFFILIATION
Ken Ainger	Exelon
David Distel	Exelon
Joe Williams	Exelon
Joel Bauer	Exelon
Joshua Trembley	Exelon
Tom Mundy	Exelon
Chris Kerr	Exelon
Dan Milroy	Exelon
Christine Kropp	Exelon
Steve Conner	Tetra Tech NUS
Phillip Moore	Tetra Tech NUS
Larry Bryan	Tetra Tech NUS
Kathy Roxlau	Tetra Tech NUS
Anne Lovell	Tetra Tech NUS
Lisa Matis	Tetra Tech NUS
Pixie Baxter	Tetra Tech NUS
Perry Samothrakis	Bechtel
Kit Ng	Bechtel
Larry Young	Bechtel
Ken Clough	Bechtel
Ping Wa	Bechtel
Desmond Chan	Bechtel
Mark Carroll	Murray & Trettel
Pat Fagan	Land Owners representative
Harriet Nash	NRC
Philip Brandt	NRC
Michael Willingham	NRC
Thomas Galletta	NRC
Andy Kugler	NRC
Dan Mussatti	NRC
Jessie Muir	NRC
Paul Michalak	NRC
Brent Clayton	NRC
Nebiyu Tiruneh	NRC
Janelle Downs	PNNL
Amoret Bunn	PNNL
Katie Cort	PNNL
Mike Sackschewsky	PNNL
Tom Secrest	PNNL
Steve Breithaupt	PNNL
Tara O'Neil	PNNL
Van Ramsdell	PNNL

Agenda – Victoria County Readiness Assessment Visit
Monday, February 25, 2008

Time	Activity	Lead	Remarks
0730 - 0800	Coffee and Sign in		<ul style="list-style-type: none"> Continental breakfast Suggested NRC donation: \$10 for day (breakfast and lunch)
0800 –0830	Welcome and Introductions	Exelon - Leadoff by Ken Ainger	
0830 - 0900	Project and Site Overview	Exelon - Presentation Ken Ainger	Handouts will be provided
0900 - 0915	Break		
0915 - 0945	Environmental Report Approach and Status	Exelon - Presentation by Joshua Trembley	<ul style="list-style-type: none"> NUREG 1555 Revised ESRP sections issued for use and comment R-COLA Lessons learned Government / community interactions
0945 - 1030	Environmental Site Characterization Process	Bechtel / TTNUS - Presentation by Ping Wan and Steve Connor	Site Characterization Program: <ul style="list-style-type: none"> Meteorological Hydrological Chemical Cultural Ecological Wetlands
1030 – 1100	Status of Federal, State, and local permitting actions	Exelon - Presentation by Joshua Trembley	<ul style="list-style-type: none"> Approval/Permit/Consultation list Summary of agency discussions Summary of permitting actions taken
1100 - 1115	Break		

Agenda – Victoria County Readiness Assessment Visit
Monday, February 25, 2008 (Continued)

Time	Activity	Lead	Remarks
1115 - 1130	Site Safety Brief	Bechtel – Safety Briefing by Joe Cowhill	
1130 – 1430	General Site Tour (Lunch will be provided on the tour)	Exelon	<u>Tour will include:</u> <ul style="list-style-type: none"> • Met tower • Power block area • Monitoring wells • Wetland area and view to Lynn Lake area (if accessible) • Portable toilet facilities will be available
1430 - 1630	Focused Tour Groups / On-site Breakout Sessions		<ul style="list-style-type: none"> • <u>Group 1:</u> wetland and ecology Site Walk • <u>Group 2:</u> observe cultural resources field work • <u>Group 3:</u> met tower visit
1430 - 1615	Breakout Sessions at Conference Center (See page 4 of the agenda for room assignments)	All	<ul style="list-style-type: none"> • Energy Alternatives / Need for Power • Hydrology/Water Use • Socioeconomics/Land Use/Environmental Justice
1615 - 1630	Break		
1630 – 1715	Alternative Site Selection Process, Need For Power, and Transmission Lines	Exelon - Presentation by Tom Mundy and Chris Kerr	<ul style="list-style-type: none"> • Process used to define and screen the alternative sites • What sites will be defined as alternatives • Preliminary look at transmission corridors
1715 - 1730	Overview of 2/26 Activities	Exelon – Discussion led by Joshua Trembley	Schedule for: <ul style="list-style-type: none"> • Technical Breakouts • Specialty Tours • NRC Meetings with Officials

