

September 16, 2008

MEMORANDUM TO: Andrew Kugler, Acting 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 – JULY 9-10, 2008, READINESS  
ASSESSMENT VISIT FOR A COMBINED LICENSE APPLICATION  
AT THE FERMI, UNIT 3, SITE

This report summarizes the U.S. Nuclear Regulatory Commission (NRC) staff's July 9-10, 2008, pre-application/readiness assessment (T-2) visit related to the environmental portion of an anticipated Combined License (COL) application for the Fermi, Unit 3 (Fermi 3). DTE is proposing to construct Fermi 3 at the site of the Enrico Fermi Nuclear Power Plant, which includes the currently operating Fermi, Unit 2 (Fermi 2) and Fermi, Unit 1, which is in the process of decommissioning. DTE Energy (DTE) has indicated its intent to submit a COL application for Fermi 3 in September 2008. DTE has also announced that the design of Fermi 3 will be the Economic Simplified Boiling Water Reactor (ESBWR).

The purpose of the visit was to allow the NRC team to assess the readiness of the applicant's Environmental Report (ER), which is a key component of the COL application. The meetings were held in Overland Park, Kansas, at the offices of Black and Veatch, one of DTE's contractors. Specific elements of the NRC team's review were discussed with the applicant and their representatives during this visit. Enclosure 1 is a list of the people who participated in the visit. Enclosure 2 is the agenda for the two-day readiness assessment visit. Enclosure 3 is a summary of the issues that were discussed and notes areas where the team determined additional information would be needed to support the COL application. Based on the status of the draft ER at the time of this T-2 review, the NRC team believes that DTE is making reasonable progress toward its goal for submission of a COL application in September 2008. The NRC team did not identify any areas in the draft ER that would indicate DTE would not be able to meet its goal within the proposed schedule. The two most significant issues raised by the NRC readiness review team at the T-1 visit on May 8-9, 2008, were the availability of onsite ecology monitoring data and the completeness of the site selection process. Although ecological monitoring will not be complete by the application submittal date, DTE has initiated plans to perform four seasons of confirmatory site ecological monitoring. DTE has also completed a more comprehensive site selection process. No contacts have been made with Canadian officials regarding potential environmental impacts.

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This readiness assessment was conducted approximately 2 months prior to the applicant's planned COL application date and the staff did not expect the ER to be fully developed at this stage. Furthermore, the applicant was aware of and informed the NRC staff of many issues described in Enclosure 3.

Project No. 757

Enclosures:  
As stated

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Project No. 757

Enclosures:  
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OFFICE	PM:DSER:RENV:NRO	BC:DSER:RENV:NRO
NAME	REmch	HBClayton
DATE	09/11/08	09/16/08

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**List of Attendees – FERMI 3 T-2 Readiness Assessment Visit**  
**Location: Black & Veatch Offices in Overland Park, Kansas**  
**July 9-10, 2008**

<b>Name</b>	<b>Affiliation</b>	<b>Role</b>
Richard Emch	Nuclear Regulatory Commission (NRC)	Team Lead, Health Physics, Accidents, Meteorology, Fuel Cycle
Stephen Lemont	NRC	Team Lead Shadow
J. Peyton Doub	NRC	Terrestrial Ecology
Michael Masnik	NRC	Ecology, Transmission Lines
Alicia Williamson	NRC	Socioeconomics, Land Use, Cultural Resources
Laura Quinn	NRC	Need for Power, Cost-Benefit, Non-rad Waste
Nona Diediker	Pacific Northwest National Laboratory (PNNL)	Team Lead, Site Selection
Susan Southard	PNNL	Ecology
Lyle Hibler	PNNL	Hydrology
Donna Hostick	PNNL	Socioeconomics, Land Use, Environmental Justice
Randall Westmoreland	Detroit Edison (DTE)	Environmental Manager
Bethany Brooks	DTE	Electrical Engineering Lead
William (Bing) Miller	DTE	Document Development Lead
Doug Timpe	Black and Veatch (BV)	Environmental Manager
Rob Crandall	BV	Project Manager
Ralph Brooks	BV	Terrestrial Ecology
Ed Shadrick	BV	Ecology
Patricia Krugjohn	BV	Plant Engineering
Torris Babbs	BV	Hydrology – Surface Water
Steve Thomas	BV	Accident Analysis, Need for Power
Bryce Weinand	BV	Meteorology
John Wynne	BV	Socioeconomics
Brandon Richman	BV	Socioeconomics
Lisa Fewins	BV	Environmental Lead, Site Selection

