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

JEFFERY T. DAVIS

JANUARY 16, 2007

EXCELSIOR ENERGY, INC.

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

PREPARED DIRECT TESTIMONY OF

JEFFERY T. DAVIS

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

A Jeffery T. Davis. I am a program manager with Short Elliott Hendrickson Inc. ("SEH"), a consulting firm of engineers, architects, planners, and scientists with offices in ten states throughout the Upper Midwest and Rocky Mountain regions. My business address is 3535 Vadnais Center Drive, St. Paul, Minnesota 55110.

Q Would you please describe your educational and professional background.

A I have a Bachelor of Science in Civil Engineering from the University of Minnesota and an Associate of Arts degree from the District One Technical Institute in Eau Claire, Wisconsin. I am a registered professional engineer in Minnesota, Wisconsin, Indiana, North Dakota, and South Dakota, as well as a Certified Document Technician through the Construction Specifications Institute. I have more than 27 years of experience developing, designing and managing a variety of projects, including large water-resource projects and large-scale industrial projects. In my current capacity as a Project Manager at SEH, I have been involved in preliminary engineering, site selection, the water appropriation permit, and environmental analysis of the Mesaba Energy Project (the "Project"). My resume is appended as Exhibit ___ (JTD-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 Project's developers.

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 Application, the Environmental Supplement, and the Water Appropriation Permit Application. Specifically, I am sponsoring the following sections :

Joint Application

Section 3.6 (Water Supply and Water/Wastewater Management Infrastructure)

West Range

Section 7.2 (Nearby Residences and Other Significant Receptors)

Section 7.5 (Geology and Soils)

Section 7.6.1 (Surface Waters in the Vicinity of the West Range Site)

Section 7.6.2 (Historical Information)

Section 7.6.3 (West Range Water Management Plan: Modeled Water Level Impacts)

Section 7.6.5 (Domestic Wastewater Discharge)

East Range

Section 8.2 (Nearby Residences and Other Receptors)

Section 8.5 (Geology and Soils)

Section 8.6.1 (East Range Surface Waters)

Section 8.6.2 (East Range Water Resource Impacts)

Environmental Supplement

Section 1.12.4 (Process Water Supply)

Section 1.12.6 (Domestic Wastewater Treatment Alternatives)

Section 1.12.7 (Potable Water Supply)

Section 2.1 (Potentially Significant Receptors)

Section 2.4 (Geology and Soils)

Section 2.5 (Water Resources and Water Quality)

Section 2.6 (Floodplains)

Section 3.3 (Geology and Soils)

Section 3.4.1 (Water Appropriation Impacts - West and East Range Sites)

Section 3.4.2 (Existing Permits)

Section 3.4.5 (Surface/Groundwater Resources)

Section 3.4.6 (Potable Water Supply)

Section 3.4.7 (Stream Diversions, Dredging and Dumping)

Section 3.4.8 (Aquifers)

Section 3.4.9 (Wastewater)

Section 3.5 (Floodplains)

Appendix 3 (West Range Soil Boring Logs)

NPDES Application (Appendix 6)

Section 3.2.1.1 (Overview)

Section 3.2.1.2 (System Capabilities)

Water Appropriation Permit Application (Appendix 9)

Section 2.0 (Alternative Water Sources Considered)

Section 3.0 (Description of Resources and Water Supply)

Section 4.1 (Supply Availability)

Section 4.3 (Canisteo Mine Pit Water Surface Elevation Modeling)

Section 4.4 (Modeling Results)

Appendix C-1 (Minnesota DNR Lake Information Reports)

Attachment B (Pipeline Route Map Books)

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 SEH personnel under my supervision. I am available to answer questions relating to these sections.

Q On what sources did SEH rely for its observations and conclusions in these sections?

