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Barbers Point Harbor Jetty Study

Description A three-dimensional physical model study, using two ship models, was conducted to determine need for a proposed jetty in Barbers Point Harbor, HI, entrance channel. The study provided data to assist in optimizing the jetty length.

Issue In November 2000, the CHL was asked to evaluate a proposed entrance-channel jetty at Barbers Point Harbor to enhance harbor operations, economic efficiency, and port safety. A physical model study of Barbers Point Harbor, HI, in 1994 indicated that a 450-ft-long jetty was necessary to prevent adverse vessel yawing due to longshore currents at the shoreline. A more recent study of the entrance channel recommended that the depth transition between the entrance channel and the harbor, currently located at the shoreline, should be reduced from 4 ft to 2 ft and shifted into the harbor. It was felt that these transition modifications and a shorter jetty might provide adequate protection. Thus, a new physical model study was conducted in the summer of 2001 to optimize the jetty length.



Model Bunga Saga Emphat bulk-cargo carrier entering Barbers Point Harbor

Products The existing Barbers Point Harbor (1:75 scale) model was used with two ship models (the APL *President Lincoln* C9 containership and a modified *Bunga Saga Emphat* bulk-cargo-carrier) and the *Kukahi* ocean-going barge to ascertain the minimum jetty length required for safe navigation near the shoreline. Wave and velocity gages were placed to define wave and wave-induced currents in the entrance channel. Representatives from the EPA, HED, the Hawaii Pilots Association, and Hawaiian Tug and Barge participated in studies to optimize the final jetty length.

Supporting Technology The CADET (Channel Analysis and Design Evaluation Tool) can be used to predict underkeel clearance in entrance channels for a range of ship, depth, and wave conditions.

Benefits Based on model data, visual observations, and harbor and barge pilot critique, the 375-ft-long jetty and the shallower depth transition inside the harbor were recommended to provide needed navigation assistance near the shoreline.

Sponsors U.S. Army Engineer District, Honolulu (HED).

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