

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 – MAY 8-9, 2008, READINESS  
ASSESSMENT (T-1) VISIT FOR A COMBINED LICENSE  
APPLICATION AT THE FERMI, UNIT 3, SITE

This report summarizes the U.S. Nuclear Regulatory Commission (NRC) staff's May 8-9, 2008, pre-application/readiness assessment (T-1) visit related to the environmental portion of a future Combined License (COL) application for Fermi, Unit 3 (Fermi 3). DTE Energy (DTE) has indicated its intent to submit a COL application for this project. At the time of this visit, DTE had not announced selection of a reactor 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; 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 Fermi site on the shore of Lake Erie near Monroe, Michigan, where Fermi, Unit 2, is currently operating. Fermi, Unit 1, is also located on the site and is the process of decommissioning; the NRC staff participated in discussions with representatives of several offsite organizations. Enclosure 1 provides a list of attendees. Enclosure 2 is the agenda used during the visit. Enclosure 3 is a list of contacts made at offsite locations during the visit. Enclosure 4 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. Note that this assessment was conducted approximately four months prior to the applicants' planned COL application date (September 2008), and the staff did not expect the environmental report to be fully developed at this stage.

CONTACT: Richard L. Emch, Jr., NRO/DSER/RENV  
301-415-1590

A. Kugler

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Furthermore, the applicant was aware of, and informed the staff of many of the issues described in Enclosure 4. In general, the team concluded that DTE should be able to provide this additional information in time to support a COL application in September 2008.

However, in the areas of site selection process and onsite ecological monitoring, the team concluded that a significant amount of effort will be required by DTE to support the September submittal. The next readiness assessment visit was not yet scheduled at the time of this visit.

Project No. 757

Enclosures:  
As stated

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DATE	09/05/08	09/16/08

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**List of Attendees – FERMI 3 Readiness Assessment Visit**  
**Location: Fermi Site near Monroe, Michigan**  
**May 8-9, 2008**

NAME	ORGANIZATION
Peter Smith	DTE Energy (DTE)
Randy Westmoreland	DTE
Barry Gustafson	DTE
Jim Werner	DTE
Joe Laprad	DTE
Molly Luempert-Coy	DTE
Bethany Brooks	DTE
Doug Timpe	Black & Veatch
Robert Crandall	Black & Veatch
Bryce Weinand	Black & Veatch
John Wynne	Black & Veatch
Brandon Richman	Black & Veatch
Tony Bockelman	Black & Veatch
Patricia Krugjohn	Black & Veatch
Steve Thomas	Black & Veatch
Lisa Fewins	Black & Veatch
David O'Rourke	Black & Veatch
Torris Babbs	Black & Veatch
Ralph Brooks	Black & Veatch
Dusty Miller	Black & Veatch
Laura McNeal	Black & Veatch
Don Weir	Commonwealth Cultural Resources Group (CCRG)
Nancy Demeter	CCRG
Rachel Bankowitz	CCRG
Kurtis Schlict	ENSR
Marcia Greenblatt	ENSR
Claire Garvin	ENSR
Richard Emch	NRC
Laura Quinn	NRC
Alicia Williamson	NRC
Bruce Olson	NRC
Harriet Nash	NRC
Paul Kallan	NRC
Tara O'Neil	PNNL
Amanda Stegen	PNNL
Sue Southard	PNNL
Sandi McInturff	PNNL
Carlton Hunt	PNNL
Mike Fayer	PNNL
Jim Droppo	PNNL
Dave Anderson	PNNL
Patrick Balducci	PNNL
Ernest Antonio	PNNL
Paul Hendrickson	PNNL
Doug McFarland	PNNL

