February 23, 2011

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033-COL
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

NRC STAFF ANSWER TO APPLICANT'S MOTION
FOR SUMMARY DISPOSITION OF CONTENTION 5

Pursuant to 10 C.F.R. § 2.1205(b), the staff of the U.S. Nuclear Regulatory Commission (Staff) hereby answers the motion filed February 3, 2011, by the Detroit Edison Company (DTE or Applicant), requesting summary disposition in favor of the Applicant on Contention 5. The NRC Staff agrees that Contention 5 has been rendered moot, and that the Applicant is entitled to summary disposition on this contention because there remains no genuine issue of material fact.

BACKGROUND

By letter dated September 18, 2008, the Applicant submitted a COL application (Application or COLA) for one ESBWR advanced boiling water reactor to be located at the site of the operating Fermi Nuclear Power Plant, Unit 2 in Monroe County, Michigan. Letter from Jack M. Davis, DTE, to NRC, Detroit Edison Company Submittal of a Combined License Application for Fermi 3 (NRC Project No. 757) (Sept. 18, 2008) (ADAMS Accession No. ML082730763). The *Federal Register* notice of docketing was published on December 2, 2008 (73 Fed. Reg. 73,350), and the *Federal Register* notice of hearing was published on January 8, 2009 (74 Fed. Reg. 836). The ESBWR design is the subject of an NRC rulemaking under Docket No. 52-010.

On March 9, 2009, the Intervenors filed a Petition for Leave to Intervene in the COLA proceeding, along with a separate document containing 14 contentions (Contention Filing). The Licensing Board held oral argument on these contentions in Monroe, Michigan, on May 15, 2009. Following oral argument, the Licensing Board found that the Intervenors had standing in this proceeding and had filed four contentions that were admissible in part. *Detroit Edison Co.* (Fermi Nuclear Power Plant, Unit 3), LBP-09-16, 70 NRC 227 (2009). Three of these contentions (Contentions 3, 6, and 8) were environmental contentions challenging the Applicant's Environmental Report (ER), and one (Contention 5) was a safety contention challenging the Final Safety Analysis Report (FSAR).

As originally submitted by the Intervenors, Contention 5 asserted that "[t]he Fermi site may have problematic hydrology likely to allow offsite transport of chemical and radiological contaminants." Contention Filing at 50. The contention raised a wide range of issues related to groundwater in the vicinity of the Fermi site. As primary support for their contention, the Intervenors cited a Request for Additional Information (RAI) sent by the NRC Staff to the Applicant on January 14, 2009. *Id*. at 51-52. This RAI requested, *inter alia*, that the Applicant submit site-specific information related to hydrologic parameters, as required by 10 C.F.R. § 100.20(c), and further information regarding radionuclide transport models. *Id*. The Intervenors also cited to the Applicant's initial response to this RAI, which indicated that the requested information was not yet available but would be submitted by September 1, 2009. *Id*. at 52-53.

In its response to the Intervenor's contentions, dated April 3, 2009, the NRC Staff agreed that the portion of Contention 5 related to site-specific parameters listed in 10 C.F.R. § 100.20(c) was admissible as a contention of omission. Staff Contention Response at 48-49. However, the Staff at that time argued that the contention should be limited to three of these parameters – distribution coefficients, retardation factors, and porosity – because the Applicant's responses to the cited RAI indicated where in the Application the other information

mentioned by the Intervenors could be found. *Id*. at 49. Although the RAI quoted by the Intervenors also referred to radionuclide transport models that produced results exceeding the Effluent Concentration Limits (ECLs) in 10 C.F.R. Part 20, Appendix B, the Intervenors did not present any specific argument related to this portion of the RAI, and the Staff therefore took no position on the modeling issue in its response.

The Board found two parts of Contention 5 to be admissible. First, the Board admitted a contention of omission asserting that on-site measurements of parameters required by 10 C.F.R. § 100.20(c)(3), in particular distribution coefficients, retardation factors, and porosity, had been omitted from the COLA. *Fermi*, LBP-09-16, 70 NRC at 272. Second, the Board admitted a second part related to the Applicant's analysis of liquid effluent releases and radionuclide transport, which were based on conservative assumptions and which showed results exceeding the ECLs. *Id*. The Board at that time rejected the Applicant's argument that this second part of the contention was immaterial because it would be resolved once site-specific data and analyses were available, and stated that "th[e] Board must analyze issues based on information currently at hand." *Id*. at 273.

On February 3, 2011, the Applicant filed a Motion for Summary Disposition (Motion) of both admitted parts of Contention 5. The Applicant's Motion, which was accompanied by a "Statement of Material Facts On Which No Material Dispute Exists" (Statement of Facts), demonstrates that summary disposition is warranted because the missing information has now been supplied. The Applicant has provided site-specific information related to the parameters set forth in 10 C.F.R. § 100.20(c)(3), and a new analysis of liquid effluent releases and radionuclide transport shows results below the ECLs found in 10 C.F.R. Part 20, Appendix B. Both portions of Contention 5 are therefore moot.

