MPUC Docket No. E-6472/GS-06-668
OAH Docket No. 12-2500-17512-2

BEFORE THE
MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
100 Washington Square, Suite 1700
Minneapolis, Minnesota 55401-2138

FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION
127 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

In the Matter of a Joint LEPGP Site Permit,
HVTL Route Permit and Pipeline (Partial Exemption)
Route Permit Application for the Mesaba Energy Project

PREPARED DIRECT TESTIMONY AND EXHIBITS OF

EXCELSIOR ENERGY INC., MEP-I LLC, AND MEP-II LLC

JOHN T. LEE

JANUARY 16, 2007

EXCELSIOR ENERGY, INC.

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

PREPARED DIRECT TESTIMONY OF

JOHN T. LEE

Q Please state your name, current employment position and business address.

A John T. Lee. I am a civil engineer and a vice president of Barr Engineering Company, which provides consulting services for engineering and environmental issues, including site assessment and development, environmental permitting, water-resources management, and waste management. My business address is 4700 77th Street, Suite 200, Minneapolis, Minnesota 55435.

Q Please describe your educational and professional background.

A I have a Bachelor of Science in Civil Engineering from Iowa State University. I am registered as a civil engineer in Iowa, Michigan, Minnesota, Missouri, North Dakota, South Dakota, and Wisconsin. With over 25 years experience in providing engineering services, I have worked as a principal in charge and a project manager for many utilities. Specifically, I have extensive experience in facility site and route permitting, water quality, water appropriation, feasibility studies, and other environmental review processes. My resume is appended as Exhibit __ (JTL-1).

Q On whose behalf are you testifying?

A I am testifying on behalf of MEP-I LLC, MEP-II LLC, and Excelsior Energy Inc. (collectively "Excelsior"), the developers of the Mesaba Energy Project (the "Project").

Scope and Summary

Q What is the purpose of your testimony in this proceeding?

A The purpose of my testimony is to sponsor several sections of the Joint Permit Application, the Environmental Supplement, and the NPDES Permit Application. Specifically, I am sponsoring the following sections:

Joint Application

Section 3.4.2 (Water Effluents)

Section 3.6.2.2 (West Range Process Water Infrastructure)

Section 7.6.4.4 (Process Water Discharge Permit)

Appendix 7 (East Range Water Quality Data)

Environmental Supplement

Section 1.8.2.2 (Project Discharges and Products West Range)

Section 1.12.4.2 (Infrastructure Requirements and Justification of Alternatives West Range Process Water System)

Section 1.12.5 (Process Wastewater Discharges)

NPDES Permit Application (Appendix 6)

Section 2 (Stormwater Management)

Section 3.2.2 (Water Use Water Source Quality)

Section 4.3 (Discharge Outfalls)

Section 5.0 (NPDES Permit Application Considerations)

Appendix A (Permit Application Forms)

Appendix B (Source Water Quality Data)

Appendix D (Water Quality Mass Balance Study)

Appendix E (Thermal Modeling)

Appendix F (Cooling Water Intake Conceptual Design)

During the preparation of the applications and Environmental Supplement, I worked closely with Excelsior in reviewing these sections. The sections incorporate analysis prepared by myself or Barr personnel under my supervision. I am available to answer questions relating to these sections.

Q Please describe the principal difference between the West and East Range IGCC Power Stations as it applies to the discharge of cooling tower blowdown.

A. The East Range IGCC Power Station will not discharge cooling tower blowdown.

Q Please explain the reason for this difference.

A The East Range IGCC Power Station is located in the Lake Superior Basin and subject to stringent rules set up as part of the Great Lakes Initiative. These rules do not allow discharges of mercury to occur above the end-of-pipe limit of 1.3 nanograms per liter. Because the background concentration of mercury in the pits that would serve as a source of cooling water for the East Range IGCC Power Station ranges between 0.5 nanogram per liter and 1.0 nanogram per liter, the discharge restriction of 1.3 nanograms per liter effectively precludes discharges of cooling tower blowdown.

Q. Please briefly describe the sources for information contained in the Applications that relate to the discharge of cooling tower blowdown from the West Range IGCC Power Station.

