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Lead Recipient/Grant Number: University of Arkansas / 69A3552348331
Principal Investigator Institution: Jackson State University
Center Name: Maritime Transportation Research and Education Center
USDOT Research Priority: Preserving the Existing Transportation System
Primary USDOT Strategic Goal: Economic Strength and Global Competitiveness
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Project Partners: One Voice and Eric Shanks, HRC, Former Executive Director, Cyprus Mandela, Inc.
Project Type (<i>select drop down</i>): Education and Workforce Development
Project Research Topic Type (<i>select drop down</i>): Maritime and Multimodal Supply Chain Management
Transportation Modes Involved (<i>check all that apply</i>): ☒ Waterway ☐ Road ☐ Rail ☐ Pipeline ☐ Other
Research Project Funding: <i>Federal funding amount - \$55,000; non-Federal funding amount - \$27,500 Total funding amount - \$82,500</i>
Project Start and End Dates: 09/01/2024 to 08/30/2026.
Project Title: Pathways for a Future-Ready Maritime Transportation Workforce
Project Abstract (Brief Description): The maritime transportation sector faces ongoing challenges, including renovating aging infrastructure, keeping pace with new technologies, adapting to broad organizational changes, and meeting the growing demands of a global economy amidst enhanced national security threats. The industry faces persistent labor shortages of skilled personnel who are equipped to deal with these challenges. According to the Maritime Administration, over the past 10 years, the sector has experienced a continuous decline in personnel due to a variety of factors, including retirements, career changes, and challenges in hiring and funding. Statistics show that the gap for officer availability in the maritime industry widened to 9% globally in 2023, compared to a 5% shortfall in 2022. With the greying of the workforce, an excessive amount of institutional knowledge has been lost from Federal, State, and local maritime transportation departments, as well as within the private sector. The maritime industry operates in a challenging and unpredictable environment, making a trained and skilled workforce crucial for ensuring safe and efficient operations. Technology and innovation have emerged as beacons of hope amid these challenges. The current digital revolution, fueled by Artificial Intelligence (AI), has ushered in transformative possibilities for maritime operations, such as the imminent arrival of Autonomous Vessels. However, the journey towards embracing AI faces hurdles, particularly in the need for a skilled workforce to support the seamless integration of AI technologies and industry operations. A multidisciplinary and well-trained workforce is necessary to successfully respond to these developments. Workforce development is critical to attracting and retaining talented maritime industry employees. This proposal outlines a strategic approach to educating the public about recruitment and retention in the maritime transportation industry, assessing supply chain disruptions and other shocks that impact the sector, and their impact on workforce development. By fostering a knowledgeable and adaptable workforce, the maritime industry can meet the demands of a global economy and maintain high standards of safety and security. The study examines strategies to improve workforce quality, foster economic resilience and support innovation. The effort emphasizes expanding

opportunities for a broad range of participants, strengthening recruitment and retention pipelines, and enhancing professional competencies across the maritime industry.

USDOT Priorities: DOT's mission is "to deliver the world's leading transportation system, serving the American people and economy through the safe, efficient, sustainable, and equitable movement of people and goods". This project supports this mission by seeking to gain a deeper understanding of the current state of the workforce in the maritime transportation industry, the factors that influence it, and the needs of the future workforce that will carry out DOT's mission. As the supply chain becomes more sophisticated and integrated, so must the maritime and supply chain workforce. The project undertakes transformative research to provide recommendations on building a future-ready workforce that can contribute to the industry's economic resilience.

Outputs (results of the work performed): Project outputs will include i) detailed analyses of the state of the maritime transportation industry workforce's current and future needs ii) recruitment strategies to enlist new talent and retain current employees; iii) a range of comprehensive training programs to equip the workforce with the skills needed to manage modern innovative technologies; and iv) systems and best practices for preserving and transferring institutional knowledge within the workforce.

Outcomes/Impacts: A comprehensive understanding of current and future workforce needs specific to the maritime transportation industry will enable informed decision-making for workforce planning, resource allocation, and targeted interventions to address skill gaps and labor shortages. This analysis can inform policies and initiatives aimed at ensuring a resilient maritime workforce. The development of training webinars covering innovative technologies relevant to the maritime sector can equip the workforce with specialized skills to navigate the industry's transition. By developing a capable, adaptable, and forward-looking workforce, this project will enhance regional economic resilience, improve industry performance, and support innovation. Documentation of critical institutional knowledge, including best practices, processes, and historical context, ensures continuity of knowledge, efficiency, risk mitigation, and organizational resilience.

Technology Transfer Activities: Maritime transportation is a complex system-of-systems that involves the interaction of people, technologies, and infrastructure. Imagining potential futures requires selecting robust and adaptive strategies to develop a future-ready workforce. For this project, technology transfer activities will involve strategic alliances for data sharing and the development of innovative strategies with identified collaborators and other partners. Additionally, scientific dissemination will be conducted to share information with interested parties in government, industry, or academia through seminars and paper presentations.

Final Research Report: Upon completion of the project, a URL link to the final report will be provided.

Project Deliverables: ☒ PI agrees to submit all deliverables within 4 weeks after the project end date.

Data Management Plan (DMP): ☒ PI has reviewed and agrees to adhere to MarTREC DMP. Proposed project DMP must be attached to the submission email along with this form.