<b>Name</b>	<b>Affiliation</b>	<b>Role</b>
Dusty Miller	BV	Land Use, Site Selection
Dave O'Rourke	BV	Hydrology – Groundwater
Tony Bockelman	BV	Health Physics, Fuel Cycle, Waste Management
Nancy Demeter	Commonwealth Cultural Resources Group	Cultural Resources
Kurtis Schlicht	ENSR	Aquatic Ecology
Marcia Greenblatt	ENSR	Water Quality, Thermal Modeling
Shiela Hess	Ducks Unlimited	Wetlands

**Agenda – FERMI 3 T-2 Readiness Assessment Visit**  
**Location: Black & Veatch Offices in Overland Park, Kansas**  
**July 9-10, 2008**

**July 9, 2008**

- 7:45 Coffee and Sign In @ Black and Veatch Offices
- 8:00 Welcome and Introductions
- 8:15 Brief Overview of Fermi Project
- 8:30 Breakout to Technical Groups/Start ER Review
- 12:00 Lunch
- 1:00 Breakout to Technical Groups – Continue ER review  
NRC begin meeting with corresponding applicant experts
- 4:00 NRC/PNNL Round-Table Discussion
- 4:45 End of Day Summary with Applicant

**July 10, 2008**

- 7:45 Coffee and Sign In @ Black and Veatch Offices
- 8:00 Status Summary
- 8:15 Breakout to Technical Groups - Continue ER Review as Needed (NRC)  
NRC meet with corresponding applicant experts
- 11:00 NRC/PNNL Reviewers' Summaries to Rich or Nona
- 12:00 Lunch
- 1:00 Close-Out with Applicant
- 1:30 Adjourn

**Additional Information Summarizing  
FERMI 3 T-2 Readiness Assessment Visit  
Location: Black & Veatch Offices in Overland Park, Kansas  
July 9-10, 2008**

Summary of Issues and Concerns:

Some of the comments that were common to all subject review areas included the lack of citations for studies noted in the text, lack of detail regarding best management practices, reliance on color figures to present data (document lost contrast when produced in black and white), lack of transmission line corridor information in specific subject areas such as ecology, and availability of copies of dated web pages cited as references. The ER also lacked information regarding the current status of Fermi 1, which is in the process of decommissioning. The ER should include a discussion regarding the decommissioning process and how it would overlap with the construction of Fermi 3. No contacts have been made with Canadian officials regarding potential environmental impacts.

Several of the ER sections were still in early development (site selection, transmission corridors, and wetlands); therefore, these reviews relied more heavily on looking at data and background materials, and interviewing the subject-area contacts. The following paragraphs provide a subject-specific summary of issues and concerns identified during the T-2 pre-application review of the draft ER. It should be noted that this review was not a formal or comprehensive NRC review and additional issues could be identified during the NRC staff's formal review after the application is submitted.

**Site Selection Process** – The site selection process presented by DTE at the T-1 visit only considered two sites for the location of the proposed nuclear unit. The NRC team suggested that DTE refer to the Environmental Standard Review Plan (ESRP, NUREG-1555) 9.2 and attempt to follow the guidance provided for the site selection process more closely.

In 2006, Black and Veatch had conducted a study for DTE to identify sites suitable for various power generating industries including coal, natural gas, and nuclear. The study used the DTE service area as its region of interest (ROI) and winnowed down the list of potential sites using a detailed process of eliminating sites based on significant unsuitable features (e.g., size, lack of water, presence of wetlands, population density), and further evaluating the sites using a weighted environmental and technical analysis. During the 2006 study, only two sites were considered for nuclear (Fermi and Greenwood).

