



PROJECT DESCRIPTION

This study investigated the nearshore hydrodynamic flows induced by the passage of large marine vessels in the Calcasieu Ship Channel between the entrance at the Gulf of Mexico and the proposed Cameron LNG terminal at Hackberry, Louisiana, approximately 18 miles north of the ship channel entrance on the Gulf of Mexico. All modelling was performed using Coldwater's Ship-Generated Hydrodynamics (SGH) model.

DESIGN APPROACH

The first phase of the project investigated the influence of speed and displacement on vessel-induced flows at various points along the shore. Services provided included:

- Review of historical data on the project area and vessel traffic
- Selection of indicator sites for model application
- Definition of alternatives to be modelled in order to accurately represent existing/proposed shipping regimes
- Determination of a vessel operational protocol

Simulations were performed along two 8 km reaches and studied six LNG carriers ranging in capacity from 76,000 to 250,000 m³ over a range of speeds. The results identified speed limits for each class of vessel that would not result in a worsening of conditions at the shore, thus enabling the operators to meet FERC licensing requirements.

The second phase employed the SGH model to predict the hydrodynamic conditions around two berthed vessels at the terminal during the passage of vessels en route to other facilities. Various combinations of berth occupancy, berthed vessel size and passing vessel size and speed were studied. Although not performed as part of this project, other studies have used the time series of water level and velocity around the hulls of the berthed vessels as input to a moored-vessel response model in order to estimate mooring forces and motions.

CLIENT

Sempra Energy LNG

LOCATION

Hackberry, LA

DATE

2005