

SELECTED EXAMPLES OF OPERATIONAL RESEARCH

Freeport Design Study

This simulation study evaluated proposed dredging plans for the Port of Freeport, TX. Simulation models of the proposed channel modifications were developed, validated, and tested.

Kyoung-In Canal Study, South Korea

This project separately tested the Kyoung-In Canal and the Approach Canal to evaluate their design and proposed changes. The Approach Canal was designed for large ship transits, while the Kyoung-In Canal accommodates smaller vessel traffic.

Freeport Wiggles & High Island Bend Channel Improvement Study

Using integration of the visual simulators this simulation study evaluated proposed bend easing for two reaches in the Intracoastal Waterway known as Freeport Wiggles and High Island Bends. Simulation models of the existing channels and proposed channels were developed, validated and tested by pilots.

Delong Mountain Terminal Feasibility Study

MSI, Alaska Marine Pilots, engineering contractors, insurance underwriters, and shipping industry representatives gathered at MSI, Newport RI, to test the feasibility of a proposed marine terminal, planned to be built near Cominco, for the exporting of Alaska's production of zinc and lead.

Guayanilla, Puerto Rico Channel Study

Client determined that a simulation study be conducted to assess proposed channel placements for access to a proposed LNG terminal located on Puerto Rico's south coast near the port city of Guayanilla. MSI developed a simulation model of both the existing and proposed changes to Guayanilla's navigation aids.

Las Mareas, PR Coal Terminal Feasibility Assessment and Pilot Training

Client desired to conduct a feasibility study to analyze the optimum maneuvering plans and placement of aids to navigation leading to a marine coal terminal near the port city of Las Mareas, Puerto Rico. A model of the proposed port configuration was constructed.

Elba Island, Savannah - Pilot Training and Emergency Shiphandling

MSI modeled both existing and proposed changes to the terminal docking facilities at the client's LNG terminal, Elba Island, Georgia. The project was designed to assess safety margins for alternate slip designs for LNG carriers transiting to and from the terminal. An allision risk study was performed as part of this evaluation. Additionally, the simulation provided training for pilots, tug masters and docking masters involved in the Elba Island operation.

Andres, Dominican Republic LNG Maneuvering Study

MSI modeled the proposed terminal docking facilities of the LNG terminal at Andres, Dominican Republic to assess the safety margins and maneuvering strategies when berthing large LNG carriers. The visual database was used to validate the size and number of ships capable of accessing the terminal. Additionally, the size of assist tugs was determined based on the forces required to maneuver vessels to and from the berth. Recommendations were made to the client on the optimum turning positions, docking strategies, and assist tug size.

Caucedo, Dominican Republic Container Terminal Maneuvering Study

MSI modeled the proposed terminal docking facilities on the Caucedo Peninsula, Dominican Republic to assess the port's design configuration to handle large container ships within the Port. The model was used to validate the size of ships capable of accessing the port. Additionally, the size of assist tug was determined based on the forces required to maneuver vessels to and from berths. Recommendations were made to the client on optimum turning basins, approach channel widths and depths, and assist tug size.

Port of Long Beach new Marine Oil Terminal

MSI, using ten different pier configurations and five different sizes of LNG carriers, conducted mooring analyses for wind load forces, current load forces, wind wave loads, Seiche and Tsunami effects plus passing ship interaction forces. Breasting and mooring dolphin placements, as well as optimum mooring line numbers and construction were included in the analyses. The Bulk Oil pier designs were similarly analyzed and an appropriate-sized turning basin was determined with the assistance of the Jacobsen Pilot Service.

LNG Terminal, Cove Point, MD

MSI modeled the re-activated Cove Point LNG Terminal and the tractor tugs to be employed at that Terminal. LNG carrier docking strategies and emergency procedures were tested and documented. Pilot and tractor tug training was conducted prior to the commissioning delivery of LNG. Tractor tug training for tug operators and docking pilots was conducted.

Sempra Energy LNG, Port Arthur, Sabine River, Texas

MSI modeled the ship channel from the breakwaters to the a proposed LNG terminal. MSI, then, conducted pilot-evaluated simulation to determine if the existing channel could accommodate an LNGC; tug requirements; escort strategies; size and orientation of the proposed pier; and the risk of allision due to mishaps created by passing ships.