**Agenda – FERMI 3 Readiness Assessment Visit**  
**Location: Fermi Site near Monroe, Michigan**  
**May 8-9, 2008**

Thursday, May 8<sup>th</sup>, 2008

<b>Time</b>	<b>Presentation / Subject</b>	<b>Presenter</b>
0800 - 0930	Opening Remarks and Introductions	Peter Smith
	Team Organization	Peter Smith
	Site Overview / Description of Site and Vicinity / Site Specific Plant Systems Overview	Peter Smith
	Safety Review	Barry Gustafson
0930-1130	Site Tour <ul style="list-style-type: none"> <li>• Intake Canal and Barge Slip</li> <li>• Fermi 3 Location</li> <li>• Cooling Tower Location</li> <li>• Eagle Nesting Area</li> <li>• Fermi 2 Support Bldg. Relocation Area</li> <li>• Proposed Lay down areas</li> </ul>	Van Leaders  Peter Smith R. Westmoreland Jim Werner Joe Laprad
1130-1230	Lunch Catered	
1230-1300	Status of Environmental Report Preparation	Doug Timpe
1300-1330	Transmission Line Routing	Bethany Brooks
1330-1400	Alternative Sites and the Selection Process	Randy Westmoreland
1400-1415	Break	
1415-1600	Breakout Discussions and Tours	Various
1600-1630	Day 1 Wrap-up	Richard Emch (NRC)

Thursday, May 8<sup>th</sup>, 2008  
 1415-1600 Breakout Discussions and Tours

<b>Presentation / Subject</b>	<b>Presenter</b>	<b>NRC Subject Matter Expert</b>
Meteorology / Air Quality	Bryce Weinand	Jim Droppo (PNNL)
Socioeconomics / Environmental Justice	John Wynne Brandon Richman	Bruce Olson (NRC) Dave Anderson (PNNL) Patrick Balducci (PNNL)
Cultural Resources	Don Weir Nancy Demeter Rachel Bankowitz	Alicia Williamson (NRC) Doug McFarland (PNNL)
Aquatic Ecology	Kurtis Schlicht Marcia Greenblatt Claire Garvin	Harriet Nash (NRC) Sue Southard (PNNL)
Health Physics / Uranium Fuel Cycle	Tony Beckelman Patricia Krugjohn Steve Thomas	Richard Emch (NRC) Ernest Antonio (PNNL)
Need for Power	Steve Thomas	Laura Quinn (NRC)

Friday, May 9<sup>th</sup>, 2008

<b>Time</b>	<b>Activity</b>	<b>Lead</b>
0800-0830	Day 1 Summary	Richard Emch (NRC)
0830-1130	Breakout Discussions and Tours (see below)	
1130-1200	NRC Caucus	
11330-1200	Lunch-Catered	
1200-1230	Wrap-up / Summary	Richard Emch (NRC)

Friday, May 9<sup>th</sup>, 2008  
 0830-1130 Breakout Discussions and Tours

<b>Presentation / Subject</b>	<b>Presenter</b>	<b>NRC Subject Matter Expert</b>
Accident Analysis Review	Steve Thomas	Richard Emch (NRC) Jim Droppo (PNNL)
Non-Radwaste	Tony Beckelman Patricia Krugjohn	Laura Quinn (NRC)
Hydrology / Water Quality / Water Use	Dave O'Rourke Torris Babbs Kurtis Schlicht Claire Garvini	Mike Fayer (PNNL)
Terrestrial Ecology	Ralph Brooks	Harriet Nash (NRC) Amanda Stegen (PNNL)
Land Use	Dusty Miller Laura McNeal	Paul Kallan (NRC) Paul Hendrickson (PNNL)
Other As Needed		

**Contacts Made at Offsite Locations  
FERMI 3 Readiness Assessment Visit  
May 8-9, 2008**

*Michigan State Historic Preservation Office: Martha MacFarlane, SHPO compliance officer*  
*Michigan State Historic Preservation Office: John Halsey, Office of State Archaeologist, State Archaeologist*

*Monroe County Industrial Development Corporation: Bill Morris, CEO*

*Monroe County Industrial Development Corporation: Tim Lake, Business Consultant*

*Monroe County Emergency Management: Glenda White, Interim Director*

*Monroe County Planning Department: Robert Pevin*

*Frenchtown farmer & former Monroe County Drain Commissioner: Rollin Webb*

*Superintendent of Jefferson Public Schools: Tim Fitzpatrick*

*Superintendent of Monroe Public Schools: David Taylor*

*Jefferson Public Schools: Michael Zopf, Director of Business and Finance*



**Additional Information Summarizing  
FERMI 3 Readiness Assessment Visit  
Location: Fermi Site near Monroe, Michigan  
May 8-9, 2008**

**Summary of Issues and Concerns**

The team used the information in Regulatory Guide 4.2, Revision 2 and NUREG-1555 (ESRP) as guidance in this assessment. The following sections provide details about the team's findings in each subject area reviewed during the T-1, including areas where the team determined additional information would be needed to support the COL application. In general, the team concluded that DTE should be able to provide this additional information in time to support a COL application in September 2008. However, in the areas of site selection process and onsite ecological monitoring, the team concluded that a significant amount of effort will be required by DTE to support the September submittal.

