



## USDOT Tier 1 University Transportation Center Program Progress Performance Report #1

Agency: USDOT Research and Innovative Technology Administration

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Project Title: Maritime Transportation Research and Education Center (MarTREC)

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Report Term or Frequency: six months

Signature:

## Maritime Transportation Research & Education Center (MarTREC)

MarTREC is a USDOT Tier 1 University Transportation Center funded in September 30, 2014 under MAP-21. Our consortium consists of the University of Arkansas (UARK), Fayetteville, AR; Jackson State University (JSU), Jackson, MS; Louisiana State University (LSU), Baton Rouge, LA; and University of New Orleans (UNO), New Orleans, LA. Each institution is strategically located to support the MarTREC theme and consists of renowned maritime transportation researchers dedicated to transferrable research and inclusive education and workforce development.

MarTREC's theme is building economic competitiveness through efficient, resilient, and sustainable maritime and multimodal transportation systems. Our vision is to be recognized as the Nation's premier source for expertise on maritime and multimodal transportation research and education.

### 1. Accomplishments of Goals and Objectives

#### 1.1 Research

Goal: MarTREC will conduct research that contributes to building economic competitiveness through efficient, resilient, and sustainable maritime and multimodal transportation systems.

Objectives:

- 1) Conduct research projects related to MarTREC's research goal
- 2) Engage a diverse set of faculty and students in MarTREC research activities
- 3) Disseminate research findings

Accomplishments:

Metric	Achieved	Objective Addressed
Projects	4	1
Journal Articles	4	3
Conference Papers	2	3
Books and One Time Publications	5	3
Presentations	12	3
Faculty	5	2
Undergraduate Students and Graduate Students	11	2
Diversity	4	2

## 1.2 Leadership

Goal: MarTREC will become the premier source for expertise on maritime transportation research, education, and workforce development.

Objectives:

- 1) Demonstrate academic leadership towards MarTREC's leadership goal
- 2) Demonstrate industry leadership towards MarTREC's leadership goal

Accomplishments:

Metric	Achieved	Objective Addressed
Leadership Positions	13	1
Conference Planning	8	1
Awards	3	1
Stakeholder Citations	0	2
Jr. Faculty Mentored	4	1
Workshops Held	0	2
External Grants	10	2

## 1.3 Education and Workforce Development

Goal: MarTREC will develop educational resources to elucidate scientific and engineering practices involved in maritime and multimodal transportation systems and practices.

Objectives:

- 1) Conduct education and workforce development (EWD) projects related to the EWD goal
- 2) Educate college students within MarTREC theme
- 3) Conduct workforce development related to MarTREC theme
- 4) Conduct outreach activities related to MarTREC theme
- 5) Make societal impact related to EWD goal

Accomplishments:

Metric	Achieved	Objective Addressed
Projects	9	1
Transportation Courses	7	2

<b>Metric</b>	<b>Achieved</b>	<b>Objective Addressed</b>
Students Supported	0	2
Transportation Degree Programs	3	2
Lectures	1	3
Short Courses and Workshops	0	3
Certifications	8	3
Modules	2	2
K-12 Summer Programs	2	4
Pre-College Programs	1	4
K-12 Resources	3	4
Diversity	2	5
Improvements	1	5

#### **1.4 Technology Transfer**

Goal: MarTREC consortium institutions will participate in national, regional, and local education and workforce development outreach to provide state-of-the-art knowledge to private and public transportation organizations and provide a forum where government employees, academic researchers, and private sector can exchange ideas on current issues.

Objectives:

- 1) Transfer MarTREC outcomes into practice
- 2) Develop products in support of MarTREC technology transfer goal

Accomplishments:

<b>Metric</b>	<b>Achieved</b>	<b>Objective Addressed</b>
Briefs Published	0	1
Guidebooks Developed	0	1
Journal Editorial Positions	13	1
Transfer of Results	1	1
New Websites	2	2

Metric	Achieved	Objective Addressed
Inventions	0	2
Other Products Developed	0	2

### 1.5 Collaboration

Goal: MarTREC will continue our existing partnerships with maritime and multimodal transportation stakeholders and develop new partnerships at the consortium, institution, and project levels to facilitate our planned research, leadership, education, workforce development, and technology transfer activities.

Objectives:

- 1) Develop external partnerships related to MarTREC’s collaboration goal
- 2) Develop collaborative products related to MarTREC’s collaboration goal
- 3) Engage faculty and students in achieving MarTREC’s collaboration goal

Accomplishments:

Metric	Achieved	Objective Addressed
External Partnerships	6	1
Other Collaborators	9	1
Deliverables	0	2
Outreach/Diversity	2	2
Faculty Involved	4	3
Students Involved	2	3

### 1.6 Plans for Next Reporting Cycle

Now that the initial start-up of the MarTREC UTC is complete, each consortium member will focus on scoping and initiating individual research projects and education and workforce development efforts.

