



# CERTIFICATE OF COMPETENCE

This certificate is issued to:

**Kristian Cecilio Ledesma García**

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**

02/ 05/2024 – 03/05/2024

**Hour duration**

16 hrs.

**Place Issued**

Mexico City, Boluda Training & Simulation Center

**Expiration date**

03/05/2027



A30FM31  
Reference number

**Director**

Ana Osiris Fernández Alcaraz

**Instructor**

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