DISCUSSION

I. LEGAL STANDARDS

A. Disposition of Contentions of Omission

The Commission has determined that there is a "difference between contentions that merely allege an 'omission' of information and those that challenge substantively and specifically how particular information has been discussed in a license application." *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373, 382-83 (2002). "When a contention alleges the omission of particular information or an issue from an application, and the information is later supplied by the applicant or considered by the Staff in a draft EIS, the contention is moot." *McGuire*, CLI-02-28, 56 NRC at 383 (citations omitted); *see also Duke Energy Corp*. (Catawba Nuclear Station, Units 1 and 2), LBP-04-7, 59 NRC 259 (2004) (holding that because the applicant's response addressed the alleged omission which was the subject of the contention, albeit "minimally," the motion was granted).

B. Summary Disposition

The Commission's rules "contemplate merits rulings by licensing boards based on the parties' written submissions and oral arguments, except where a board expressly finds that 'accuracy' demands a full-scale evidentiary hearing." *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), CLI-01-11, 53 NRC 370, 385 (2001). Subpart L of the Commission's rules authorizes informal adjudicatory decision-making by a licensing board after receiving written submissions and hearing oral arguments. *Shearon Harris*, CLI-01-11, 53 NRC at 385 (citing 10 C.F.R. § 2.1201 *et seq*. (Subpart L)) (other citation omitted).

The standards for summary disposition under 10 C.F.R. § 2.1205 are the same as those under 10 C.F.R. § 2.710(d)(2). 10 C.F.R. § 2.1205(c) ("In ruling on motions for summary disposition, the presiding officer shall apply the standards for summary disposition set forth in subpart G of this part"). A party is entitled to summary disposition as to all or any part of the

matters involved in the proceeding "if the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law." 10 C.F.R. § 2.710(d)(2). "The standards are based upon those the federal courts apply to motions for summary judgment under Rule 56 of the Federal Rules of Civil Procedure." *Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC __, __ (Mar. 26, 2010) (slip op. at 11-12) (citing *Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio 44041), CLI-93-22, 38 NRC 98, 102 (1993)).

The movant bears the initial burden of showing that there is no genuine issue as to any material fact, which it attempts to do by means of a required statement of material facts not at issue and any supporting materials that accompany its dispositive motion. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-99-23, 49 NRC 485, 491 (1999). If the opposing party fails to counter each adequately supported material fact with its own statement of material facts in dispute and supporting materials, the movant's facts will be deemed admitted. *Advanced Medical Systems,* CLI-93-22, 38 NRC at 102-03; s*ee also* 10 C.F.R. § 2.710(b) ("[A] party opposing the motion may not rest upon the mere allegations or denials of his answer," but rather, "must set forth specific facts showing that there is a genuine issue of fact"). "[T]he mere existence of *some* alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment; the requirement is that there be no *genuine* issue of *material* fact." *Anderson v. Liberty Lobby*, 477 U.S. 242, 247-48 (1986) (emphasis in original). "'Only disputes over facts that might affect the outcome' of a proceeding would preclude summary disposition." *Pilgrim*, CLI-10-11, 71 NRC at __ (slip op. at 12) (quoting *Liberty Lobby*, 477 U.S. at 248).

In addition, the Commission will reject attempts to add new arguments in an answer to a summary disposition motion that could have been raised earlier. *See Pilgrim*, CLI-10-11, 71

NRC at __ (slip op. at 29-31). In *Pilgrim*, the new arguments were rejected because they were not fairly encompassed by the contention at issue in the motion for summary disposition, as originally pled and admitted, and because the intervenor did not attempt to amend the contention to add the new arguments. *Id.* at __ (slip op. at 31).

II. CONTENTION 5 IS MOOT, AND THERE IS NO GENUINE ISSUE OF MATERIAL FACT

Contention 5, as admitted by the Board, consists of two parts: a contention of omission related to the missing site-specific measurements of distribution coefficients, retardation factors, and porosity; and a second part related to the Applicant's analysis of liquid effluent releases and radionuclide transport, which showed results exceeding the ECLs. Paragraphs 1 through 7 of the Applicant's Statement of Facts set forth a number of historical issues related to Contention 5. The NRC Staff agrees that paragraphs 1, 3, 4, 5, 6, and 7 accurately describe the COLA and the process by which Contention 5 was admitted. The attached affidavit of the Staff's lead groundwater hydrologist for the Fermi 3 review, Joseph F. Giacinto (Giacinto Affidavit), addresses the technical issues related to the Applicant's early approaches to radionuclide transport modeling, as set forth in paragraphs 2, 5, 6, of the Applicant's Statement of Facts. Giacinto Affidavit ¶¶ 4-5.