A The observations and conclusions of these sections are based on a variety of analytical tools. To assess long-term sustainable flows, we held discussions with the Minnesota Department of Natural Resources ("MDNR") regarding the availability of water, analyzed stage-storage data from the MDNR, reviewed MDNR publications

related to each water source, and reviewed primary data to ensure the availability of the water resource. We used data obtained from numerous sampling events to characterize the chemical constituents in the source water and the receiving water. We then used extensive modeling to assess both water quality and water levels during operation of the proposed facility. To estimate the effluent water quality of the Project over various periods of operation, we employed a mass balance model. The model calculates the anticipated water quality of both the Project's discharge of cooling tower blowdown to Canisteo Mine Pit ("CMP") and Holman Lake and the anticipated water quality of the receiving bodies.

Q Please briefly describe the generation and management of cooling tower blowdown at the West Range IGCC Power Station and contact process waters at both the West and East Range site locations.

A The West Range IGCC Power Station will result in the discharge of three wastewater streams: cooling tower blowdown, process wastewater generated from gasification and slag processing operations, and domestic wastewater. The most significant wastewater stream released as a result of the Project is cooling tower blowdown, which is essentially composed of the same chemical constituents as the water bodies from which it was drawn and to which it will be discharged, but in a higher concentration. Discharge of cooling tower blowdown from the West Range IGCC Power Station may require a variance from water quality criteria for hardness and total dissolved solids, neither of which represent human health or welfare concerns.

The Project will utilize a Zero Liquid Discharge ("ZLD") system to manage its contact process wastewaters. This process recovers distilled water for reuse, which

may be used to reduce fresh water consumption and concentrates certain contaminants into a solid waste stream. Excelsior will make provisions with a licensed disposal facility to ensure the lawful disposal of any solid waste resulting from this system.

Although both the West and East Range IGCC Power Stations will employ ZLD systems, each facility will use its system differently. The West Range IGCC Power Station will use the ZLD system to process wastewater generated from gasification and slag processing operations. This treatment will eliminate any discharge of water that has come into contact with syngas or coal gasification byproducts. The separation of contact and non-contact wastewater streams will ensure that no mercury, phosphorus or other pollutants that could be derived from the gasification process are discharged to surface waters.

The East Range IGCC Power Station will use a ZLD system to handle all non-domestic wastewater streams. The system will ensure that, despite the significantly greater cost associated with the more extensive use of the process, Excelsior will be able to completely eliminate the discharge of cooling tower blowdown from the East Range IGCC Power Station. This additional processing of cooling tower blowdown by the East Range IGCC Power Station is required due to the more stringent rules that govern discharges to the Lake Superior Basin watershed.

Q Please describe the Project's methods for managing stormwater.

A The Project will adopt Best Management Practices (BMP) during construction to manage any stormwater generated during operation of Mesaba One and Mesaba Two. Before beginning construction, Excelsior will develop and submit a Stormwater Pollution Prevention Plan. This plan will identify foreseeable conditions, specify the

locations of areas not to be disturbed, and propose practices to address erosion prevention and sediments BMPs.

Q Please briefly describe investigations you have undertaken to ensure that the IGCC Power Station's discharges to receiving water bodies will be consistent with the protection of human health and welfare.

A The West Range IGCC Power Station will directly discharge cooling tower blowdown into the CMP and Holman Lake. In assessing how to best manage these affected water bodies, we considered the current water quality of each water source, the IGCC Power Station's discharge rates, the proposed outfall locations for possible discharge, and the physical and chemical characteristics of the IGCC Power Station's wastewater discharges. Based on our analysis of the waterbodies, we developed a comprehensive mass balance model to ensure that such discharges would not violate water quality criteria that would directly affect human health or public welfare. During operation of Mesaba One and Mesaba Two, water quality criteria consistent with the protection of human health and welfare will be maintained in both Holman Lake and the CMP by providing for the adjustment of water levels between the two water bodies, the regulation of cycles of concentration used in the cooling towers, and limitation of the flow rate and volume of wastewater discharge.