A SEH used information from the Minnesota DNR, engineering studies, field studies, literature reviews, and discussions with local government units to estimate the water supply capability for the preferred water resources located near the proposed West Range and East Range IGCC Power Stations. As the basis for its observations and conclusions, SEH used a variety of models. For example, SEH developed a water surface elevation model for the Canisteo Mine Pit (CMP) to predict monthly water surface elevation changes and the long term impact of operating Mesaba One and Mesaba Two over extended time periods of varying weather extremes. In particular, the model allowed Excelsior to predict how severely CMP water levels could fluctuate in the event of worst case conditions, *i.e.*, maximum water withdrawals under conditions of limited recharge. SEH also used soil and geological surveys, soil borings, maps, and information from the Minnesota DNR to assess the area's geology and soil conditions.

Q Please describe the alternative water sources SEH considered for use by the West Range IGCC Power Station.

A SEH evaluated a number of potential water sources, including the Mississippi River and groundwater wells. SEH utilized site visits, meetings with state and local officials, research, and engineering analysis to determine water supply capability, pipeline routes, pump station locations, water intake locations, discharge points, and utility corridors between the water source and plant site. The results of this investigation show that the CMP, the Hill Annex Mine Pit (HAMP) Complex, the Lind Mine Pit (LMP), and Prairie River are the best potential water sources for the Project.

Q Please describe each of the preferred water sources for the West Range IGCC Power Station.

A The West Range IGCC Power Station footprint is located near abundant water sources, including several abandoned mine pits. One of these pits is currently being pumped to lower the water-surface elevation, and another pit currently overflows to the Prairie River.

The CMP is a chain of abandoned mine pits in which rising water levels are a source of increasing concern to local residents and governmental entities seeking to avoid the adverse impacts of a potentially catastrophic flood. Such concerns are not misplaced. As water levels continue to rise, soils supporting the CMP's rock walls could become saturated and unstable in the presence of mechanical shocks. The threat of a collapse due to such disruptions has prompted closure of an existing rail line with tracks running near the edge of the CMP (the vibrations from train traffic being a source of mechanical disruptions). Water released from the CMP due to collapse of a containment

wall or simply from water overflowing the existing banks of the pit would eventually flow through the City of Bovey, potentially resulting in damage to the City's commercial and residential properties, the existing railroad embankment, and the local area's natural resources.

The HAMP Complex consists of four principal mine pits, one of which is located within the Hill Annex State Park. To preserve evidence of historical mining practices and allow for tours of the mine features on a seasonal basis, the Minnesota DNR currently regulates water levels by pumping water from the HAMP Complex to a nearby lake.

The LMP is currently filled with water and has an outlet pipe that discharges into the Prairie River. Upon the addition of Mesaba Two, the Project may be required to appropriate water from the Prairie River immediately downstream of the Prairie Lake Hydropower Dam. The proposed appropriation of water, however, will have no effect on the hydropower facility's power production because of the downstream-appropriation point.

Q Please describe the water sources available for use by the East Range IGCC Power Station, as well as impacts on water resources.

A Unlike the pits in the HAMP Complex and CMP, the water levels in the pits serving the East Range IGCC Power Station pose no current threat to human health and/or welfare. Furthermore, none of these pits receive any recreational use or support a recreational fishery. Therefore, the implementation of water level control measures is not immediately necessary and no compelling reason exists to carefully control water level fluctuations. Given the number of voluminous water sources on the site, the

flexibility in operating them across a wide range of fluctuations in water level, and the capability of supplementing these sources with water from Colby Lake, the necessary water to sustain the East Range IGCC Power Station is reasonably assured.

The water needed to serve the East Range IGCC Power Station at this location will be less than that required by the West Range IGCC Power Station. The reduced water needs of the East Range IGCC Power Station stem from the use of an expanded Zero Liquid Discharge ("ZLD") system required to eliminate the discharge of cooling tower blowdown. Although adding significant capital and operating costs to the East Range IGCC Power Station, water recovered through use of this system will reduce the Station's overall water needs and will allow the Project to play a synergistic role with industrial mining operations seeking to locate nearby.

Q Please describe the water management plan and its associated infrastructure for the East Range and West Range IGCC Power Stations.