Sections A, B, and C of the Applicant's Motion and paragraphs 8, 9, and 10 of the Applicant's Statement of Facts describe the Applicant's final determination of site-specific values for distribution coefficients, retardation factors, and porosity, and final radionuclide transport modeling results that incorporate these values. The attached affidavit also includes the staff's assessment of this information. Giacinto Affidavit ¶¶ 6-8. As discussed below, the Staff concurs that all of the information presented by the Applicant is correct, and that all information the Staff requires for its review has now been submitted. The Applicant's Motion and associated Statement of Facts therefore demonstrate that there is no genuine dispute of material fact, and that summary disposition is warranted.

A. Distribution Coefficients, Retardation Factors, and Porosity

Sections A and B of the Applicant's Motion, and paragraphs 8 and 9 of the Statement of Facts, address the missing site-specific measurements of distribution coefficients, retardation factors, and porosity at the Fermi 3 site. In section A of the Motion and paragraph 8 of the Statement of Facts, the Applicant describes the way in which it obtained site-specific information related to distribution coefficients (K_d values) and retardation factors based on laboratory testing of rock samples from the Fermi 3 site. Motion at 5-7; Statement of Facts ¶ 8. The attached affidavit confirms that the Applicant's representations are correct, and that the Staff now has the information it requires with respect to K_d values and retardation factors to prepare the relevant portion of its Final Safety Evaluation Report (FSER). Giacinto Affidavit ¶ 6. The Applicant's original submittal containing this information can be found in a Letter to NRC Document Control Desk from Peter W. Smith, Director, Nuclear Development - Licensing and Engineering, Detroit Edison Company, NRC3-09-0026, "Detroit Edison Company Revised Response to NRC Request for Additional Information Letter No. 2," (Sept. 1, 2009) (ADAMS Accession Number ML092470230).

In section B of the Motion and paragraph 9 of the Statement of Facts, the Applicant describes the way in which it obtained site-specific information on porosity by using measured site-specific data on hydraulic conductivity together with a "Rock Quality Designation" for the material at the Fermi 3 site. Motion at 7-8; Statement of Facts ¶ 9. For subsequent modeling, the Applicant used the most conservative site-specific value obtained. Motion at 8. The attached Staff affidavit confirms that the Applicant's representations are correct, and that the Staff now has the information it requires with respect to porosity to prepare the relevant portion of its FSER. Giacinto Affidavit ¶ 7. The Applicant's original submittal containing this information can be found in a Letter to NRC Document Control Desk from Peter W. Smith, Director, Nuclear Development - Licensing and Engineering, Detroit Edison Company, NRC3-10-0046, "Detroit

Edison Company Response to NRC Requests for Additional Information (RAI) Letter No. 42 and RAI 02.03.13-11," (Oct. 19, 2010) (ADAMS Accession No. ML102940218).

The first part of Contention 5, the contention of omission, alleges that site-specific information required by 10 C.F.R. § 100.20(c)(3) has not been provided. This information has now been supplied. Commission case law states that "[w]hen a contention alleges the omission of particular information or an issue from an application, and the information is later supplied by the applicant or considered by the Staff in a draft EIS, the contention is moot." *McGuire*, CLI-02-28, 56 NRC at 383 (citations omitted). The first part of Contention has therefore become moot, and summary disposition is warranted.

B. Radionuclide Transport Modeling

Section C of the Applicant's Motion and paragraph 10 of the Statement of Facts address the Applicant's revisions to its radionuclide transport models, which incorporate the site-specific information discussed above. Motion at 8-10; Statement of Facts ¶ 10. The revised models no longer yield results that exceed the ECLs in 10 C.F.R. Part 20, Appendix B. Motion at 9. The Applicant's submittal of October 19, 2010, contains this information in addition to the porosity information discussed above. The attached Staff affidavit confirms that the Applicant's representations are correct, and that the Staff now has the information it requires with respect to radionuclide transport modeling to prepare the relevant portion of its FSER. Giacinto Affidavit ¶ 8. The affidavit also notes that the Staff has performed its own calculations that confirm the Applicant's results. *Id*. ¶ 9.

Because the revised modeling results no longer exceed the ECLs in Part 20, Appendix B, there is no further genuine issue of material facts related to this portion of Contention 5. Commission regulations state that a party is entitled to summary disposition "if the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law." 10 C.F.R.

§ 2.710(d)(2). This part of the contention, as admitted, was limited to consideration of model results exceeding the ECLs, and did not include any other arguments related to radionuclide transport modeling. Because the contention, as admitted, has been resolved by the Applicant's subsequent submittals, the second part of Contention 5 is also moot. The Applicant is therefore entitled to summary disposition as a matter of law.

CONCLUSION

The NRC Staff agrees that there is no further dispute concerning the material facts set forth in the Applicant's motion. Both parts of Contention 5 have been resolved by information the Applicant submitted after the contention was admitted, and both are therefore moot. The Applicant is therefore entitled to summary disposition as a matter of law.

