



PEM OFFSHORE INC.



COURSE BROCHURE

Dynamic Positioning Operator's Refresher Training Course



Course Objective

To update the participant's knowledge of the principles of Dynamic Positioning (DP), DP operations, DP watch keeping "best practice" and DP emergencies taking into account recent developments and current Industry requirements /guidelines.

Participants will be required to prove, through practical exercises that they are able to plan and execute DP operations.

This will include risk assessment, contingency planning, toolbox talk and the assessment of vessel capability. During simulated bridge watch-keeping, participants will be required to carry out DP watch keeping practices. This includes execution of the Operational plan, completion of appropriate DP checklists and watch hand over. During this process they will be required to recognize and respond correctly to a variety of alarms, warnings and information messages which could lead to catastrophic failure.

Participants

For participants who hold a Nautical Institute DP certificate and who have been operating in DP for 3-5 years without refresher training.

Course Content

- ♦ DP principles / functionality
- ♦ Elements of a Dynamic Positioning System
- ♦ DP rules and guidelines / redundancy
- ♦ Practical operation of a DP System
- ♦ Operational planning
- ♦ Best practice watch keeping during DP operations
- ♦ Simulator exercises

Course Pre-requisites

Course participants should hold, as a minimum qualification, a STCW 111/1 or 111/2 or 111/3 or 1/6 Certificate of competency.

- ♦ Course Duration 3 days.
- ♦ Maximum 6 participants.



Dynamic Positioning Simulator (Advanced)



Course Objective

This course provides personnel engaged in the Dynamic Positioning Operator training scheme with further insight, experience and confidence in performing offshore operations under DP control.

Participants

The course is designed for Deck Officers, Engineer Officers and personnel working toward an STCW Certificate of Competency (COC) who are already registered on The Nautical Institute DP Operators Certification Scheme.

Course Content

The DP Simulator course offers students the opportunity to develop their DP skills through balanced delivery of theory and practical simulation tasks. The course enhances and develops the skills in DP through:

- ♦ Discussion and application of lessons learned to date.
- ♦ DP operation planning and preparation.
- ♦ Operating the DP desk under normal and pressure conditions.
- ♦ Discussion of systems failures.
- ♦ Developing decision making on courses of action due to numerous systems failures.
- ♦ Developing communication skills as a part of the bridge team and overall project team.
- ♦ Analysis and interpretation of DP trends.
- ♦ Understanding of alarms and printer readout.
- ♦ Understanding and initiating DP Alert status alarms.
- ♦ Practice effective bridge and project teamwork.
- ♦ Training is conducted using Kongsberg K-Pos DP simulation equipment.



Course Pre-requisites

Participants must have a DP Induction Course Certificate and successfully completed phase 2 of the Dynamic Positioning Officer training program on a DP capable vessel. For further guidance, please refer to www.nautinst.org.

- ◆ Course Duration 4 days.
- ◆ Maximum 6 participants.

DP Operator (Induction) Course



Course Objective

ENTRY REQUIREMENTS

The minimum qualification is set at STCW Regulation II/1

- II/2 - II/3 Deck, Regulation III/1 – III /2 – III/3 – III/6 Engine and Regulation III/6 for ETOs Alternative appropriate marine vocational qualification will be considered

on a case by case basis.

Prospective DPOs, who are in the process of training for an STCW certificate, can start the DP scheme and complete Basic (Induction) course and 30 days Familiarisation only. See also: <http://www.nautinst.org/>.

Participants not qualifying for entry into the Nautical Institutes DP Operator Certification scheme may follow the course, but will not participate in the NI examination and will be issued a certificate of attendance for a “DP Awareness Course”.

Content

The Induction course covers the following aspects of dynamic positioning:

- ◆ Definition of DP, elements of the DP system, DP systems redundancy, and Class Requirements
- ◆ Functions of the DP system, and DP principles
- ◆ Different types of DP vessels and DP operations, sensors and use of sensor inputs
- ◆ Introduction to position reference systems and the DP system's use of position measurements

- ◆ Vessel capability, DP consequence analysis and DP capability analysis
- ◆ Thrusters and maneuvering systems
- ◆ Power systems and Blackout Prevention
- ◆ Operational procedures for DP operation, and procedures for operating the DP system
- ◆ Study of DP incidents
- ◆ Principal use of the DP system

Training is conducted using Kongsberg K-Pos Icon DP simulation equipment.