**Alternative Energy Generation and Need for Power:** The Michigan 21<sup>st</sup> Century Energy Plan report dated January 2007 evaluates Michigan's electric supply needs through 2025 and describes recommendations for meeting Michigan's electric needs, renewable resources and alternative technologies, as well as energy efficiency.

<http://www.dleg.state.mi.us/mpsc/electric/capacity/energyplan/>

DTE plans to utilize the Economic Simplified Boiling Water Reactor (ESBWR) design for Fermi 3. Fermi 3 would serve the Detroit area and would supply approximately 1600 MWE of power. Preconstruction activities will begin in the 2010 time frame and the need for base-load power is in the 2020 time frame. Fermi 2 is a boiling water reactor (BWR) supplied by General Electric Company, that produces 1200 MWt of power, and the license expiration date for Fermi 2 is March 20, 2025. DTE anticipates receiving approval for license renewal for Fermi 2 in the 2018 time frame. Fermi 1 is in the process of decommissioning. The Fermi site was intended originally for three units. DTE's need for power analysis relies heavily on the Michigan 21<sup>st</sup> Century Energy Plan.

**Alternative Site Selection Process:** Based on the energy demand in the Michigan 21<sup>st</sup> Century Energy Plan report, DTE launched a study to determine where various types of power plants could be sited. DTE considered its region of interest (ROI) to be DTE's service area that covers 11 counties. Of the dozens of sites evaluated, DTE evaluated just two existing sites that the company owns for nuclear alternatives. The conclusion of the study was that of the two sites, the existing Fermi site in Monroe, Michigan was the preferred site for a new nuclear unit. The team asked DTE a number of questions about the site selection process and concluded that the process was not consistent with the guidance in Regulatory Guide 4.2, Revision 2 and NUREG-1555 (ESRP) because it did not consider a broad enough suite of potential sites. The staff suggested DTE refer to the ESRP guidance and follow the process described for the alternative site selection process as the company continues to develop the Fermi 3 environmental report (ER). The team concluded that this issue would require significant effort by DTE to complete by the September 2008 application submittal. DTE expressed confidence that the company could complete the effort by September.

**Cultural Resources:** DTE has retained the services of a cultural resource consultant, CCRG, to perform a cultural resources assessment for the Fermi 3 ER. CCRG identified two historic sites, one a foundation and the other a domestic scatter (with a prehistoric component). They also identified four lithic scatters. A tour was given by CCRG of the above-ground resources within the State Historic Preservation Office (SHPO)-negotiated viewshed area of potential effect (APE). Lithic scatters were not visited due to their location (a planted field of corn). Fermi 1 may be potentially eligible for the National Register of Historic Places which makes the decommissioning activities a concern that has been raised by the SHPO. The current viewshed “analysis” was based on current cooling tower heights (450’), yet the new cooling tower will be 150 feet taller (600’). This analysis may need to be revised. Cultural resources information is needed for the transmission line corridors. No contact has been made with the Tribes. The SHPO did make a visit to the Fermi site, and there is an informal agreement regarding the area of potential effect.

**Meteorology/Air Quality/Accidents:** The availability of appropriate annual cycles of onsite meteorological data was confirmed. Air quality issues related to National Ambient Air Quality Standards (NAAQS) and protected federal lands were discussed. Information on specific air permitting requirements was not available. Assumptions and models for impacts during construction activities and the cooling tower plume analysis were discussed. Although the details of the cooling tower and the location are still being defined, a cooling tower impact analysis has been conducted based on design parameters. The relocation of the met tower may be an issue in the future. The consideration of the cooling tower impact may need to be revised once the cooling tower design and its exact location are defined. No accident analysis issues were identified during the review.