Respectfully Submitted,

/Signed (electronically) by/
Marcia Carpentier
Counsel for NRC Staff
U.S. Nuclear Regulatory Commission
Mail Stop O-15 D21
Washington, DC 20555-0001
(301) 415-4126
Marcia.Carpentier@nrc.gov

Dated at Rockville, Maryland
this 23rd day of February, 2011

STAFF ATTACHMENT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033-COL
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

AFFIDAVIT OF JOSEPH F. GIACINTO
CONCERNING THE STAFF'S REVIEW OF DTE's UPDATED SITE
CHARACTERIZATION AND RADIONUCLIDE TRANPORT ANALYSIS

I, Joseph F. Giacinto, hereby state as follows:

1. I am a scientist in the Hydrologic Engineering Branch, Division of Site and Environmental Reviews, Office of New Reactors of the U.S. Nuclear Regulatory Commission (NRC). I have been involved in site characterization and groundwater transport analysis for more than 20 years, and have been involved in reviewing applications for power plants for more than five years. I have been involved in the hydrologic engineering safety reviews for more than 10 new nuclear power plant applications. I am the lead groundwater hydrologist for the review of the Fermi 3 combined license (COL) application. A statement of my professional qualifications is attached hereto.

2. Initially, the Fermi Applicant's September 2008 COL application provided no radionuclide transport calculations. The Applicant's initial radionuclide transport calculations were presented in a November 2008 response to staff Requests for Additional Information (RAIs) in NRC3-08-0008 (ML083190539). In a September 2009 response to staff RAIs, NRC3-09-0026 (ML092470230) summarized the Applicant's approach to radionuclide transport using literature values for porosity and distribution coefficients (K_d values) obtained from analyses of site-specific samples. In a May 2010 response to staff RAIs, NRC3-10-0018 (ML101320136) provided the Applicant's supplemental response to questions concerning transport calculations.

In an October 2010 response to staff RAIs, NRC3-10-0046 (ML102940218) provided a summary of the Applicant's determination of site-specific porosity used for transport, and associated revisions to the transport calculations.

3. I have read the statements in sections A through C of APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF CONTENTION 5 (Applicant's Motion), and the statements are correct. I have also reviewed DTE's STATEMENT OF MATERIAL FACTS ON WHICH NO GENUINE DISPUTE EXISTS (Statement of Facts). My discussion of this review follows. I have concentrated on the technical issues in paragraphs 2, 5, 6, 8, 9, and 10 of the Statement of Facts. Legal issues in other paragraphs of the Statement of Facts are addressed in the staff answer to the Applicant's Motion.

4. I have reviewed paragraph 2 of the Statement of Material Facts and conclude that it is correct. A release was postulated to occur from the equipment drain collection tank, a part of the Liquid Waste Management System (LWMS). The LWMS is designed with mitigating features to meet the requirements of General Design Criteria (GDC) 60 and guidance in Regulatory Guide 1.143 "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants". A cubicle enclosure around the equipment drain collection tank is capable of containing the entire contents of the tank should the postulated release occur.

5. I have reviewed paragraphs 5 and 6 in the Statement of Facts insofar as they relate to DTE's initial analysis of radionuclide transport in groundwater. Initially, mitigating design features were cited by the applicant as a reason for not including a release analysis in the FSAR (Revision 0). In response to staff RAIs, in NRC3-08-0008 (ML083190539) the applicant developed and presented initial transport calculations using an effective porosity of 1 percent for the Bass Islands aquifer based on literature values. The applicant performed the transport analysis without using a distribution coefficient or retardation in the calculations, which resulted in concentrations exceeding 10 CFR Part 20, Appendix B, Table 2, Column 2 limits (ECLs) for

several radionulcides (tritium, manganese, iron, cobalt, zinc, strontium, yttrium, ruthenium, cesium, and cerium). The applicant's discussion of this first transport analysis concluded by citing mitigating design features.

6. I have reviewed paragraph 8 in the Statement of Facts, and conclude that it is correct. In response to staff RAIs, NRC3-10-0026 (ML092470230) summarizes the applicant's response using site-specific distribution coefficient values that were developed from laboratory analysis and used for transport calculations. The laboratory analysis report, submitted separately by the applicant in January 2010 (NRC3-10-0004, ML100331451), contained distribution coefficient analyses for nine distinct site specific Bass Islands aquifer samples whose locations approximated the postulated groundwater pathways. The laboratory used industry standard practices in its analysis. Distribution coefficients were obtained for the isotopes of manganese, iron, cobalt, zinc, strontium, yttrium, ruthenium, silver, cesium and cerium. The site-specific retardation factors are directly proportional to the bulk density and distribution coefficients, and inversely proportional to the porosity. The laboratory analyses of distribution coefficients and the porosity values provided by the applicant (discussed below), and the resulting retardation factors are sufficient for the staff's evaluation.