LEARNING OBJECTIVES

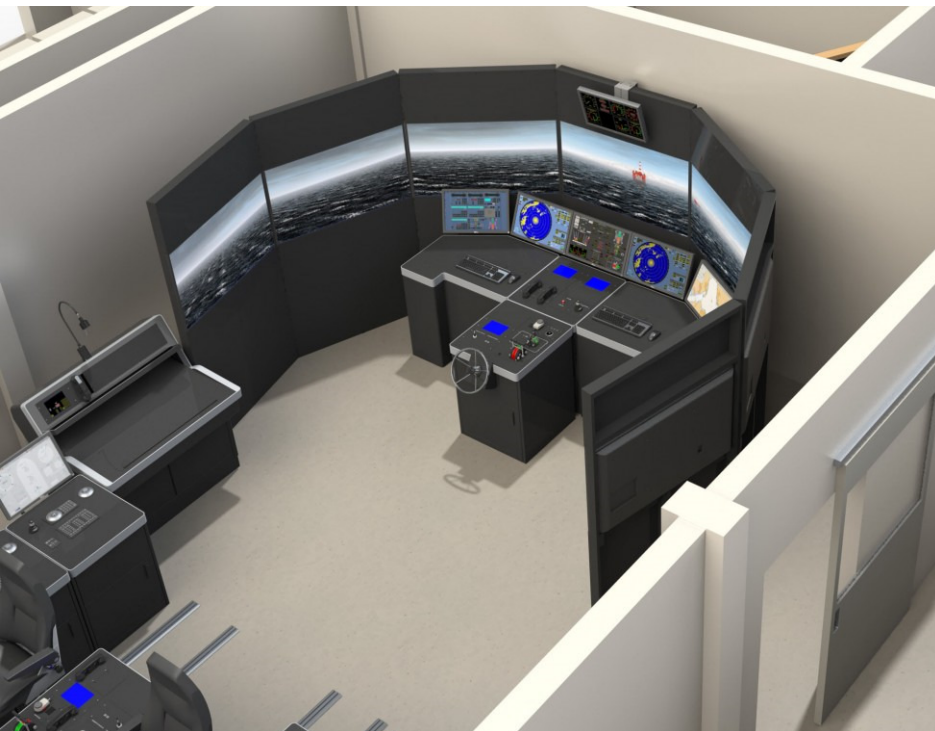
- ◆ After the course, the successful participants are able to:
- ◆ Define the principles of DP.
- ◆ Recognise the component parts of a DP system.
- ◆ Understand the relationship between vessel movement, position reference systems, sensors, computers, propulsion units and feedback.
- ◆ Understand the concept of redundancy.
- ◆ Understand the DP modes of control.
- ◆ Describe the operation of sensors and common position reference systems.
- ◆ Describe the operation of computers.
- ◆ Describe propulsion units, types and configurations.
- ◆ Understand power supply, redundancy and management.
- ◆ Practice communication and watch handover procedures.

Course Pre-requisites

Participants must hold appropriate STCW certification or be studying towards an appropriate STCW recognized certificate. Participants may benefit from having some previous offshore experience.

- ◆ Course Duration 5 days
- ◆ Maximum 6 participants.

Dynamic Positioning Familiarization



Course Objective

The course is designed to provide an insight into Dynamic Positioning (DP). It outlines DP system components, and the capabilities of DP equipped vessels. Course participants will become aware of the DP system's individual elements and their practical use, as well as the effects of system failures and the concept of redundancy.

The course will also provide an insight into key guidelines and documentation affecting DP operations. The combination of these elements will enable participants to best utilize DP equipped vessels and understand their limitations.

Participants

The course is aimed at offshore project staff employed in project design and installation engineering.

The course would also be beneficial for shore-based management of offshore vessel operating/managing companies including HR, Operations and Technical Managers.

Content

- ♦ Elements of a DP system.
- ♦ DP principles and modes of operation.
- ♦ Position reference systems and sensors.
- ♦ Reference system management in construction operations.
- ♦ Power generation, distribution and management.
- ♦ Vessel capabilities and redundancy.
- ♦ Standards and operational guidelines.
- ♦ DP vessel incident analysis.

Course Pre-requisites - Nil.