Following the T-1 visit, DTE reevaluated the site selection process using information from the 2006 study as a basis; all the sites in the 2006 study were evaluated as potential sites for a nuclear power plant. Within the DTE service area, 29 potential sites were identified. A Michigan Department of Environmental Quality (MDEQ) database was utilized to find suitable brownfield sites, and Energy Velocity was utilized to find suitable greenfield sites. The Fermi and Greenwood sites owned by DTE were included in the evaluation. A more detailed visual review of data and maps was then conducted to eliminate sites with obvious flaws which resulted in a total of 24 candidate sites. Windshield surveys were then conducted at all candidate sites, searching for significant unsuitable features. The result was a list of nine candidate sites.

A weighted environmental and technical analysis was applied to each of the nine candidate sites. The three sites rating the highest for nuclear power development included Fermi, Greenwood, and Belle River, although the other six remained viable alternatives. The applicant indicated they intend to present all eight alternatives to the Fermi site in the ER submitted with the COL application.

Although the site selection section of the ER was in very early stages of development, the NRC team was able to determine from reading the 2006 report and interviewing the Black and Veatch staff responsible for the Fermi 3 site selection study, that the site selection process is consistent with the guidelines of ESRP 9.2.

**Ecology** – The applicant’s plans for onsite monitoring for terrestrial and aquatic ecology will include four-season vegetative sampling on transects; impingement and entrainment sampling; onsite aquatic surveys, including benthic invertebrates; quarterly wildlife and avian surveys; and surveys for threatened and endangered species (vegetative and wildlife).

Since the T-1 visit, Ducks Unlimited (DU) had completed wetland delineations for the Fermi 3 site. All areas were flagged and surveyed with GPS. DU delineated 37 individual wetland areas totaling approximately 550 acres. DU estimated that more than 90 percent of the delineated wetlands have surface connections to navigable waters of the U.S. or tributaries and that approximately 95 percent will likely be determined by the U.S. Army Corps of Engineers to be jurisdictional under Section 404 of the Clean Water Act. There is a greater area of wetlands onsite than was originally estimated. Wetlands were found in the area where the cooling tower for Unit 3 would be constructed and where buildings from Unit 2 would be relocated. DTE is considering possible adjustments in the site layout to further minimize impacts to wetlands.

The presence of protected species was discussed with the applicant. DU observed two Eastern fox snakes during the delineation, and other people have reported seeing them onsite. The applicant may have to dig up any American Lotus that will be impacted by construction and replant it elsewhere. Bald eagles are known to nest onsite. The arrowleaf is suspected to be present onsite but must be identified when in flower. If the Indiana bat is present onsite, the species would only occur as summer roosters because suitable habitat is not present. The NRC team asked if piping plovers were present onsite or if they were of concern in the applicant’s region, but did not receive a definitive answer. The discussion of terrestrial species needs to address categories of important species other than listed species and regulated habitats. Best management practices for erosion control need to be specified.

No information was provided regarding the vegetation management plan within the transmission line corridor nor was specific information provided for the stormwater management plan. The ER needs to provide a clear table identifying important aquatic species and graphics (pie charts, drawings) need to be adjusted to be legible when reproduced in black and white. The cumulative impacts discussion should be expanded.

**Cultural Resources** – DTE did not provide documentation describing its interaction with the State Historic Preservation Office (SHPO) for Michigan, and it was not clear if there had been formal consultation or simply casual conversations between the two parties. Information regarding Fermi 1 and its potential eligibility for listing on the National Register of Historic Places also was not provided.

**Meteorology/Air Quality** – Concerns were noted by the NRC team regarding the relocation of the met tower and how new data would relate to historic data collected at the previous tower location. It was not clear how the applicant applied the copious amounts of existing met data to the analysis provided in the ER. Information on the estimation of atmospheric dispersion factors was incomplete.

The applicant was asked if the site is located within an air quality attainment area, and the applicant stated that area around the site is in attainment for Federally-listed pollutants. The NRC team suggested the applicant expand the air quality discussion in the ER to address these issues. The applicant also needs to elaborate on the potential impacts of construction and road traffic from construction workers in the air quality discussion.

The ER stated that the SACTI model was not suitable for predicting fogging, and an assumption was made that there would be no fogging or icing from the cooling tower because none has ever been experienced from the Fermi 2 cooling tower. The NRC team noted that the cumulative impacts of fogging and icing from the combination of the towers for Fermi 2 and Fermi 3 had not been evaluated. The NRC team suggested that the SACTI model could provide useful insights about these impacts.

