

Midwest Regional University Transportation Center
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2004

Project Title: Optimal and Near-Optimal Resource Allocation for Transportation Infrastructure Protection Administrative Contact: Jason Bittner Approved by COR/Steering Committee: Project Investigator (agency & contact): UW-Madison, Vicki Bier	
Project ID: 04-05 Sponsor: MRUTC Approved Starting Date: July 1, 2003 Approved Ending Date: March 31, 2006 (revised)	

Description: The work proposed here will explore applications of game theory, optimization, and demonstrably near-optimal heuristics to modeling defense against security threats to networked transportation systems and to help in identifying optimal strategies for allocating resources among various possible defensive investments.

Task 1 - Literature review on transportation security

Task 2 – Development of analytical models for optimal resource allocation

Task 3 - Illustrative case studies

Task 4 - Preparation of final report

Total study budget	Expenditures for current quarter	Total Expenditures to date
\$90,296 (\$10,771 from other sources)	27,776.21 from this source	63,177.35 from this source

Percent Complete: 85%

Progress This Quarter:

- 1) Completed work on four-component case study for multiple attacks
- 2) Extended results to the case of a single attack
- 3) Distributed proceedings on Optimizing Resource Allocation for Transportation Infrastructure Protection
- 4) Began preparation to extend to the five-component case study

Work Next Quarter:

- 1) Work on extensions to the five-component case.
- 2) Finalize documentation of results for the four-component case for *Journal of Infrastructure Systems*.

Circumstances affecting progress/budget:

None; progress is on target (although slower than expected on preparation of the proposed journal article). Budget expenditures are now approximately equal to percentage complete because: (a) some of the principal investigator's time is being charged to the project; (b) travel and workshop expenses have already appeared; and (c) secretarial expenses for the workshop have been charged to the grant. Expenditures will be at 88% by the end of this year.