- ♦ **Course Duration 2 days**
- ♦ **Maximum 6 participants**

Basic ASD Tractor Tug Operator



The Simulator Basic ASD TUG Operator Course is designed to introduce senior deck officers to the capabilities and limitations of modern ASD “tractor” tugs. The course will focus on basic manoeuvring techniques such as steering, stopping, working a line and manoeuvring in close proximity to a large vessel. It will also include an introduction to high speed escorting techniques to demonstrate how the tugs

can be manoeuvred to create the very high steering forces used to save a ship suffering a serious mechanical failure.

The design of the course assumes that the students are:

- ♦ licensed as per national/ STCW requirements;
- ♦ have experience operating conventional tugs or supply ships; and
- ♦ have a good understanding of the English language.

Scope

The objective of this course will be accomplished over five training days.

Individual Performance Objectives (PO) to be achieved are:

PO 100 – Conduct basic steering and stopping manoeuvres to include making up a towline on a large vessel that is stationary, and applying push/ pull forces;

PO 101 – Conduct intermediate manoeuvres to include making up to a vessel that is making up to 6 knots speed and applying push pull forces;

PO 102 – Develop and understanding of basic tractor design types employed around the world and the associated manoeuvring and performance characteristics of each;

PO 103 – Develop and understanding of the various escorting techniques employed today;

PO 104 – Conduct basic escort manoeuvres to include, indirect pull, powered indirect pull, and transverse arrest at speed up to 10 knots.

PO 105 – Understand the importance of fairlead and bit strength issues needed to ensure that the tractor tug does not damage the ship's structure.

PO 106 – Communicate using standard command language for tractors and escorting.

Method of Achieving Objectives

Candidates will receive presentations on key knowledge and theoretical manoeuvring principles followed by practical simulation sessions where this knowledge must be applied in practical scenarios. The course is designed to capitalise on the full capabilities of (FMS) as an illustrative, developmental, and assessment tool.

Course Management Details

The course will be conducted at the PEM Offshore Simulation and Innovation Centre (POSAIC). The environment will be classroom and the FMS Tug Bridge. The optimum number of students is four, maximum six and minimum two. The desired instructor to student ratio is 1:4. A typical schedule is contained in Annex A. Assessment. Students are assessed based on their ability to complete practical assignments related to each PO.

- ♦ Course Duration 5 days
- ♦ Maximum 6 participants.

ISPS Code: Awareness & Implementation



Objective

The security related events of 2001 led to the evolution of a formalized security regime in the maritime industry. This course introduces the concept of a security management system as required by SOLAS and explains the relevant elements of the IMO International Ship and Port Facility Security (ISPS) Code.

Highlights

- ♦ Overview of ISPS Code
- ♦ Principles of a security management system
- ♦ ISPS Code relevant elements explained
- ♦ Preparation for audits
- ♦ Verification and certification requirements

DURATION: 1 day

ISPS Code Internal Auditor

Course Objectives and Benefits



This course is intended to provide participants with the tools needed to carry out an ISPS internal audit for a company, vessel asset or applicable offshore unit. The course provides a practical approach to auditing and encouragement of continual improvement. Particular attention is

paid to preparing for US security requirements. This course uses interactive case studies to enhance understanding.

Course Highlights

- ♦ Defining security fundamentals
- ♦ Relevant requirements of the ISPS Code Parts A and B
- ♦ Flag State and other requirements
- ♦ Types of audits and basic steps in the development of an internal audit program
- ♦ Phases of an internal audit:
- ♦ Planning the audit
- ♦ Conducting the audit
- ♦ Reporting the audit
- ♦ Identifying the 'qualified auditor'
- ♦ Audit techniques including effective communication and audit investigations
- ♦ Case studies

ISM Code, Lead Internal Auditor



Course Objectives and Benefits

This course is for personnel who have experience in internal auditing. It is intended to provide participants an opportunity to analyze, discuss and update their knowledge of the ISM Code and related management systems. Reference is made to relevant IMO developments. Included is guidance in clarifying the approach taken for auditing and promoting consistency in the decision-making process. The course makes extensive use of case studies.

Course Highlights

- ♦ ISM Code review
- ♦ Integrity and continual improvement of a safety management system
- ♦ Other industry standards
- ♦ Non-conformance and report writing
- ♦ Auditing techniques and interpretation of requirements to support decision-making
- ♦ Case studies.