Agenda – Victoria County Readiness Assessment Visit
 Tuesday, February 26, 2008

Time	Activity	Lead	Remarks
0730 - 0800	Coffee and Sign in		<ul style="list-style-type: none"> Continental breakfast Suggested NRC donation: \$10 for day (breakfast and lunch)
0800 –0815	General Discussion / Follow Up from Day One	Exelon / NRC	
0815 - 1030	Breakout Sessions (See page 5 of the agenda for room assignments)	All	<ul style="list-style-type: none"> Alternatives Sites Cultural Resources Meteorology/Air Quality
1030 - 1045	Break		
1045 - 1215	Breakout Session Report Out	NRC / Exelon	About 15 minutes per Session, led by NRC / PNNL participants
1215 – 1600	<ul style="list-style-type: none"> GBRA Canal Tour NRC meetings with officials Lunch provided to take 	Exelon	<ul style="list-style-type: none"> <u>Group 1</u>: GBRA canal system tour (meet at intersection of 35 & 185) <u>Group 2</u>: NRC arranged meetings with officials
1600 - 1630	Follow Up from Day Two / Overview of 2/27 Activities	Exelon	Schedule for additional, if necessary: <ul style="list-style-type: none"> Specialty Tours NRC Meetings with Officials
1630 - 1715	Feedback and Follow-up Actions	NRC	Discuss observations / suggestions and timing and function of second NRC environmental site visit
1715 - 1730	Concluding Remarks	Exelon	Note: this is the end of the Site Visit for those not planning to attend the Matagorda County Site Visit on 2/27

Agenda – Victoria County Readiness Assessment Visit
 Wednesday, February 27, 2008

Time	Activity	Lead	Remarks
0700 - 0730	Coffee and Continental Breakfast		<ul style="list-style-type: none"> • Continental breakfast • Suggested NRC donation: \$5
0730 - 1100	Additional site tours requested by NRC	Exelon	
0730 - 1030	Matagorda County (secondary site) visit	Exelon	
1030 - 1100	Concluding Remarks and Wrap Meeting at Matagorda Site	Exelon	<p>Approximate travel time from Matagorda Site to:</p> <ul style="list-style-type: none"> • Victoria Conference Center or Airport (1.5 hrs) • Houston Hobby Airport (2.25 hrs) • Houston Bush Airport (2.5 hrs) • Austin Airport (3 hrs) • San Antonio Airport (3.5 hrs)

**Additional Information Summarizing the Victoria County Site
U.S. Nuclear Regulatory Commission
Environmental Staff Readiness Assessment Visit**

The overall issue identified is that there does not appear to be enough time for Exelon to perform the data collection and analysis that it has proposed to include the full set in its combined operating license (COL) application planned for September 1, 2008. In general, Exelon appears to be aware of the requirements for its environmental report (ER) and has initiated appropriate actions, but in several areas such as meteorology and aquatic ecology, the period of sampling will be shorter than that recommended in the U.S. Nuclear Commission (NRC) Regulatory Guide 4.2 or in the Environmental Standard Review Plan (ESRP; NUREG-1555), and in other areas the proposed schedule appears to be ambitious considering the amount of work still to be done. A summary of issues and concerns by subject area is provided below.

Alternative Energy Generation

Exelon has evaluated alternative generation technologies, and noted that 8 of 11 planned new coal plants in Texas have been cancelled recently due to environmental concerns. Even so, supercritical pulverized coal and natural gas are the alternatives that will be examined in most detail as alternatives to nuclear generation. Coal and biomass-based Integrated Gasification Combined Cycle also are being evaluated. It appears that Exelon has taken renewable sources seriously in its evaluation of alternatives. Wind energy is showing significant growth, mainly in west Texas, but it is not likely to provide a sufficient amount of base-load power to meet the expected needs and would require a large investment in transmission line construction to get the power to where it is needed. West Texas also has good solar resources, but these are less developed. Off-shore wind power would be regulated by the State of Texas – everywhere else it falls under the U.S. Mineral Management Service. Biomass and fuel-cells were discussed. Demand-side management (DSM) is voluntary in Texas and is not seen as a viable option by the Electric Reliability Council of Texas (ERCOT), and the State feels that the market for DSM is near saturation. The deregulated environment makes DSM programs hard to implement. In general, it appears that Exelon is on track regarding the proposed schedule in this area.