7. I have reviewed paragraph 9 in the Statement of Facts, and conclude that it is correct. The Applicant's response to the staff RAI, found in NRC3-10-0046 (ML102940218), provided a summary of a revised determination of site-specific bedrock porosity developed from analysis relying on site specific hydraulic conductivity and Rock Quality Designation data. The Applicant conservatively selected the resulting low end of the range of values for effective porosity, 0.1 percent, and used that value in subsequent calculations. The NRC has completed its review of the revised FSAR material, DTE letters, and regional reports, and finds the Applicant's porosity estimate to be acceptable. The revised, lower value for effective porosity increases the calculated groundwater velocity in the bedrock, thereby increasing the conservatism of subsequent analyses.

8. I have reviewed paragraph 10 in the Statement of Facts, and conclude that it is correct. NRC3-10-0046 (ML102940218) provided a summary of past groundwater radionuclide transport analysis approaches, an explanation of a revised radionuclide transport approach, and proposed text changes to the FSAR. The revised approach considered two groundwater flow paths through the Bass Islands aquifer: one involving flow to the east towards Lake Erie and another involving flow towards the west to the offsite well. In the revised approach, the applicant's analysis process proceeded as follows:

- All contents of the Equipment Drain Collection Tank was assumed to be released into its underground room, and groundwater floods the room, thereby initially diluting the tank liquid by a factor of at least three.
- Effective porosity was set to a site specific value of 0.1 percent as described above.
- Fate and transport calculations then followed a conservative, multi-step approach:
    - An initial analysis relied only on advective transport and radioactive decay. Radionuclides with an activity concentration above 1 percent of their ECLs were evaluated in the next step.
    - A second analysis added the effect of sorption, conservatively using the minimum site-specific distribution coefficients. Radionuclides with an activity concentration above 1 percent of their ECL were evaluated in the next step.
    - For the pathway to Lake Erie, a third analysis considered the calculated groundwater discharge relative to the tremendous dilution capacity of an appropriate local volume of Lake Erie. While actual dilution capacity would be expected to be on the order of a factor of 3,500, the Applicant used a conservative dilution factor of 10 in the analysis. All radionuclides were below ECLs, and the sum of fractions was less than 1. The sum of fractions methodology, which is used to assess compliance for effluent containing multiple radionuclides, involves dividing each radionuclide's concentration in the water at

the exposure location by the corresponding ECL and summing the values. A summed value over unity is out of compliance.

- For the pathway to a well, the third analysis added the effect of longitudinal dispersion. Results for radionuclide activity concentrations were below ECLs, but the sum of fractions was greater than 1.
- The final step for the pathway to the well added the effect of transverse dispersion. In this case, the sum of fractions was less than 1.

9. The Applicant's analysis in NRC3-10-0046 (ML102940218) clearly described the highly conservative (i.e., promoting transport and high activity concentrations) aspects of the approach including:

- Instantaneous release of the complete contents of the tank, with the highest radionuclide activity concentrations (generally by several orders of magnitude) according to the DCD (Rev. 06, Table 12.2-13a),
- Rapid groundwater flow, achieved in part by assuming the lowest effective porosity value (0.1 percent) obtained through a determination on site field samples,
- Limited sorption taking place, achieved by assuming the lowest distribution coefficients from laboratory work on site samples,
- Appropriate careful consideration of realistic transport processes and additional modeling complexity for key radionuclides,
- Only minor dilution (a factor of 10), of groundwater discharging to Lake Erie, and
- A constant concentration source term over the operating life of 60 years for the case of transport to a well (does not affect the final conclusions).

10. NRC staff confirmed the calculated results to the receptors by performing independent analyses. Those analyses relied on conservative assumptions, and the process, assumptions,

and overall results resembled those ultimately provided by the Applicant in NRC3-10-0046 (ML102940218).

11. For the pathway to Lake Erie, the calculated groundwater discharge relative to the tremendous dilution capacity of an appropriate local volume of Lake Erie is on the order of a factor of 3,500, while a dilution factor of 10 was used in the analysis. The dilution of groundwater discharging to Lake Erie is extreme, and therefore the assumed dilution factor of 10 is a highly conservative low value. Nevertheless, use of that value still resulted in sufficiently low radionuclide activity concentrations in lake water. The analysis for the well also produced sufficiently low concentrations once the effect of two-dimensional dispersion was included. However, concentrations at the well would be further reduced in actuality because radial flow to the well caused by pumping would draw clean groundwater into the well from cross-gradient portions of the Bass Islands aquifer.

12. The results of the conservative analyses provide confidence that a complete release of the tank's contents to the Bass Islands aquifer would not result in an exceedance of ECLs or the sum of fractions at the two possible receptors. Direct impact to surface water was not evaluated because the location of the key source of contamination is underground. Furthermore, the use of mitigating design features, which was not credited in the analyses described above, would further reduce any potential impact from an accidental release.