The East Range IGCC Power Station would be located in the Lake Superior Basin watershed where the applicable standards for discharges effectively preclude any discharge of cooling tower blowdown into this watershed. Consequently, the East Range IGCC Power Station will utilize an oversized (relative to the West Range) ZLD system to prevent any discharge from the East Range Site.

Q Please briefly describe the thermal impacts to West Range receiving water bodies.

A The Project complies with applicable federal and state thermal standards by utilizing a reasonable mixing zone. Thermal modeling of the discharge indicates that the Project will result in a relatively small temperature increase in the water bodies for several reasons, including the overall surface area and volume of the water bodies as compared to the volume, flow rate, and temperature of the discharge.

Q Please provide a brief description of the Project's mitigation measures on the West and East Range Sites, including mitigation through statutory and regulatory controls.

A The Project will comply with applicable permit limits as well as statutory and regulatory standards, including Minnesota water quality requirements. Although the Project will cause a limited increase in the concentration of various constituents, an analysis of the projected discharge into the CMP from the HAMP complex and LMP indicates that the Project will comply with federal and state limits for mercury and all other individual chemical constituents, and, if necessary, a variance will be requested from total dissolved solids (TDS), and hardness limits, which are two characteristics that have been noted as having no bearing on human health and welfare.

The Project also complies with the Clean Water Act's requirements regarding intake structures. The Project has two conceptual designs for the intake system: the caisson intake system, which will be considered for use in the CMP pumping station, and the floating intake system, which will be used at the HAMP Complex and LMP pumping stations. Both of these systems will use the best technology available

(BTA), such as intake structures that regulate intake velocities and screens for the protection of aquatic organisms.

Supplements and Clarifications

Q Are there any parts of the sections that you have sponsored that you would like to supplement or clarify at this time?

A Yes. I would like to include a corrected water quality table, which is appended as Exhibit ___ (JTL-2).

Conclusion

Q Does this conclude your testimony?

A Yes.

EXHIBITS

EXHIBIT ___ (JTL-1)

Experience

John Lee has been providing engineering services to the power industry since 1979. A registered civil engineer in several Midwestern states including Minnesota, North Dakota, South Dakota, and Wisconsin, he has worked for utilities as both a principal in charge and a project manager. His services to the power industry have involved energy facility site and route permitting and other environmental review processes, remedial investigations, feasibility studies, and remedial design. Examples of John's relevant work for power industry clients include:

- Serving as principal in charge for the siting and permitting of Otter Tail Power's Big Stone II project, which entails adding an electric generating unit to an existing plant. Barr assisted with the water-appropriation and siting permits and also provided the information needed for a federal environmental impact statement, including air quality assessment, water appropriations modeling, vegetation analysis, wetlands delineation, sensitive-species studies, noise analysis, zoning land-use studies, agricultural-impact assessment, and geological studies. The water-appropriation and siting permits have been granted, and the federal EIS is in progress, with a decision expected in 2007.

- Serving as project manager for development of Minnesota permit applications for the Excelsior Energy IGCC power station proposed for Minnesota's Iron Range. Barr is taking the lead on preparing the Minnesota power plant site permit, high-voltage transmission line route permit, and a gas pipeline routing permit, scheduled for submittal in early 2006. Barr is also preparing an NPDES permit application that addresses water quality issues, thermal discharge (316[a]) and cooling water intake requirements (316[b]).

- Working with Xcel Energy on environmental permitting and for the Riverside repowering project. The project involves converting an existing coal-fired plant to a new 2-on-1 gas-fired plant using portions of the existing plant for the steam cycle.

- Serving as principal in charge for several permitting efforts for the Great River Energy Cambridge generating station, a new 170 MW simple-cycle gas-fired combustion turbine generator. Barr helped obtain a Minnesota power plant site permit, has prepared an Environment Assessment document for submittal to the U.S. Department of Agriculture Rural Utilities Service, and has submitted a Minnesota NPDES permit application. Barr is currently preparing a water-appropriation permit application.

- Assisting Xcel Energy with environmental permitting and site engineering for the High Bridge combined-cycle plant. The project involves a new 2-on-1 gas-fired plant being built adjacent to an existing coal-fired plant that will be decommissioned when the new plant is completed.