Alternative Site-Selection Process

The staff raised some concerns with the process Exelon used, as the staff understands it. For example, the initial site-identification process does not appear to have been very systematic, and it seems possible that good site locations in the region of interest (ROI) could have been missed. In addition, because of the way the sites were “self-identified” by owners or economic development agencies, a number of the “potential sites” were clearly unsuitable. Once Exelon got past the step of identifying potential sites, it does appear that they initially followed the process described in the Electric Power Research Institute (EPRI) siting guide. In fact, their detailed analysis led them to choose the Victoria County site when it was not their preferred site earlier in the process. The alternative site-selection process will be discussed in greater detail during the C-2/C-3 readiness assessment activity in July 2008.

Need for Power

The proposed facility would operate as a merchant plant and would serve the Houston, Austin, San Antonio, and Corpus Christi areas. ERCOT would develop an integrated resource plan during its approval process for the plant. In general, it appears that Exelon is on track regarding the proposed schedule in this area.

Cultural Resources

With concurrence from the State Historic Preservation Office (SHPO), Exelon developed a phased approach to identify cultural resources located on the property. The current 1(a) phase consists of characterizing the soil and geology of the area to determine where sites may be located. They are in the preliminary stages of cultural resource surveys and literature review and have had a meeting with the SHPO. Issues identified include: private land – no previous cultural resources surveys have been conducted; the farm, the area, and the McFaddin family are all historically significant; and one of the oldest prehistoric cemeteries known in the United States is located on the property. Exelon is very early in the process of identifying cultural resources and assessing impacts and mitigation, but in general the approach towards cultural resources and working with the SHPO meets the ESRP standards. However, it will probably take 6 to 12 months to collect the information and resolve any issues associated with defining the area of potential effect and assessing any impacts from construction and operation that may occur.

Meteorology

Exelon has set up a meteorological tower on site, it is well instrumented, and the data recovery and storage procedures are good. There are no obvious problems related to the siting of the tower, the meteorological measurements, or data processing. However, Exelon will not have one year of meteorological data for the Victoria site until the end of June 2008. The short time between the end of the data collection period and the planned date for submission of the COL application (September 1, 2008) will make adequate data validation and analysis, preparation of input to various sections of the application including the ER, and production of a quality document a challenge.

Hydrology

The proposed system design indicates that the reactors would be cooled using a 4800-acre cooling reservoir, with make-up water provided by the Guadalupe-Blanco River Authority (GBRA), which would ultimately get the water from the Guadalupe River. GBRA has the senior water right in the Guadalupe River. Exelon would also construct a separate, but immediately adjacent, reservoir for GBRA for water storage. The intake structure would be located on the GBRA canal system and would be shared between the plant and GBRA for use in supplying water to both the plant's cooling reservoir and the proposed adjacent GBRA reservoir. Clean Water Act 316(b) intake issues are still being determined; the location of such regulation for the proposed system is unclear as to whether it would be at the diversion within the canal system or at the intake for make-up water to be transferred to the reservoir.

Although Exelon had four months of hydrological data at the time of the visit, there were no documents available to indicate at what stage Exelon is regarding data analyses. The primary concern is that there may not be enough time to perform the proposed data collection and analysis prior to proposed submittal of the COL application on September 1, 2008. Issues to follow up on in future readiness reviews include:

- Stormwater impacts during construction of the cooling reservoir and operation of the plant,
- Dewatering during construction,
- Discharge impacts especially in the relatively quiescent waters of Linn Lake and Kuy Creek, and even the Guadalupe River,
- Effect of the cooling reservoir on regional groundwater, especially with all the gas production wells in the proposed footprint of the cooling reservoir, and
- Intake structure design and how 316(b) regulations are to be addressed.

Aquatic Resources

The site construction plans include removal of numerous wetlands and perennial streams, construction of outfalls to waterways, and a new intake structure. Exelon had just begun to characterize the affected aquatic resources to determine the extent of the changes to the structure and function of these resources. NRC guidance, such as Regulatory Guide 4.2 and NUREG-1555, suggests results of one year of aquatic monitoring be included in the ER. Therefore, if Exelon submits a COL application in September 2008, the ER will not have the amount of aquatic monitoring data identified in NRC guidance documents. At the time of the visit, the subcontractor for aquatic monitoring had completed only one or two sampling events on the Guadalupe River, and the sampling design may not capture seasonal variations of species using the Guadalupe River. There were no plans to monitor other representative onsite water bodies that would be affected or destroyed by the proposal, and there were no plans to conduct studies aimed at estimating impingement and entrainment at the make-up water intake location in the GBRA canal system. Finally, the staff discussed the importance of beginning a program to sample benthic macroinvertebrates. While Exelon may plan to continue collecting aquatic resource information after they submit the application, this information may not be available in time to allow the NRC to produce a draft environmental impact statement (EIS) within the typical EIS production schedule.