Executed in Accord with 10 CFR § 2.304(d)

Joseph F. Giacinto
Hydrologist – Hydrologic Engineering Branch
Division of Site & Environmental Reviews
Division of New Reactor Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(301) 415-0714
Joseph.Giacinto@nrc.gov

Executed in Rockville, MD
this 23rd day of February, 2011

STAFF ATTACHMENT 2

RESUME

Joseph F. Giacinto
Hydrologist
Hydrologic Engineering Branch
Division of Site and Environmental Reviews
Office of New Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUMMARY

Duties include technical review functions related to environmental reports and environmental impact statement (NEPA) input, and providing technical input to safety evaluation reports based on reviews of an early site permits (ESP) or combined license (COL) Safety Analysis Reports. Routinely lead safety site audits and support environmental site audit/scoping meetings and alternate site assessment processes, prepare project cost estimates, and supervise contractors and staff. Duties include supporting acceptance reviews of new applications, readiness assessment activities, technical review of new applications and the development of requests for additional information (RAIs), organizing the site safety audits, preparing statements of work for contractors and associated independent government cost estimates, and developing infrastructure guidance including interim staff guides (ISGs), regulatory guides (RGs), and contributions to industry initiatives and guidance. Project work currently includes team lead for managing contracts, developing cost estimates, and supervising a team of contractors and internal staff for review of safety related hydrology issues. Currently lead hydrologist for two new reactor applications and lead groundwater hydrologist for three new reactor applications.

EDUCATION

M.S., Hydrology, University of Arizona, Tucson, AZ, 1988
B.S., Geology/Geophysics, San Diego State University, San Diego, CA, 1985

REGISTRATION

Certified Professional Geologist, Virginia License Number: 001350
Registered Professional Geologist, Wyoming License Number: PG-2588
Microsoft Certified Professional, ID Number: 2949056

PROFESSIONAL AFFILIATION

Vice-Chair, Advisory Committee on Water Information, Hydrology Modeling Work Group

EXPERIENCE

HYDROLOGIST
U.S. Nuclear Regulatory Commission, Rockville, MD
Duties include technical review functions related to environmental reports and environmental impact statement (NEPA) input, and providing technical input to safety evaluation reports based

on reviews of an early site permits (ESP) or combined license (COL) Safety Analysis Reports Routinely lead safety site audits and support environmental site audit/scoping meetings and alternate site assessment processes, prepare project cost estimates, and supervise contractors and staff. Duties include supporting acceptance reviews of new applications, readiness assessment activities, technical review of new applications and the development of requests for additional information (RAIs), organizing the site safety audits, preparing statements of work for contractors and associated independent government cost estimates, and developing infrastructure guidance including interim staff guides (ISGs), regulatory guides (RGs), and contributions to industry initiatives and guidance. Project work currently includes team lead for managing contracts, developing cost estimates, and supervising a team of contractors and internal staff for review of safety related hydrology issues. Currently lead hydrologist for two new reactor applications and lead groundwater hydrologist for three new reactor applications.

SENIOR PROJECT MANAGER, 2002 - 2009

Environmental Resources Management, Annapolis, MD

Designed, reviewed, developed, and managed environmental studies, power plant expansions, and numerical modeling projects and associated contracts and contractors. Regularly performed complex technical analyses on large-scale, nationally recognized environmental studies and data surveys integrating field and modeling studies. Developed reports, documents and environmental applications for use by private clients, federal and state agencies, and client contractors. Reports and products were used as key support components for nationally recognized litigation proceedings and in the support of key decision pathways. Presented technical information in an easily understood format to technically diverse audiences that included peers, juries, lawyers, federal and state agencies, senior management, and the general public. Responsibilities included research and development of new technologies and providing technology training opportunities for staff, and personnel management. Acting as extensions of staff for state agencies, prepared reports for hearings related to certificate of public necessity and convenience for proposed power plant expansions, and prepared presentations for congressional members and the general assembly. Prepared grant proposals for innovative technologies that integrated funding from local, state, and federal sources. Led development of environmental and GIS applications for technically and geographically diverse user groups. Projects included the design, management, and implementation of high-profile project teams and technology solutions, including on- and off- site training sessions.

SENIOR PROJECT MANAGER, 1995 - 2002

ES&T (Division of GES), Blacksburg, VA

Marketed services to new and existing clients, managed projects, performed technical analysis, developed proposals, supervised personnel, and performed personnel reviews. Developed numerical models to simulate environmental processes and reproduce past conditions to track contamination to potential responsible parties. Developed expert witness testimony and exhibits for nationally recognized litigation cases. Worked on litigation, included developing, designing, and implementing various databases, GIS/IT desktop and Web applications, and reviewing and critiquing the work of other nationally recognized experts. Presented findings related to environmental analyses to peers at conferences and developed professional papers.