- Serving as project manager for siting and permitting services for the Blue Lake expansion and Angus Anson expansion projects for Xcel Energy. Provided assistance in obtaining regulatory approvals for expanding the Angus Anson peaking plant in South Dakota and the Blue Lake peaking plant in Minnesota. The Angus Anson expansion project required Barr to prepare an amendment of an existing state site permit. Barr assisted Xcel in preparing applications for a Certificate of Need, site permit, electric transmission route permit, natural-gas-pipeline route permit, air quality and other environmental permits.

- Serving as principal in charge to help Xcel Energy obtain regulatory approvals from the Minnesota Environmental Quality Board (MEQB) and the Public Utilities Commission for the Black Dog repowering project. Worked with Xcel Energy resource planning staff in 1998 to develop the need case for the repowering of two of the plant's coal-fired units to a gas-fired combined cycle unit. Also compiled the information and prepared the environmental review document necessary to obtain the site permit from the MEQB.

- Serving as principal in charge for air, water, wastewater, and other environmental permitting and engineering design projects associated with the development of the 550 MW Lakefield Junction Generating Project in southern Minnesota (a partnership of NRG Energy and Tenaska, Inc.).

- Serving as principal in charge and project manager for work for Great River Energy, including providing environmental review and permitting assistance and water-supply and waste-management engineering services for development of a 300–600 MW gas-fired combined-cycle generating facility in the Twin Cities area. When planning decisions resulted in reconfiguring the project to a 170 MW simple cycle peaking plant addition at another location, Barr continued to work on obtaining the site and air quality permits.

- Serving as principal in charge and project manager for work involving permitting and environmental services for two wind power projects planned for southern Minnesota and northern Iowa. Services included assisting with client's applications to utilities commission and environmental quality board for proposed projects that will provide up to 400 MW of wind power capacity.

Education B.S. Civil Engineering, Iowa State University, 1979

Registrations Civil Engineer: Iowa, Michigan, Minnesota, Missouri, North Dakota, South Dakota, and Wisconsin

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EXHIBIT ___ (JTL-2)

Table 5.2-2
Expected IGCC Power Station Discharges and Applicable State Numerical Water Quality Standards

Constituent	Units	Class 2 WQ Standard	Anticipated Effluent Water Quality – Phase I (5 COC)	Anticipated Effluent Water Quality – Phase II (3 COC)
Hardness	mg/l	250	1,576	2,052
Alkalinity	mg/l	n/a	--	--
Bicarbonate	mg/l	n/a	892	1,200
Calcium	mg/l	n/a	--	--
Magnesium	mg/l	n/a	--	--
Iron	mg/l	n/a	--	--
Manganese	mg/l	n/a	--	--
Chloride	mg/l	230	27	38
Sulfate	mg/l	n/a	499	590
TDS	mg/l	700	1,733	2,070
pH	mg/l	6 - 9	6 - 9	6 - 9
Aluminum	ug/l	125	52	74
Arsenic	ug/l	53	--	--
Barium	ug/l	--	--	--
Cadmium	ug/l	2.0[1]	Note 3	Note 3
Chromium (6+)	ug/l	32[1]	Note 3	Note 3
Copper	ug/l	15[1]	Note 3	Note 3
Fluoride	mg/l	n/a	--	--
Mercury	ng/l	6.9	4.7	6.6
Nickel	ug/l	283[1]	26	37
Potassium	mg/l	n/a	21	27
Selenium	ug/l	5	Note 3	Note 3
Sodium	mg/l	--	--	--
Specific Conductivity	umhos/cm	1000	2,400[4]	3,269[4]
Zinc (3)	ug/l	191[1]	Note 3	Note 3
Phosphorus	mg/l	1[2]	.02	.05

[1]Indicates a hardness based standard. It is assumed hardness in the receiving water is >200 mg/L based on available data.
[2]Phosphorus standard is an effluent limit and not a water quality standard.
[3]Results below detection limit.
[4]Values depicted reflect assumed values in the groundwater and LMP