

Technical Report Documentation Page

1. Report No. MTC Project 2004-03	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Management Systems for Inland Waterway Traffic Control, Volume II: Vessel Tracking for Managing Traffic on the Upper Mississippi River		5. Report Date November 2005	
		6. Performing Organization Code	
7. Author(s) Ray A. Mundy, James F. Campbell		8. Performing Organization Report No.	
9. Performing Organization Name and Address Center for Transportation Research and Education Iowa State University 2901 South Loop Drive, Suite 3100 Ames, IA 50010-8634		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No.	
12. Sponsoring Organization Name and Address U.S. Department of Transportation Research and Special Program Administration 400 7th Street SW Washington, DC 20590-0001		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes Visit www.ctre.iastate.edu for color PDF files of this and other research reports.			
16. Abstract <p>Previous investigation of alternative traffic management policies for the Upper Mississippi River (UMR) portion of the inland navigation system revealed that implementing an alternative traffic management policy to reduce periodic congestion was not warranted (see Volume I). However, in that study it was noted that implementing a vessel tracking system might incur benefits of increasing homeland security, improving navigation safety, and protecting environmentally sensitive river habitats. In response to this observation, a companion research project was initiated that examines the feasibility of vessel tracking systems with geographic positioning systems.</p> <p>Volume II describes and discusses the relevance to lockage efficiency of satellite-based vessel tracking systems, automatic identification systems (AIS), vessel tracking services, and vessel traffic management systems. Also, technologies necessary to implementing a vessel tracking system on the UMR, including methods for acquiring dynamic data for vessels and for communicating this data to a geographic information system (GIS) for visual display, are described. Technological issues of position reporting, communications, and data integration are addressed. Key organizational issues involving responsibility and authority associated with vessel tracking on the UMR are also addressed. Finally, a prototype vessel tracking GIS is presented that provides static displays and an example of dynamic vessel tracking to demonstrate the functionality possible from vessel tracking on the UMR.</p> <p>Results argue that the enhanced visibility and knowledge provided by vessel tracking with geographic positioning will improve management of limited waterway transportation resources on the UMR. Also, ready access to information on where individual tows and barges are located within the waterway system, their recent and past travels, ownership, cargo, and location relative to various structures within and along the waterway may prove useful to homeland security. However, vessel tracking on the UMR solely for managing lockages should not be implemented at this time.</p>			
17. Key Words Inland waterway transportation management—Upper Mississippi River system—vessel tracking systems—geographic positioning systems—satellite-based vessel tracking—automatic identification systems—vessel tracking services—homeland security		18. Distribution Statement No restrictions.	
19. Security Classification (of this report) Unclassified.	20. Security Classification (of this page) Unclassified.	21. No. of Pages 73	22. Price NA

MANAGEMENT SYSTEMS FOR INLAND WATERWAY TRAFFIC CONTROL, VOLUME II: VESSEL TRACKING FOR MANAGING TRAFFIC ON THE UPPER MISSISSIPPI RIVER

**Final Report
November 2005**

Principal Investigator

Ray A. Mundy
Director, Center for Transportation Studies
Professor, College of Business Administration,
University of Missouri-St. Louis

Co-Principal Investigator

James F. Campbell
Professor, College of Business Administration
University of Missouri-St. Louis

Faculty Research Associates

Robert M. Nauss, College of Business Administration, UM/St. Louis
Daniel L. Rust, Center for Transportation Studies, UM/St. Louis
L. Douglas Smith, College of Business Administration, UM/St. Louis
Donald C. Sweeney, Center for Transportation Studies, College of Business Administration, and
College of Arts and Sciences, UM/St. Louis

Research Assistants

William E. Winter, Public Policy Center, UM/St. Louis
Denise M. Franke, Amrita Sinha, and David A. Long, Center for Transportation Studies, UM/St. Louis

Authors

Ray A. Mundy and James F. Campbell

Preparation of this report was financed in part
through funds provided by the U. S. Department of Transportation
through the Midwest Transportation Consortium, Project 2004-03.

A report from
Center for Transportation Research and Education

Iowa State University
2901 South Loop Drive, Suite 3100
Ames, IA 50010-8634
Phone: 515-294-8103
Fax: 515-294-0467
www.ctre.iastate.edu

