

The Lamnalco Simulator is a Marine Research Institute Netherlands (MARIN) Compact Manoeuvring Simulator capable of simulating a variety of maritime operations. The emphasis is on tug handling for representative ASD tugs of the Lamnalco Tug Fleet as well as for the multipurpose vessels of the APS 90 Class and C-Class. Furthermore, the simulator is capable of simulating typical offshore operations with FPSOs (either spread-moored or weathervaning configurations) and a variety of propulsion systems.

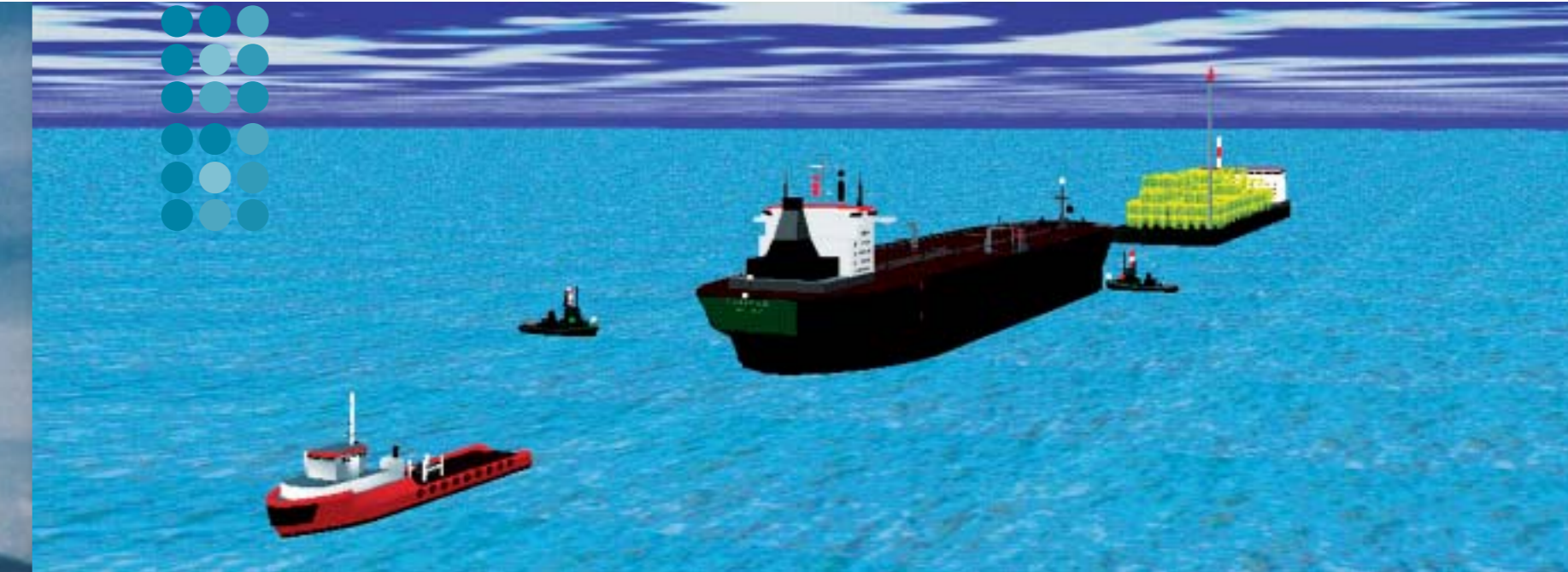


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Lamnalco Simulator

Advanced training for marine operations





Figure 1: Trainee Station

MARIN (Marine Research Institute Netherlands)

Since 1932, Marin has acted as an independent and innovative service provider to the maritime industry. The services incorporate a unique combination of simulation, model testing, full-scale measurements and training programmes.

The Lamnalco simulator is a tailor-made and compact version of the simulators in use at Marin with identical software. The full mission simulators at Marin's Nautical Centre MSCN are being used for pilot and tug-master training and for port design studies.



Lamnalco Simulator: Key areas of training

The simulator is geared towards rigorous training in:

- General ASD tug-handling principles (free-sailing, sidestep, etc.)
- General principles of pushing, towing and escorting in direct and indirect modes (including transverse arrest, indirect steering and breaking)
- Specific manoeuvres for dedicated areas under normal environmental conditions and validation of limiting operating parameters
- Specific manoeuvres for dedicated areas under marginal environmental conditions, i.e. near the edge of the operational envelope
- Emergency situations: malfunctions of engines and rudder (assisted vessel and/or ASD tug)
- Certain towing and PSV vessel conditions may also be added along with D.P. simulations with specific client equipment



Figure 2: Instructor Operator Station

Simulator System Description

The Lamnalco Compact Manoeuvring Simulator consists of a Trainee Station (Figure 1), an Instructor Operator Station and a separate Pilot/Captain Station. The Trainee Station is equipped with:

- 180-degree projection system using three high-quality image generators
- One rear-view display
- Main console with
 - * ASD controls (Aqua-master) or normal controls for telegraph, wheel and bow thruster
 - * Winch controls
 - * Simulated electronic chart
 - * Synthetic radar display
- Overhead panel with
 - * Thruster angle indicators
 - * RPM indicators
- The Instructor Operator Station (figures 2 and 3) consists of:
 - * Dual head control station
 - * Stealth image generator

- The Pilot/Captain Station enables the control of an additional own-ship, for instance to manoeuvre LNG-tankers, shuttle tankers and to facilitate FPSO operations. It consists of:
 - * A soft bridge application for control of telegraph, wheel and bow thruster
 - * Stealth Image Generator (Figure 3)

Advanced simulation software

The Lamnalco Simulator uses the MERMAID500 MARIN simulation software. This software is based on extensive and on-going research in the field of ship hydrodynamics, port and waterway design. This enables the simulators the capability to continuously evolve in functionality and complexity to respond to advances in tug and vessel technology.

The Marin mathematical ship models are considered to be highly sophisticated manoeuvring models that are based on sea trials and model test results. Any type of vessel and propulsion system can be handled.



Figure 3: Stealth View: Escorting an LNG tanker

STEALTH IMAGE GENERATOR

This device is best described as a separate visual channel with complete flexibility to take up any arbitrary observation point within the database during runtime. Thus, 3D monitoring of the simulation in progress is very effectively achieved.

Advantages of simulator training

- Flexible
- Cost-effective
- COTS - components, utilizing normal PCs
- In-house training (requiring normal office space)
- Customised consoles, dedicated controls
- Instructor and preparation system
- Dedicated ship models
- Dedicated geographical databases
- Standard library of traffic models
- High-quality visualisation
- Remote dial-in support and maintenance
- Easy to add ship models and geographical databases at any time
- Easy and virtually unlimited creation of new exercises



From Top Left: RA3200, C Class vessel performing tow-back duties and APS 90 Multipurpose vessel with an impression of the newest visualisation software.