**Hydrology:** The hydrology baseline description is essentially complete and most of the field studies are done. Surface water and groundwater issues were discussed. There is an abundance of historical lake level information and stream flow record to get a good understanding of the regional surface water hydrology. Eleven pairs of shallow and deep wells were installed and have been monitored since June 2007 and will continue through June 2008. The contractor used the regional U.S. Geological Survey (USGS) model to evaluate impacts from dewatering for construction. Cormix modeling and water quality issues were discussed. Regional water quality data from 1996-2004 exists and will be used to determine impact from plant operations. The lake levels are sensitive to wind direction and strength. Issues that may need to be addressed further include (1) connectivity between wetlands that surround the plant and the groundwater cone of depression created during construction dewatering, (2) quantifying water quality impacts with limited near-site data, and (3) ice impacts (e.g., lake levels, flooding on Swan Creek).

**Health Physics/Radiological Monitoring/Uranium Fuel Cycle/Decommissioning:** Fermi 2 is currently a zero radioactive liquid release facility, and DTE plans to operate Fermi 3 as a zero release facility. However, the ability to maintain zero liquid releases for the proposed ESBWR has not been tested. Lake Erie is used for municipality drinking water. The dose rates to construction workers on Fermi 3 will be based on thermoluminescent dosimeters and air monitoring results.

However, the validity of these results will need to be established based on the location of the monitors and dosimeters with respect to the expected location of the construction workers. In addition, DTE will need to build an independent spent fuel storage facility between Fermi 2 and the cooling towers; the calculated additional dose rate from this planned facility will need to be factored into the construction worker dose estimate. The need for calculating doses to non-human biota was discussed. No other radiological issues were identified during the review.

**Ecological Resources:** The largest issue for the two ecology sections is that no onsite biota sampling has been performed to date, and at the time of the T-1 there were no plans to perform onsite sampling. Performing quantitative surveys of the onsite biota, both aquatic and terrestrial, for four seasons would be consistent with the guidance in Regulatory Guide 4.2, revision 2, and NUREG-1555. The team concluded that the lack of such survey data could be a significant impediment to the ability of the NRC staff to assess the ecological impact of the proposed Fermi 3 plant. The team also concluded that it would be impossible to perform four seasons of quantitative surveys before the planned application submittal in September 2008. DTE believed that the onsite biota had been characterized, but was considering the need for additional quantitative surveys to confirm that characterization.

**Aquatic Resources** – There is a large amount of water-covered areas onsite. Most of it appears inter-connected in some way, with the possible exception of the quarry ponds. Impacts to one waterbody may in turn have an effect on another waterbody. It is unlikely any protected species inhabit the waters on the site, but they have not been sampled. Most of the impacts to the aquatic environment appear to be associated with the construction of the barge slip, intake, and discharge; impingement and entrainment at the new intake structure; the amount of water-covered areas that may be filled to accommodate the new cooling tower and other areas of construction; and thermal effects (including cold shock) from the discharge. DTE stated that there are no aquatic species of concern on the Fermi site. There have been no aquatic species monitoring efforts to characterize the environment.

Impingement and entrainment studies were conducted in the early 1990s for Fermi 2. In 2005 a study was conducted at Swan Creek by the U.S. Fish and Wildlife Service (USFWS) and Michigan Department of Natural Resources (MDNR) approximately 0.5 to 2.5 miles from the site using seining and electro-fishing. DTE is using this study to determine which fish species are most likely to utilize other habitat, such as the intake canal. There are other studies that were conducted further from site that DTE is using in conjunction with Fermi 2 data to characterize the impingement and entrainment. No studies were conducted onsite for benthic organisms.

The site layout/construction plans have not been finalized. This created a number of uncertainties about whether an area would or would not be impacted by construction. Also, the design of important systems (i.e., intake screening system and discharge) had not yet been finalized. Cumulative effects have not yet been taken into consideration.

**Terrestrial Resources** – Approximately half of the 1260-acre site is currently occupied by roads, buildings, cooling towers, and existing facilities for Units 1 and 2. Almost 700 acres of the site is part of the USFWS wildlife refuge program, through a joint agreement between the USFWS and DTE who owns the property. The four sections of the National Wildlife Refuge (NWR) onsite are part of a much larger system, called the Detroit River International Wildlife Refuge. The wetlands onsite appear interconnected and impacts to one waterbody may in turn have an effect on another waterbody.