There appears to be considerable communication between Exelon and GBRA; however, it is not clear if the plans would benefit from having other resource agencies involved. For example, it is unclear whether GBRA or Exelon would be the lead on acquiring State and Federal permits for compliance with the Clean Water Act and other statutes. High-level discussions with State and Federal agencies have not included ecological resources. Apparently, Exelon plans to finish the surveys before contacting Texas Parks and Wildlife Department and U.S. Fish and Wildlife Service.

Terrestrial Resources

Collection of terrestrial ecological information and ground surveys at the Victoria County site were not initiated until late 2007. Wetland mapping and delineation have been initiated and are following a two-phase approach developed with the U.S. Army Corps of Engineers (ACOE) to first collect data on the soils and vegetation and develop general mapping of the potential jurisdictional wetlands, and then follow an agreed-upon process to submit a jurisdictional determination request to ACOE. So far, three survey events for terrestrial organisms have been conducted (these are at the reconnaissance level—no quantitative sampling is planned). Two additional surveys are planned for spring (March and April 2008) and early summer (May and June 2008), but none in the fall or winter. No quantitative sampling for wildlife is currently planned, and most wildlife surveys will be incidental while performing the wetland and habitat mapping.

A number of small wetlands on the site would be lost when the main cooling reservoir is constructed. At least one of these wetlands is about 50 acres, while most are smaller—no maps were yet available. It is unlikely that Exelon will have feedback from the ACOE regarding the wetland jurisdictional determination and delineations in time to include in the ER.

Exelon will also perform reconnaissance surveys this spring and early summer, and could possibly perform point count surveys for breeding birds. Potential bird usage of the site will be described using the reconnaissance data as well as data from two Christmas bird count stations that adjoin the proposed site property. We also discussed how they might address sampling or quantifying the herpetofauna currently using the proposed site. It is apparent that there are no actual survey data to determine wildlife use on the site or in areas that could be affected by water removal or pipeline construction. No quantitative information or surveys had been planned or completed for invasive species likely to inhabit the site.

NRC guidance, such as Regulatory Guide 4.2 and NUREG-1555, suggests results of one year of terrestrial monitoring be included in the ER. Therefore, if Exelon submits a COL application in September 2008, the ER will not have the amount of terrestrial monitoring data identified in NRC guidance documents. While Exelon may plan to continue collecting terrestrial resource information after they submit the application, this information may not be available in time to allow the NRC to produce a draft EIS within the typical EIS production schedule.

Threatened and Endangered Species

Exelon has a list of State and Federal species of concern that will be addressed, but Exelon has not contacted the State or Federal agencies to determine the appropriate timing of surveys for the species of concern (e.g., plant flowering times). The rangelands on site may provide habitat for the Texas horned lizard as well as several rare snake species. There are possibly two bald eagle nest sites on or adjacent to the property. Alligators occur in the vicinity and may be on site or in the GBRA canals. There is a number of livestock watering ponds on the site. Roseate spoonbills and white-faced ibis were seen at several ponds including Linn Lake.

Whooping cranes overwinter in the Aransas National Wildlife Refuge in the San Antonio Bay south of the proposed site and may fly over or near the site during spring and fall

migrations. If freshwater flows to San Antonio Bay are decreased as a result of the proposed project, salinity in the bay would increase, which may be deleterious to the ecosystem as a whole and to the blue crab in particular. Blue crab is a main food item for the wintering whooping cranes.

Land Use

It appears that Exelon is on track to support the proposed schedule in this area.

Transmission Lines

Transmission lines for the Victoria plant will tie to five existing substations. There probably also will be a new line to Coletto Creek west of the proposed site. The final routing and detailed route evaluation will not be completed until American Electric Power and state certification. Exelon plans to use the macro-corridor methods to identify potential 1- to 3-mile-wide corridors. Land area within the potential route will be subject to a weighted path analysis based on multiple criteria for siting transmission lines. In general, it appears that Exelon is on track regarding the proposed schedule in this area; however, it is likely that there will be relatively little data available about the resources within the proposed macro-corridors.

