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Engineer Research and Development Center

Wave Climate and Wave Response Study, Kahului Harbor, Maui, Hawaii

Description

Kahului Harbor is the only deep-draft harbor on the Island of Maui and the busiest port in Hawaii outside of the Island of Oahu. The harbor is exposed to wind and waves from the north and northeast. Two large breakwaters protect the harbor. High energy waves generated by intense winter storms in the north Pacific Ocean routinely attack the breakwaters. The harbor entrance is a 660-ft opening between the breakwaters. Commercial piers are located in the eastern part of the harbor. A variety of vessels uses the piers, including barges, container ships, passenger cruise ships, and tug boats. Water depth in the Federal entrance channel, harbor basin, and commercial pier areas is 35 ft.

Issue

Because of Kahului Harbor's size and commercial importance, the Harbors Division, Department of Transportation, State of Hawaii, has devoted special care to long-range planning. Present and projected commercial activities indicate that new berths for barge and passenger ship operations will be needed. The purpose of this project is to determine wave response of the existing harbor and various plans being considered for modifying the harbor and to evaluate implications for navigation and mooring areas.

Aerial view of Kahului Harbor, Maui, Hawaii

Supporting Technology

A numerical model, validated with field measurements for short waves (wind waves and swell) and long waves (harbor oscillations) collected during previous studies, was used to evaluate the technical feasibility of 14 alternative modifications to the harbor. Model results were compared to experience in the existing harbor and to general criteria for operational acceptability.

Benefits

Model results will allow long-range planning for new berths to accommodate barges and passenger ships.

Sponsors

U.S. Army Engineer District, Honolulu (HED); State of Hawaii Department of Transportation.

Point of Contact

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