UNIVERSITY OF MINNESOTA
Solar Vehicle Project

The **North American Solar Challenge (NASC)** started in Austin, TX on July 17. Borealis III was the first of twenty qualifiers across the starting line and headed North to Winnipeg, experiencing periods of sun and rain and exchanging the lead with Michigan and MIT. Borealis III was first across the Canadian border and into Winnipeg, and then headed west for 800 miles on Highway 1 to the finish at Calgary on July 27.

Fighting 20 mph headwinds and afternoon clouds, Borealis III crossed the finish line in **second place**, 11 minutes behind the winner in overall time. As one team supporter stated, "11 minutes after 54 hours of running is a **TIE** for first place".

Borealis III provided a remarkable **demonstration** of the potential of renewable energy by running 2500 miles in 54 hours (average 46 mph), enduring periods of cloudy, windy and rainy weather, and using **no gasoline**.

A **broad audience** was exposed to this demonstration during the 10 days of the NASC. By running in or near the lead, Borealis III was among the **first cars** into the **three** staged overnight stops, the **seven** check point stops, the **border crossing** and the **finish line**, thereby drawing **much attention** from local and national media, including daily reporting in the Twin Cities newspapers, radio interviews with team members and TV segments.

OBJECTIVES:

1) Create the 2005 "Borealis III" solar vehicle as a demonstration of renewable energy.
2) Represent the U of M in the 2005 North American Solar Challenge (NASC) which ran 2500 miles from Austin, TX to Calgary, Alberta during July 17-27.

PERSONNEL:

Forty-six self-selected undergrads from eight majors in the Institute of Technology, advised by Prof. Patrick J. Starr of the Mechanical Engineering Department.

RESULTS:

- Team Members donated over 43,000 extracurricular hours of research, design and fabrication activities to create Borealis III.
- Over 50 industrial partners donated $150,000 worth of in-kind materials and services.The financial need of $180,000 was contributed by many corporate sponsors, university units, and private individuals.
- IREE provided $50,000 as Special Opportunity funding and was the **major sponsor**.
- Borealis III is an **integrated system** of cutting edge technologies including photovoltaic cells, digital control, D.C. brushless motors, aerodynamic shapes, composite chassis construction and lightweight suspension.

FINDINGS:

The U of M Solar Vehicle Project is an excellent means to introduce undergrads to both the technologies that are relevant to renewable energy systems and the interdisciplinary design team environment.

The U of M Solar Vehicle Project helps to keep the potential of renewable energy in the public imagination by competing in national, intercollegiate cross-country events.