Socioeconomics

Exelon has selected a six-county focus within the 50-mile radius as their region of influence. Within this region, they are looking at average statistics for housing, labor, demographics, and other parameters. At this point, they do not appear to be highlighting smaller segments of the population (e.g., Victoria city), but presenting information at a county level. Exelon representatives have held meetings with governmental officials, school superintendents, and development boards. They have also attended community events, have spoken at Rotary-type meetings, and are setting up a store-front office in downtown Victoria. However, it does not appear that Exelon or its contractor have made contacts with local community officials for the purpose of gathering environmental or socioeconomic data for the ER analysis.

Environmental Justice

Exelon has gathered census data, but it was unclear whether this was at the block-group level or at a higher level. No concentrations of minority populations have been identified near the site, and no subsistence fishing or agricultural practices have been identified. However, Exelon has not made community contacts to explore these issues.

Radiological Issues and Accidents

These areas were not discussed during the C-1 visit, but will be discussed in detail during the C-3 readiness assessment activity in July 2008.

MATAGORDA COUNTY ALTERNATIVE SITE

Hydrology and Aquatic Resources

The Matagorda County site averages 8 feet above mean sea level, but the predicted storm surge is about 30 feet. This would require build-up with fill, and plant systems would have to be elevated to exceed flood levels during storm surges from the Gulf of Mexico. The plant would include natural-draft cooling towers instead of a cooling reservoir. On-site aquatic resources appeared to be minimal. Rice farming is the predominant use of the area. Waterways are limited to canals and wetlands. However, because of the proximity to the Gulf of Mexico, the site scored very well for water availability.

Two options were considered for obtaining water at this site:

1. Intake water from the Gulf of Mexico was considered. A pipeline would be built to cross the Intracoastal Waterway and the barrier island, and then extend out a couple of miles into the Gulf where the water depth is about 35 to 40 feet. There was a potential for interacting with several protected species (for example sea turtles and piping plovers) with this configuration.
2. An intake structure on the shore of the Intracoastal Waterway on the southern edge of the site was also considered. The pipeline to the power block would be shorter than to the Gulf of Mexico, and there would be less interaction with protected species.

With either intake scenario, the discharge would likely be to Tres Palacios Bay, which has had problems with rapid changes in salinity levels.

Groundwater is near the surface, and Exelon has continued to collect groundwater data.

Land Use and Terrestrial Resources

The Matagorda County site is currently used for agriculture and cattle grazing and is considered a greenfield site. It is adjacent to several wetlands and the Mad Island Wildlife Management Area. Numerous bird species use this area. Among the reasons that were cited for shifting the preferred site from Matagorda to Victoria were concerns by adjacent land owners and others that there could be increased salt deposition due to cooling towers using sea water for make-up at the Matagorda site. Increases in salt deposition could affect the rice field production in the area and could contribute to rising salinity (and water quality issues) in the adjacent bay. Most of the Matagorda site is currently used for rice production, but prior to agricultural conversion, it was probably natural wetlands. It was indicated that if the land is taken out of agricultural production,

the land may revert to being jurisdictional wetlands, thus requiring consultations with the ACOE and possibly extensive wetland mitigation.

Conclusion

Typically, the next NRC pre-assessment activity is a C-2 visit, which involves gathering more information regarding alternative sites. However, based on the current schedule for submittal of the COL application in September 2008, the staff's visit to one of the alternative sites as part of the C-1 visit, and the applicant's presentation on the alternative site-selection process, the staff plans to combine the C-2 and C-3 visits. Because the NRC staff has already visited a couple of Exelon's proposed alternative sites in conjunction with other projects, the C-2 portion of the next readiness assessment interaction will include a detailed discussion on the alternative site-selection process. The C-3 activity involves assessing the readiness of the applicant's ER, a key component of the COL application, and the C-3 interaction will be the staff's first opportunity to assess the applicant's readiness in the areas of radiological issues and accidents. The applicant faces challenges in the areas of data collection and external agency coordination; therefore, the NRC staff is concerned that the applicant might not be ready by the planned September 1, 2008 submittal date. Additional issues could be identified during the C-2/C-3 visit or the NRC's formal review after the application is submitted.