## 2. Products

### 2.1 Publications

#### Journal Articles

1. Nachtmann, Heather, and Edward A. Pohl, "Emergency Medical Services via Waterways," *Risk Management*, Vol. 15, No. 4 (2013), pp.225-249.

#### Conference Papers

1. Tong, Jingjing, Heather Nachtmann, and Edward A. Pohl, "Value-Focused Thinking for Inland Waterborne Cargo Prioritization," *American Society for Engineering Management Conference Proceedings*, October 2013.
2. Oztanriseven, Furkan and Heather Nachtmann, "A Review of Economic Impact Analysis in Maritime Transportation," *American Society for Engineering Management Conference Proceedings*, October 2013.

#### Presentations

1. Nachtmann, Heather, "Supporting Secure and Resilient Inland Waterways," National Strategic Maritime Risk Stakeholder Alliance, West Lafayette, IN, November 2013. (Invited)
2. Nachtmann, Heather, Kenneth N. Mitchell, Chase E. Rainwater, Ridvan Gedik, and Edward A. Pohl, "Optimal Dredge Fleet Scheduling within Environmental Work Windows," TRB 93rd Annual Meeting, Washington, DC, January 2014.
3. Nachtmann, Heather, Matthew Campo, and Jingjing Tong, "Development of Multimodal Transportation Resilience Planning Tool for Inland Waterway Transportation," TRB 93rd Annual Meeting, Washington, DC, January 2014.
4. Oztanriseven, Furkan, and Heather Nachtmann, "An Economic Impact Study of the Arkansas Navigable Inland Waterways," 2013 INFORMS Annual Meeting, Minneapolis, MN, October 2013.
5. Tong, Jingjing, and Heather Nachtmann, "A Cargo Prioritization Model for Inland Waterways," 2013 INFORMS Annual Meeting, Minneapolis, MN, October 2013.
6. Dr. George Tchobanoglous, PhD, PE, NAE, Prof. Emeritus UC-Davis 2013 Kappe Lecturer - Amer. Academy of Environ. Eng. & Sci., A viable solution to the problem direct potable reuse of purified water (Invited).
7. Kyle Griffith, Liquefied Natural Gas (LNG) in the Maritime Industry, 11/12/2013, non-invited talk,
8. Bethany Stich, Southeastern Conference of Public Administration, "Marine 101: Exploring the World of Water Transportation" January 12, 2014, invited,
9. Bethany Stich, Transportation Research Board, National Academies of Science Workshop, "Marine 101: Exploring the World of Water Transportation" January 12, 2014, invited,
10. Bethany Stich, TRB, Intermodal Transportation Disruption and Reroute Simulation Framework: Lessons for Freight Planning" Transportation Research Board, National Academies of Science, January 14, 2014,
11. Bethany Stich, American Society of Public Administration, "Transportation Finance & Federalism." March 14, 2014,

- Bethany Stich and Kyle Griffith, (2013), "Federalism, Politics & Economic Development: The Port of Gulfport as Transportation Histrionics," Southeastern Conference for Public Administration, September 25-28.

Books/Other One Time Publications

- ABS staff, ABS Consulting "Bunkering of Liquefied Natural Gas-fuelled Marine Vessels in North America", 2014, Report Publication from ABS
- R.E.Bailey, CAPT COMDT (CG-OES) 16715 CG-OES Policy Letter, No. 02-14, "Guidance Related to Vessels and Waterfront Facilities Conducting Liquefied Natural Gas (LNG) Marine Fuel Transfer (Bunkering) Operations
- EPA's Liquefied Natural Gas Regulatory Roadmap, July 2006, EPA230-B-06-001
- FC Gas Intelligence, Phipps, Sam: "LNG for Marine USA: Industry Leaders Thoughts" 2014 Interview White Paper 1
- FC Gas Intelligence staff, "Interview Whitepaper 2: LNG to Fuel Off Road Applications in the USA", 2014.