ISM Code: Advanced Implementation

Objective

Studies of casualties have shown that human error is often a major contributing cause. Although proper installation, maintenance and operation of equipment can minimize the risk of a casualty, of equal significance is the ability of the crew to operate a ship and its equipment in a safe manner. The role of shore-side management in safe operation is explained from the perspective of ISM code implementation. This course introduces the concept of a safety



management system as required by SOLAS, explains each element of the IMO International Safety Management Code to enhance understanding of the steps to take in preparing for audits and demonstrating compliance.

Highlights:

- ♦ Overview of ISM Code
- ♦ Principles of a safety management system
- ♦ ISM Code elements explained in detail
- ♦ Preparation for audits
- ♦ Verification and certification requirements

DURATION: 1 day

ISM Code: Internal Auditor

Objective



The ISM Code requires a company to conduct internal audits of its safety management system by qualified personnel. Personnel qualifications and training records are verified by the flag Administration and/or Recognized Organization during certification and audits. This course is intended to provide participants with an understanding of the techniques and personal attributes required to perform an internal audit. The requirements of the ISM Code are reviewed with the

intent of verifying the company's conformity with the requirements. The audit techniques presented during the course contribute to continual improvement and system integrity. This course contains interactive case studies to enhance understanding.

Highlights:

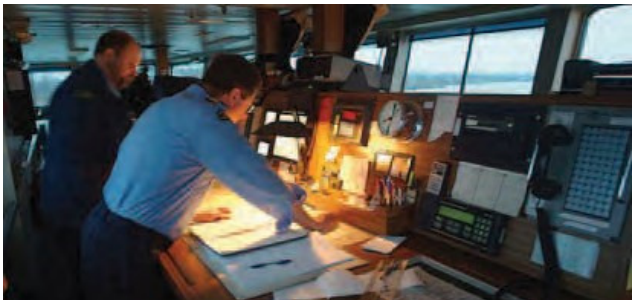
- ♦ Evolution of the ISM Code
- ♦ Defining safety fundamentals
- ♦ Requirements of the ISM Code, Parts A and B
- ♦ Awareness of current industry standards
- ♦ Types of audits and basic steps in the development of an
- ♦ internal audit program
- ♦ Phases of an internal audit:
 - Planning the audit
 - Conducting the audit
 - Reporting the audit
 - Audit follow-up and verification
- ♦ Identifying the 'qualified auditor'
- ♦ Audit techniques including effective communication during
- ♦ audit investigations
- ♦ Case studies

DURATION: 3 days

Effective SMS Implementation: DPA Requirements

Objective

The ISM Code recommends that each company assign a Designated Person Ashore (DPA) and DPA Assistant to monitor the safety and pollution prevention aspects of the operation of each ship so that adequate resources and shore-based support are applied as required. This course is intended to provide participants with an understanding of the authority and liability issues of the DPA role. Particular attention is given to the safety management system, planned maintenance system, vessel response plan and the US VGP (where trading to the US is contemplated). Reference is made to current IMO regulations with a focus on systems, plans and future trends. A number of case studies are provided including examples of practical approaches for avoiding undesirable outcomes.



Highlights:

- ♦ DPA's authority and liability
- ♦ ISM Code review
- ♦ Safety management system (SMS)
- ♦ Carriage of goods by sea
- ♦ Vessel equipment standards
- ♦ SMS audit findings
- ♦ Legal implications of the ISM Code
- ♦ Planned maintenance system (PMS)
- ♦ Vessel response plan (VRP)
- ♦ Vessel general permit (VGP)

DURATION: 2 days

Vetting Inspections: Oil Tankers



Objectives

This course is intended to provide shipowning and ship management companies with an understanding of vetting inspections. The course aims to familiarize marine superintendents and shipmasters and/or officers with the system of vetting and its procedures so that they can prepare their vessels to minimize the opportunity for unexpected/unnecessary observations that may adversely impact the vessel's prospects.

Highlights

- ◆ Introduction to vetting, definitions and background
- ◆ Ship Inspection Report Programme (SIRE)
- ◆ Enhanced Survey Program: multiple inspections
- ◆ Goals and interests of shipowning/ship management companies
- ◆ Interests of major oil companies
- ◆ Minimum safety criteria
- ◆ Standard procedures followed to apply for a vetting inspection
- ◆ Itemized standard process for a vetting inspection
- ◆ Points of attention
- ◆ Observations of high risk
- ◆ Review and response to noted observations
- ◆ Outline of TMSA requirements

DURATION: 2 days

Port State Control Inspections

OBJECTIVES AND BENEFITS:

This course is intended to provide participants with an understanding of the requirements for successfully completing Port State Control inspections. The course aims to enhance awareness and preparedness for PSC inspections and help achieve compliance with the requirements regarding safety and pollution prevention. Attention is given to the most common deficiencies which may result in a vessel being detained.