Developed new and specialized numerical modeling techniques for statistical inverse simulations of parameter values and distributions. Directed, mentored, and trained staff in environmental analysis, modeling techniques, and the use and application of GIS and numerical models. Supervised a staff of up to five individuals and planned short-term and long-term workload for each staff member performing resource leveling across various projects. Chose and interviewed candidates for potential positions and recommended new hires, and performed employee evaluations.

PROJECT ASSOCIATE, 1994 – 1995

IT Hanford, Hanford, WA

Reviewed reports on radionuclide transport and provided comments to senior staff for use in mapping long-term remediation strategies. Served as the primary point of contact for performing numerical modeling and GIS analyses for groundwater flow and dissolved and radionuclide transport over the Hanford site and towards the Columbia River. Analyzed groundwater pump test data and determined parameters from field observation data, and used resulting parameters in numerical model simulations to evaluate the effectiveness of field operations and groundwater capture and treatment efforts on the Hanford site. Developed innovative methods to improve procedures and cut costs for remediation methods to senior staff and field crews based on environmental analyses of pump test, water level, and simulated conditions. Reviewed sampling procedures and field operations, and evaluated leakage from radionuclide waste holding tanks used during the production of plutonium near moth-balled reactors.

SENIOR ASSOCIATE, 1992 - 1994

ICF Kaiser Engineers, Richland, WA

Performed nationally recognized environmental, numerical and GIS modeling for litigation cases and environmental analyses for various sites across North America at major industrial client facilities. The modeling and analyses were integrated with GIS software to evaluate spatial and temporal trends in data sets. Integrated database query applications with customized GIS applications permitted on-the-fly analyses of large-scale environmental disasters, parameter distributions, and water supply networks. Maintained computer networks, terminals, and associated software and hardware. Purchased, installed, and maintained hardware and software including state of the art printers and plotters. Developed automated computer codes and GIS modules to pre- and post- process simulation input and output results into report-ready figures and graphics. Performed statistical modeling of environmental conditions for statistical inverse estimation of hydrogeologic parameters based on known ranges, site characteristics and boundary conditions.

STAFF SCIENTIST, 1988 - 1992

Geraghty & Miller, Inc.

Developed conceptual and numerical models matching observed to simulated environmental conditions for public and private organizations to predict future conditions given initial site specific conditions and constraints. Developed, supported, and tested commercial software and provided support to end users. Presented findings from predictive computer simulations to

public agencies on clients' behalf to negotiate settlements concerning pollution control and abatement. Worked cooperatively with teams of consultants to develop estimates of future water supplies for a major metropolitan area in an arid region of the U.S. Maintained and built custom computers especially suited to iterative mathematically processing of large volumes of data for numerical simulations. Developed exhibits for clients and litigation proceedings based on the statistical probabilities of outcomes from predictive simulation scenarios.

SELECTED PROFESSIONAL PUBLICATIONS/PRESENTATIONS

Giacinto, J.F, R.P. Raione, N. Tiruneh, H. Ahn, D. Barnhurst and M. McBride, 2010. Conceptual Groundwater Model Development for New Nuclear Power Plants. Published and presented at the Joint Federal Interagency Conference, Las Vegas, NV, July 2010.

Giacinto, J.F. and P. Petzrick, 2007. Assessing Renewable Energy Progress and Technology, presented and published at FSU Renewable Energy Symposium, September 2007.

Giacinto, J.F., L.G. Rafalko, P. Petzrick, 2006. Sealing abandoned mines with treated fly ash kills two birds with one stone. Published in POWER Magazine, February, 2006.

Giacinto, J.F, P. Petzrick, and L. G. Rafalko, 2006. Interpreting Geophysical Studies for Watersheds Over an Abandoned Mine Complex. Presented/published at the Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), April 2006.

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Giacinto, J.F., 2005. Correlating Airborne Geophysical Survey Data to Conductive Strata. Presented and published at ESRI User Conference, July 2005.

Reeves, G.W., J.F. Giacinto, and P. Petzrick, 2005. Potential Massive Beneficial Use of Coal Combustion Products. Presented and published at World of Coal Ash Conference, April 2005.

Giacinto, J.F., 2005. Airborne Geophysical Survey Results Over the Davis Kempton Mine Complex. Presented to the West Virginia Department of Environmental Quality Task Force, April 2005.

Giacinto, J.F., 2005. GIS Tools for Site Management and Redevelopment. Presented and published at Towson University GIS Conference and Symposium (TUGIS), March 2004.

Giacinto, J.F., 2004. Integrated Data Collection and GIS Applications with Personal Digital Assistants. Presented and published at ESRI User Conference, August 2004.

Giacinto, J.F., 2004. Personal Digital Assistant Data Collection – Scales of Efficiency. Presented and published at Towson University GIS Conference and Symposium (TUGIS), March 2004.

Giacinto, J.F., 2003. Development and Implementation of a Container Based Integrated ArcIMS Application. Presented and published at Twenty Third Annual ESRI User Conference, July 2003, San Diego, CA.