**2.2 Websites**

Website Title	Web Address
MarTREC	<a href="http://www.engr.uark.edu/martrec/6442.php">http://www.engr.uark.edu/martrec/6442.php</a>
Institute for Multimodal Transportation	<a href="http://www.jsums.edu/imtrans/">http://www.jsums.edu/imtrans/</a>
Gulf Coast Center for Evacuation and Transportation Resiliency	<a href="http://www.evaccenter.lsu.edu/">http://www.evaccenter.lsu.edu/</a>
Merrit C. Becker Jr. UNO Transportation Institute	<a href="http://transportation.uno.edu/">http://transportation.uno.edu/</a>
REHAMS	<a href="http://www.lsu.edu/highlights/2008/07/REHAMS.html">http://www.lsu.edu/highlights/2008/07/REHAMS.html</a>
XCITE	<a href="https://www.eng.lsu.edu/events/2013/7/13/exploration-camp-for-inspiring-tomorrows-engineers-(xcite)/">https://www.eng.lsu.edu/events/2013/7/13/exploration-camp-for-inspiring-tomorrows-engineers-(xcite)/</a>
Port of NO Partnership	<a href="http://www.nola.com/business/index.ssf/2014/02/port_of_new_orleans_partners_w.html#incart_river_default">http://www.nola.com/business/index.ssf/2014/02/port_of_new_orleans_partners_w.html#incart_river_default</a>
UNO/Port of NO	<a href="http://portno.com/UNOTI_Partners">http://portno.com/UNOTI_Partners</a>
UNO/Port of NO	<a href="http://www.uno.edu/news/2014/UNOTransportationInstitutePartnerswithPortofNewOrleans.aspx">http://www.uno.edu/news/2014/UNOTransportationInstitutePartnerswithPortofNewOrleans.aspx</a>

**2.3 Technologies or techniques**

Nothing to report

**2.4 Inventions**

Nothing to report

## 2.5 Other Products

Nothing to report

## 3. Participants & Collaborating Organizations

### 3.1 Partnerships

Organization Name	Location	Collaboration
Louisiana Transportation Research Center	Baton Rouge, LA	Supply facilities and equipment and work site sharing
University of Cal Poly San Luis Obispo	San Luis Obispo, CA	Research collaborator
Louisiana Transportation Research Center	Baton Rouge, LA	Student internship
U.S. Army Corps of Engineering, Engineering Research and Development Center	Vicksburg, MS	Research collaborator and sponsor
Port of New Orleans	New Orleans, LA	Financial support
Port of New Orleans - WGSO 990 AM Radio	New Orleans, LA	Technology transfer partner

### 3.2 Other Collaborators

Organization Name	Location	Collaboration
Mississippi DOT	Jackson, MS	Meeting to discuss research partnerships
USACE ERDC Coastal and Hydraulics Laboratory and Geotechnical and Structures Laboratory	Vicksburg, MS	Meeting to discuss research partnerships
Shanghai Maritime University	Shanghai, China	Engagement for visiting professor
Ingram Barge Company	Nashville, TN	Strategic research vision development
World Trade Center Transportation Committee	New Orleans, LA	Industry outreach
Ports Association of Louisiana	State of Louisiana	Industry outreach
International Freight Forwarders & Custom Brokers Association of New Orleans	New Orleans, LA	Industry outreach
University of Oxford	Oxford, UK	Research exchange
Urban Land Institute, Louisiana Council	New Orleans, LA	Committee service



## **4. Impacts**

### **4.1. Impacts on Principal Discipline**

Nothing to report

### **4.2. Impacts on Other Disciplines**

Nothing to report

### **4.3 Impacts on Transportation Workforce Development**

- Dr. Feng Wang (JSU) presented to a group of 11th graders in the "Saturday Academy" program of the Center of Excellence in Science, Technology, Engineering & Mathematics Education at JSU on March 29, 2014
- "On the Move" -- a UNO youth outreach initiative designed to introduce New Orleans area k-12 students to the educational and career opportunities in the field of transportation,
  - Dibert Community School and fifth grade student members of Planning Club on 9/24/13, 10/01/13, 10/14/13
  - New Orleans Charter Math and Science High School (SciHigh) on 10/03/13
  - UNO KidsWalk Coalition; members of the Coalition on 10/08/13
  - Propeller Time Bank; attendees of the event on 10/29/13
  - Dibert Community School; 150 k-8 students on 12/18/13
  - Joseph S. Clark High School; 10 high school students each on 02/06/14 and 03/13/14
  - New Orleans Charter Math and Science High School (SciHigh); 10 high school students on 02/19/14
  - Success Preparatory Academy; 35 student's k-12; 10 teachers on 02/20/14
- UNO co-organized a 1-day lecture on customer service with Urban Strategies Inc. for local African American middle school students.

### **4.4 Impacts on Physical, Institutional, and Informational Resources**

Nothing to report

### **4.5 Impacts on Technology Transfer**

Nothing to report

### **4.6 Impacts on Society beyond Science and Technology**

Nothing to report

## **5. Changes/Problems**

Nothing to report

## **6. Special Reporting Requirements**

Nothing to report