There is an active bald eagle nest on the Fermi site and eagles in the area are both residents and migratory so it is unclear if the eagle uses the site year-round or for nesting only. USFWS has been monitoring the nest and has data available. According to the applicant, there are no Federally-listed species of concern.

There are approximately eight state-listed species of interest, including two wetland species and the bald eagle. Letters have not been sent to Canada, but DTE has viewed the "government of Canada" website for species of interest.

The most significant terrestrial ecology issue is the lack of systematic characterization of the species in the large wetland areas. State species need to be considered during field surveys. The site layout and construction plans have not been clearly identified. Habitat acreage associated with the construction impacts is needed. Ducks Unlimited has just begun performing wetland delineations. The scope of the delineations is not clear. It is also not clear whether DTE is characterizing the wetlands as well as designing systematic surveys to look for the arrowhead and eastern fox snake, both state protected species. It is not clear if state officials were consulted regarding the bald eagle nest. The NRC staff recommended that DTE invite Ducks Unlimited to the T-2 readiness assessment meeting (planned for July 2008) to discuss the results of the wetland delineations.

**Land Use:** DTE owns most of the mineral rights for the Fermi site. The State of Michigan holds mineral rights for approximately 12 acres that are not part of the site for proposed Unit 3. The proposed site for Unit 3 is within Michigan's coastal zone established under the Coastal Zone Management Act. DTE will need concurrence from the State of Michigan that proposed Unit 3 is consistent with Michigan's coastal zone plan. The proposed Unit 3 will not share systems with the existing Unit 2. Preconstruction activities are planned at the Fermi site and there are no current plans to submit a LWA. No land use issues were identified during the review.

**Transmission Lines:** DTE is planning on 29 miles of new 345kV transmission line that would be needed to serve Unit 3. Approximately 19 miles would be new circuits attached to existing towers. Approximately 10 miles would be in an existing right-of-way but would require the installation of towers. An independent company, ITC Transmission, owns and operates the transmission system. No transmission line issues were identified during the review.

**Socio-Economics/Environmental Justice:** Access to the site is relatively constricted in the local vicinity and between I-75 and the site boundary. There will be a noticeable visual impact as Fermi 3 is projected to require a 600-ft tall parabolic cooling tower – significantly taller than the two existing towers. There does not appear to be any unusual resource dependencies or subsistence practices in the immediate vicinity of the site. There is a National Wildlife Refuge within the site boundary, but it is closed to public access.

DTE's consultant, Black and Veatch, has determined that the economic region affected by the Fermi 3 construction and operation would be formed by a three-county area including Wayne County (Detroit core), Lucas County, Ohio (Toledo core), and Monroe County, the county directly between these two large cities. According to DTE figures, over 87% of the current workforce at Fermi resides in these three counties.

DTE explained the system of local governance in Michigan including the layers of villages, townships, cities, and counties. They described the system of property tax assessment applicable to each of these layers. They did not provide the actual tax remittance information – the dollars spent by DTE on local or state taxes. This information would be expected to be in the ER.

DTE indicated that plant construction would occur in phases, with preconstruction activities beginning in 2012, followed by peak construction occurring in 2017. They are using a Bureau of Labor Statistics multiplier analysis to estimate economic impacts.

DTE believes that there are three top socioeconomic issues needing resolution in the ER. First, they recognize the need to make many more local contacts with stakeholders in the areas of environmental justice (EJ) and wastewater planning/adequacy, and with first responder organizations relative to impacts experienced during the Unit 2 construction. DTE also needs to search for local studies about EJ populations and local economic impact analyses that may have been conducted through local universities. Second, as discussed above, additional tax information is needed in the ER. The ER will include a time series of tax remittances to each taxing authority to whom DTE has an obligation. This includes expected local sales tax and use tax payments. Lastly, DTE indicated the need to collect level-of-service (LOS) information covering the local road network and other transportation planning information to facilitate a transportation impact analysis. The ER is expected to include a transportation impact analysis.