



A90FM91
Reference number

CERTIFICATE OF COMPETENCE

This certificate is issued to:

Ángel Manuel Cruz González

For having completed the course:

Training and Maneuvers with a Marine Tugboat in a NAUTIS / VSTEP simulator

Capacitación de Familiarización con las Operaciones de Barco Remolcador Marino

Objective

The participant will be competent to demonstrate knowledge, understanding and competence for the control of maneuvers of marine tugboat operations in port.

Topics

- Types of Tugboats
- Thrusters
- Types of propellers
- Maneuverability
- Stability
- Bollard pull.
- Towing Modalities
- Communication
- Principles of Maneuver

Exercises

- Turns at full speed while maintaining the rotation turning point.
- Emergency maneuvers due to failures of the tugboat (propulsion, steering, line, etc).
- Bow to bow maneuver.
- Maneuver indirect mode and combination of modes.
- Maneuver of moving a large vessel or barge with one or two tugboats.



Course delivered period

28/04/2025 – 29/04/2025

Hour duration

16 hrs.

Place Issued

Mexico City, Boluda Training & Simulation Center

Expiration date

29/04/2028

Instructor

Juan Francisco Márquez Lara
Registration Mexican Labor Authority (STPS)
MALJ680920CZ50005

Ing. Carlos Luis Rico Contreras
Representante Legal de Boluda