A The East Range IGCC Power Station will employ two types of water intake structures: one designed for permanent placement within a water resource and one designed to be moved from place to place within such resources and/or between them. Both types of structures will comply fully with federal law and, where required, use the best technology available to minimize harm to aquatic organisms. The infrastructure for the East Range IGCC Power Station currently plans for one permanent pumping station, one or more floating pumping stations in the mine pits, and both buried and transportable pipelines. This integrated system will provide adequate redundancy to supply daily peak and average needs, supply water in years of excess rainfall, deliver reserved water in years of reduced rainfall, and discharge water from mine pits in event of an emergency.

Excelsior's water-management plan for the West Range IGCC Power Station reflects the need to manage water levels in each of its source waters within a much narrower tolerance band than that used for regulating source water levels in pits serving the East Range IGCC Power Station. The more restrictive tolerance applied to the West Range source waters stems from their current recreational use or their role in preserving historic mining practices for public inspection. The plan for the water resources serving the West Range IGCC Power Station provides for the maintenance of water levels and water quality within an acceptable range, adequate redundancy to supply daily peak and annual average needs, retention of water in years of excess precipitation, provision of retained water in years of below normal precipitation, and emergency discharge of water from mine pits in case of extreme precipitation that would otherwise threaten human health and/or welfare. Infrastructure required to support the West Range water management plan includes permanent and floating pumping stations, an engineered orifice, and a number of pipeline routes to maintain the water levels in the CMP. Additionally, the water management plan includes outfalls for discharging cooling tower blowdown to the CMP and Holman Lake.

Q Please describe the Project's method of acquiring potable water and disposing of domestic wastewater.

A Potable water required to support construction and operation of the West Range IGCC Power Station is readily available from the City of Taconite, which will own and maintain any necessary infrastructure, all of which will comply with Minnesota Department of Health ("MDOH") requirements. Potable water for the East Range IGCC Power Station will be provided by a connection to the City of Hoyt Lakes water system,

which is permitted by MDOH and has sufficient capacity to supply all potable water needs.

Excelsior considered two primary options to dispose of the domestic wastewaters produced by the West Range IGCC Power Station. The first option involved constructing an on-site wastewater-treatment plant to treat such waste streams and discharge treated effluent to local surface waters. The second option involved connecting to the Coleraine-Bovey-Taconite wastewater-treatment system. This second approach is preferred because it will avoid the eventual discharge of treated domestic wastewaters into local surface waters.

Similarly, Excelsior considered two primary options for the management of domestic wastewater at the East Range IGCC Power Station. The first option relied on on-site wastewater treatment while the second relied on connecting to the existing Hoyt Lakes wastewater-treatment system. The second option is preferred because it will reduce operating costs and eliminate discharges of treated domestic wastewaters into Colby Lake.

Q Please briefly discuss geological conditions at the two site locations that have potential implications for the Project.

A As part of its investigation of the two site locations, Excelsior considered the geology of the area, its soil conditions, and the existence of any floodplains. The Project's design takes into account existing soil conditions and will include best management practices to minimize damage to facilities and roads, soil erosion, and sediment transport. Excelsior will use seasonal construction practices when required to

avoid permanent impacts that might otherwise occur to sensitive soils. No floodplains will be permanently impacted by the Project at either site location.

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 No, not at this time.

Conclusion

Q Does this conclude your testimony?

A Yes.

EXHIBITS

EXHIBIT ___ (JTD-1)

Jeffery T. Davis, PE
Principal/Program Manager

Education

Bachelor of Science
Civil Engineering
University of Minnesota (1980)

Associate of Arts
District One Technical Institute
Eau Claire, Wisconsin (1974)

Introduction to AutoCAD
St. Paul Technical College
(1993)

Unsteady Flow Modeling Using
DAMBRK and DWOPER
University of Texas, Austin
(1989)

Team Building
College of St. Thomas (1992)

Project Manager
Advanced Skills
College of St. Thomas (1993)

Supervisory Leadership
Wilson Learning (2000)

Professional Registrations

Professional Engineer in Minnesota, Wisconsin, Indiana, and North Dakota

Professional Certification

Certified Document Technician, Construction Specifications Institute (CSI)

Save International (Value Engineering/Management)

Professional Associations

Minnesota Society of Professional Engineers

Society of American Military Engineers

Northwest Maintenance of Way

CSI

General Background

More than 27 years of experience developing, designing and managing a wide variety of projects. Started with Municipal/Civil projects, moved to large water resource projects and is now involved with large industrial projects. As he moved within the various disciplines his responsibilities changed from project engineer to project manager to program manager. In his current position Mr. Davis is managing project managers in up to 20 disciplines. Value of projects for which he has been or is currently involved range from $15,000 to $2 billion.