A detailed review of the ABS Pre-Port Arrival Quick Reference Guide and the ABS Onboard Routine Maintenance Checksheet will be provided.

HIGHLIGHTS:

- ◆ Port State Control and targets
- ◆ Definitions used by Port State Control and their legal basis
- ◆ Regional Port State Control agreements
- ◆ Selection of ships for inspection
- ◆ Importance of preventive maintenance and class attendance in connection with Port State Control detentions
- ◆ Inspection types of Port State Control
- ◆ Port State Control and cargo operations as well as manning
- ◆ Port State Control, ISM Code (safety management) and ISPS Code
- ◆ Port State Control in the EU and US
- ◆ Commercial implications of Port State Control
- ◆ ABS Pre-Port Arrival Quick Reference Guide
- ◆ ABS Onboard Routine Maintenance Checksheet

DURATION: 2 days

Bridge Resource Management for Limited-Tonnage Vessels



Objective

The Simulator Bridge Resource Management Course for Limited-Tonnage Vessels is designed to maximize the use of all resources to improve shipboard safety in tugs, towboats, passenger vessels, ferries, professionally crewed yachts, and other ships up to 1,600 gross (3,000 international) tons.

The design of the course assumes that the students are:

- ♦ Licensed as per National/ STCW requirements
- ♦ Have a good understanding of the English language.

Scope

The objective of this course will be accomplished over five training days. Individual Performance Objectives (PO) to be achieved are:

- ♦ PO 100 – Execute a Passage Plan demonstrating principles of Conferring and Monitoring;
- ♦ PO 101 – Maneuver vessels without overreliance of particular resources;
- ♦ PO 102 – Maneuver vessels with due consideration of stress, fatigue and or complacency;
- ♦ PO 103 – Maneuver vessels during time of transition;
- ♦ PO 104 – Demonstrate sound communication principles while maneuver vessels;
- ♦ PO 105 – Demonstrate effective teamwork while maneuver vessels;
- ♦ PO 106 – Demonstrate sound decision making and effective leadership during shipboard emergencies.

Method of Achieving Objectives

Candidates will receive presentations on Planning and Procedures, Situational Awareness and Human Factors, and Human Interaction as well as application of lessons learned from actual Case Studies. This is followed by practical simulation sessions where this knowledge must be applied to the simulation scenario. The course is designed to capitalize on the full capabilities of FMS as an illustrative, developmental, and assessment tool.

Course Management Details

The course will be conducted at PEM Offshore Simulation And Innovation Center. The environment will be classroom and the FMS. The optimum number of students is four, maximum eight and minimum two. The desired instructor to student ratio is 1:4. A typical schedule is contained in Annex A. Assessment. Students are assessed based on their ability to complete practical assignments related to each PO.

Basic Shiphandling



Objective

The Simulator Basic Ship Handling Course is designed to meet the ship handling competency requirements for officers in charge of a navigational watch on ships of 500 gross tonnes or more as stipulated in Table A--- II/1 of the STCW Code.

The design of the course assumes that the students are:

- licensed as per national/ STCW requirements, and
- have a good understanding of the English language.

Scope

The objective of this course will be accomplished over five training days. Individual Performance Objectives

(PO) to be achieved are:

- PO 100 – Maneuver vessels with a variety of steering and propulsion arrangements; b. PO 101 – Maneuver vessels under a variety of load conditions;
- PO 102 – Maneuver vessels in both deep and shallow water including conditions where squat is experienced;
- PO 103 – Maneuver vessels in under a variety of wind and current conditions;

- PO 104 – Maneuver vessels and conduct procedures for recovery of persons overboard;
- PO 105 – Maneuver vessels in order to come to anchor, and to conduct basic mooring procedures.

Method of Achieving Objectives

Candidates will receive presentations on key knowledge and theoretical maneuvering principles/ ship handling phenomena followed by practical simulation sessions where this knowledge must be applied to practical maneuvering. The course is designed to capitalize on the full capabilities of FMS/ PTT as an illustrative, developmental, and assessment tool.