Giacinto, J.F., 2003. Translation of an ArcView 3.2 Application for the Internet. Presented at the Towson University GIS Conference and Symposium, June 2003, Towson, MD.

Giacinto, J.F., L.D. Norman, J.W. Bodamer, 2001. Converting Desktop MapObjects Applications to ArcIMS: Case Studies for Environmentally Sensitive Sites. Presented and published at Twenty First Annual ESRI User Conference, San Diego, CA.

Giacinto, J.F., J.A. Johnson, D.R. Bennett, J.W. Widener, W.O. Wells, 2001. Utilizing Three Dimensional Visualization to Conceptualize and Calibrate a MODFLOW Groundwater Flow Model for Multiple Superfund Sites. Published and presented at the MODFLOW 2001 and Other Modeling Odysseys Conference, Golden, CO.

Giacinto, J.F., W.G. Cutler, and M.D. Hrovatic, 2000. Development, Implementation, and Maintenance of a Remotely Accessible Geographic Information System, 2000. Presented at Twentieth Annual ESRI User Conference, San Diego, CA, June 2000.

Giacinto, J.F., 2000. Characterization of Brownfields and Superfund Sites Utilizing Remotely Accessible Geographic Information Systems. Presented at Environment Virginia 2000 Conference, Lexington, VA, April 2000.

Giacinto, J.F. W.G. Cutler, M.D. Hrovatic, and D.G. Collins, 1999. Remotely Accessible Geographic Information Systems: A Superfund Case Study. Presented at the Fourth Annual CIS/USA Conference, San Francisco, CA, November 1999. Published in Hydrological Science and Technology Journal.

Giacinto, J.F., 1999. Electronic Multimedia Site Summary for a Former Military Manufacturing Facility. Presented at 22nd Biennial Ground Water Conference, Interconnected Water Supply in California, San Diego, CA, May 1999.

Giacinto, J.F., J.A. Johnson, J.W. Bodamer, and L.D. Norman, 1999. Improving Public Awareness Through Multimedia Reports: A Brownfields Case Study. Presented at Environment Virginia ’99 Conference on Environmental Sustainability, Lexington, VA, April 1999.

Giacinto, J.F. and J.L. Liu, 1998. Conceptualization of a Groundwater Flow System Using Three-Dimensional Kriging in Salt River Valley, Arizona. Presented at the International Water Resources Engineering Conference – Groundwater Management Symposium, Memphis, TN.

Giacinto, J. F., 1994. An Application of MODFLOWP to a Superfund Case Study, Proceedings of the 1994 International Groundwater Modeling Conference, Fort Collins, CO.

Giacinto, J. F. and J. L. Devary, 1993. Design of a Three-Dimensional Groundwater Model Utilizing a Geographical Information System: A Superfund Case Study, Proceedings of the Second USA/CIS Joint Conference on Environmental Hydrology and Hydrogeology, Washington, D.C.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
	)	
DETROIT EDISON CO.	)	Docket No. 52-033
	)	
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the NRC STAFF ANSWER TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF CONTENTION 5, with attachments, have been served upon the following persons by Electronic Information Exchange and electronic mail this 23rd day of February, 2011:

Ronald M. Spritzer, Chair
Administrative Judge
Atomic Safety and Licensing Board Panel
Mail Stop: T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-mail: Ronald.Spritzer@nrc.gov

Michael F. Kennedy
Administrative Judge
Atomic Safety and Licensing Board Panel
Mail Stop: T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-mail: Michael.Kennedy@nrc.gov

Randall J. Charbeneau
Administrative Judge
Atomic Safety and Licensing Board Panel
Mail Stop: T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-mail: Randall.Charbeneau@nrc.gov

Office of Commission Appellate Adjudication
Mail Stop O-16C1
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-mail:OCAAmail@nrc.gov

Office of the Secretary
ATTN: Docketing and Service
Mail Stop: O-16C1
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-mail: HEARINGDOCKET@nrc.gov

Bruce R. Matters
Detroit Edison Company
One Energy Plaza, 688 WCB
Detroit, Michigan 48226
E-mail: matersb@dteenergy.com

David Repka, Esq.
Tyson R. Smith, Esq.
Counsel for the Applicant
Winston & Strawn, LLP
1700 K Street, NW
Washington, DC 20006-3817
E-mail: drepka@winston.com
trsmith@winston.com

Terry J. Lodge, Esq.
Counsel for Petitioners
316 N. Michigan St., Ste. 520
Toldeo, OH 43604-5627
E-mail: tjlodge50@yahoo.com

/Signed (electronically) by/

Marcia Carpentier
Counsel for NRC Staff
U.S. Nuclear Regulatory Commission
Mail Stop O-15 D21
Washington, DC 20555-0001
(301) 415-4126
Marcia.Carpentier@nrc.gov

Dated at Rockville, Maryland
this 23rd day of February, 2011