Experience

Program Manager for:

Mesaba Energy IGCC Project – Taconite, Minnesota. Preliminary engineering, site selection, high voltage transmission generator outlet interconnect, water appropriation permit, environmental analysis and construction permit for the proposed 1212 MW integrated gasification combined cycle (IGCC) coal gasification facility. Estimated cost $2 billion.

Gas Transmission Pipeline Nashwauk Public Utilities Commission – Nashwauk, Minnesota. Preliminary engineering, route selection, route permitting, engineering design and construction administration of a large diameter high pressure 22-mile natural gas pipeline to serve Minnesota steel industries integrated taconite mine, direct reduction iron (DRI) plant and steel mill to be located in Nashwauk, Minnesota. Estimated cost $15 million.

Itasca County – Public Support Infrastructure for MSI – Nashwauk, Minnesota. Conduct an investigation for the public support infrastructure including preliminary engineering, site evaluation, high pressure gas supply and highway, and railroad for the first U.S. fully integrated sheet minimill that incorporates a new taconite iron ore mine, concentrator, pelletization plant, direct reduction iron (DRI) facility, melting furnace, and a thin-slab caster and hot strip mill to produce high quality hotrolled sheet steel. Estimated cost: $1.6 billion. (2005)

Program Manager for:

Tower Harbor – Tower, Minnesota. SEH developed a concept plan, conducted an economic feasibility study to define and justify associated with the project. This project also includes strategic planning to develop the funding sources to support the harbor and highway/bridge improvements. Estimated cost: $16 million. (2004)

Crookston Flood Control, Stage 2 – U.S. Army Corps of Engineers, St. Paul District. Assisted in the development of a feature design memorandum to address interior drainage and update the overall project costs. SEH staff discovered geotechnical and civil inaccuracies and performed the remedial design to keep costs within the Federal Appropriated Project budget. Based on the revised design, SEH developed plans and

SEH

specifications for 8,500 LF of clay levee, five pump stations, 2,500 LF of street and utility reconstruction, 2 major road raises and high flow cutoff channel 3. Approximate construction costs: $4 million.

Embankment Failure Remediation, Roseau River, Roseau, Minnesota – Freeberg and Grund Engineering. Conducted a remedial study to evaluate and design 3 options to stabilize 400 LF of river embankment. Once the City of Roseau selected the best option that met short and long-term needs, designed the final project documents. Construction is scheduled to start in 2003 with construction costs estimated at $400,000.

Little Calumet Flood Control, Stage VIII – U.S. Army Corps of Engineers, Chicago District. Assisting in the development of plans, specifications and estimates for a 1.5-mile reach of the Little Calumet River through an area that is presently commercial and residential in nature. Main features include: 8,600 LF of clay levee; 7,000 LF of floodwall; 10,000 LF of recreation and maintenance trail; modifications to 6 pump station structures; coordination with 10 major utilities representing more than 90 utility crossings in the project reach; one pedestrian bridge; and interior drainage and utility design. Approximate construction cost: $12 million.

Crookston Flood Control, Stage 1 – U.S. Army Corps of Engineers, St. Paul District. Assisted the Corps of Engineers in updating plan, specifications and construction cost estimate for a high flow cutoff channel on the Red Lake River. Project features include: 70,000 CY of excavation; riprap lining of upstream and downstream ends of the channel; 20-inch HDPE 500-foot siphon under the channel cut; Texas crossing and maintenance access road for City access to burn site and channel bottom.