Course Management Details

The course will be conducted at the designated Training Institute. The environment will be classroom and the FMS/ PTT. The optimum number of students is four, maximum eight and minimum two. The desired instructor to student ratio is 1:4. A typical schedule is contained in Annex A. Assessment. Students are assessed based on their ability to complete practical assignments related to each PO.

Duration: 5 Days

Advanced Shiphandling



Objective

The Simulator Basic Ship Handling Course is designed to meet the ship handling competency requirements for masters and chief mates on ships of 500 gross tonnes or more as stipulated in Table A---II/2 of the STCW Code.

The design of the course assumes that the students are:

- licensed as per national/ STCW requirements, and
- have a good understanding of the English language.

Scope

The objective of this course will be accomplished over five training days. Individual Performance Objectives

(PO) to be achieved are:

- PO 100 – Maneuver vessels when approaching pilot stations and embarking or disembarking pilots with due regard to weather, tide, head---reach and stopping distances;
- PO 101 – Maneuver vessels in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response;

- PO 102 – Conduct planned turns using of constant rate of turn techniques;
- PO 103 – Maneuver vessels in shallow water, including conditions where under-keel clearance is reduced due to squat, rolling and pitching;
- PO 104 – Conduct maneuvers that involve interaction between passing ships and between own ship and nearby banks (canal effect);
- PO 105 – Conduct berthing and unberthing under various conditions of wind, tide and current with and without tugs;
- PO 106 – Come to anchor under various conditions of wind, tide and current with and without tugs; and
- PO 107 – Maneuver in heavy weather to include assisting a ship or aircraft in distress, towing operations, and the launch of rescue boats or survival craft.

Method of Achieving Objectives

Candidates will receive presentations on key knowledge and theoretical maneuvering principles/ ship handling phenomena followed by practical simulation sessions where this knowledge must be applied to practical maneuvering. The course is designed to capitalize on the full capabilities of FMS/ PTT as an illustrative, developmental, and assessment tool.

Course Management Details

The course will be conducted at the designated Training Institute. The environment will be classroom and the FMS/ PTT. The optimum number of students is four, maximum eight and minimum two. The desired instructor to student ratio is 1:4. A typical schedule is contained in Annex A. Assessment. Students are assessed based on their ability to complete practical assignments related to each PO.

Course Duration – 5 Days

Enhanced Master Pilot Relationship



Many shipping companies already train senior officers in bridge teamwork and resource management. Increasingly, pilotage authorities are doing the same, as recommended by IMO resolution A960.

At PEM Offshore Simulation And Innovation Center, we believe the added value of combined training has largely been overlooked.

Our course directly addresses the crucial relationship between the Master and Pilot by promoting a peer

group atmosphere and applying 'real life context' to each training module. These unique features allow delegates to develop a greater understanding of the issues surrounding the Master/Pilot exchange and will provide a significant step towards the reduction of maritime incidents.

The Enhanced Master/Pilot Relationship course has been recognized by our industry:

Objective

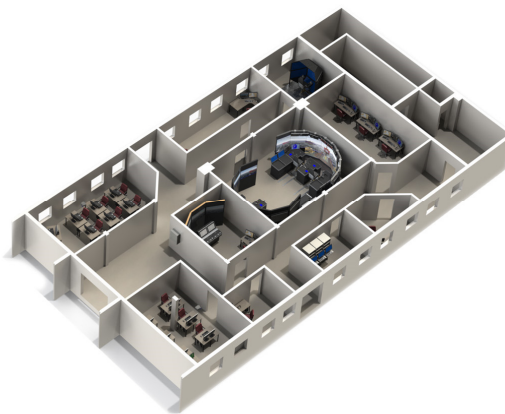
To enhance the effectiveness of the Master Pilot relationship

- ◆ To promote excellence in Bridge
- ◆ Team best practice
- ◆ Provide Pilot's perspective of the Bridge Team
- ◆ Improve e-arrival procedures
- ◆ Enhance Bridge Team interaction
- ◆ Discuss role of the Master and Pilot
- ◆ Emphasize passage plan requirements and the need for effective monitoring
- ◆ Highlight the importance situational awareness
- ◆ Identify weak links with the aid of case studies
- ◆ Build on current resource management practices through joint training

Course Duration – 3 days



PEM OFFSHORE INC.





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