**Hydrology** – All reviewed sections were drafted and nearly complete except the wetland delineation discussion which was not available for review during the visit. Some sections need to be incorporated into the document but appear to be nearly complete. An assessment of pond alterations within the document needs to be completed.

More complete information is needed on the cooling system design, especially with regard the dimensions of the cooling tower and intake and discharge facilities.

Quantitative water budget covering inputs and output to Lake Erie and withdrawals for Fermi 2 and Fermi 3 (projected) were spread out over the ER but not put concisely into one diagram. Water flow and volume units were inconsistently used (cfs, m<sup>3</sup>/s, gpm, etc.). The information may be correct and present a balance, but it could be presented more concisely for ease of reading and understanding of the data presented.

Construction activities will include significant alteration of three inter-connected ponds located along the west side of the site near Doxy Road. The draft report suggests that this will be the most significant hydrologic impact. These ponds are connected to the adjacent wetlands located to the north and south which are in turn connected to Swan Creek and Lake Erie. This alteration is not fully described in the draft report. A detailed assessment of hydrological impacts under normal and storm conditions for these ponds is lacking.

There is no discussion of the CORMIX model vertical structure of flow or temperature profiles in the draft ER. This should be addressed as it is the basis for a significant assumption for the thermal modeling. The outfall design is not presented graphically within a geographical or bathymetric context.

Because Lake Erie is shared with Canada, the ER mentions some international agreements. However, it does not provide information regarding Canadian agency contacts made specific to water or water quality issues.

**Health Physics/Radiological Monitoring/Fuel Cycle/Decommissioning/Accidents** – DTE has chosen the ESBWR as the reactor design for Fermi 3. The calculations of doses to the public from the release of radioactive gaseous effluents based on the ESBWR source term had not been completed. DTE had not evaluated changes that would be needed in the Radiological Environmental Monitoring Program currently conducted for Fermi 2 based on the addition of Fermi 3.

**Transmission Lines** – Transmission line information was missing from subject-area discussions (e.g., ecology).

**Land Use/Socioeconomics/Environmental Justice** – Overall, these ER sections were complete. Remaining data collection needs appear to be minor, and most of the issues identified during the T-2 visit deal more with providing further explanation or clarification within the ER sections. Some of the areas identified that could use improvement are discussed below. The ER needs to provide or better demonstrate bases for conclusions. For example, the ER should include more explanation regarding the process and methods used to determine impacts to migrant and other environmental justice (EJ) populations; provide documentation of consultations and interviews; and provide more explanation as to why a heavy emphasis was placed on impacts in Monroe County, with only minor coverage of Wayne and Lucas Counties. The NRC team suggested that a sentence or two characterizing Wayne and Lucas Counties within the Community Characterization subsections would be helpful for completeness.

Within the socioeconomics section, transportation impacts are limited to highway; however, rail and barge are mentioned in land use. The NRC team suggested that references to transportation impacts be consistent between the two sections. Regarding transportation studies, the ER noted that an hourly level-of-service (LOS) survey for transportation planning is not currently planned, but will be undertaken at some undetermined point in the future. There is data for 24-hour periods and there are plans for a new access road, so more information may be available.

In response to an item of concern from the T-1 visit, Black and Veatch had revised the tax section to include more information on the taxes paid by DTE over time within the region. Additionally, The NRC team discussions with Black and Veatch indicated that while they have done more searching on potential EJ populations, they had not found much additional information. It was suggested that their methods and contacts be more fully described in the final ER.

Regarding land use concerns identified in the T-1 visit, DTE and Black and Veatch are working with the MDEQ to address the Coastal Zone Management Certification determination as part of water permitting.

***Need for Power/Cost-Benefit*** – The overall need for power and cost benefit analysis followed the guidance in NUREG-1555. There should be a section added on the current regulatory structure of the state of Michigan that should cover any currently proposed legislation that could change the regulatory structure of the state. Some concerns were noted on missing data numbers on projected power demand and supply; however, there were no overriding major concerns. In the cost-benefit analysis there was a need for expansion on descriptions of non-quantifiable or nonmonetary benefits. There was no monetization of costs and benefits.