Miami Harbor Navigation Improvements Study

Response Summary:

The ERDC is assisting the U.S. Army Corps of Engineers, Jacksonville District (CESAJ) in analyzing the proposed navigation improvements for the Miami Harbor Navigation Channel. In 2015, the Corps completed project construction in dredging Miami Harbor, initially planned in 1999. Since the last ship simulation study, the size of vessels in the world fleet has increased. To accommodate the wider and deeper draft vessels, CESAJ has proposed several improvements, including widening from the Outer Entrance Channel to Dodge Island Cut and eliminating sharp can openers at bends of the channel. The study will also include the proposed deepening at the entrance of the channel. The study will address whether the modifications are feasible with the selected design vessels: a 14,000 TEU containership, 18,000 TEU containership, and a new cruise vessel. This will be accomplished through a PED Level Ship Simulation Study.

Figure 1: Aerial view of Miami Harbor

The DOTS program allowed for ERDC personnel to conduct a reconnaissance trip to Miami Harbor to observe navigational conditions. The purpose of the reconnaissance trip is to collect site information and photographs needed to develop simulation databases. ERDC personnel rode a cruise ship, a cargo ship, and two container ships. Photographs were taken during the initial transits. ERDC met with representatives from the Biscayne Bay Pilots and the CESAJ to discuss ship handling and the current navigation concerns at the study area.

Period of Performance:

The reconnaissance trip was conducted on 4-8 March 2019.

Benefits of the Response to the USACE Dredging/Navigation Program:

The ship simulation study will provide a tool to CESAJ that can be used to assess the feasibility and safety of the proposed modifications to the navigation channel.

Figure 2: View from a container ship bridge entering the harbor

Deliverable:

The visual database for the Miami Harbor ship simulations will be developed using the digital images collected during the reconnaissance. These visuals can be used for future navigation studies within the area. The information gathered during meetings and ship riding will be used to develop the test matrix. The results from the ship simulation study will be documented in a Technical Report.

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