

Marine safety training in offshore renewables: an approach to tailor-made courses design José L. Santamaría, Ph.D. Std.; Jose M. Cuetos, Ph.D.; Horacio Montes, Ph.D.

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Abstract

Accidents may have tremendous social impact and consequences for individuals affected as well as for operational performance. Training is recognized as an essential tool for preventing accidents and face contingencies in a further stage. Offshore special features complex joint of risky activities \rightarrow safety training has to be multidisciplinary.

Everyone different DUTIES & RESPONSIBILITY LEVEL → TRAINING ELEMENTS/PROGRAMMES different for every Group acc. to RISKS IDENTIFIED, FUNCTIONS & RESPONSIBILITY (1)

Objectives: TRAINING, A TOOL FOR GREEN ENERGY = CLEAN & SAFE SEAS



AVOID / FACE ACCIDENTS AND INCIDENTS through TRAINING **PREVENTING SIDE**: Specialized Training & Safety Culture **CONTINGENCY SIDE**: Emergency Planning. Training to perform task in emergencies COVER NEEDS IN SAFETY TRAINING IN ALL PHASES: INSTALLATION, OPERATION



Methods: 1.- Identify Areas and Training Groups in Offshore Wind Energy Installations OWEI

Previous Steps for Identifying Training Needs- SEMS IMPLEMENTATION (1)

- 1. a) RISK ASSESSMENT: For all personnel engaged in OWEIsb) A whole study of risks and safety of procedures has to be conducted.
- 2. Assigning everyone to a group of activity acc.to
- Common risks and/or
- Functions/responsibility
- 3. Identify their training needs. → Select AREAS OF TRAINING
- 4. Specific topics for the syllabus → To provide tailor-made courses for everyone



MAIN GROUPS IDENTIFIED:

-Crews: people engaged on vessels/service boats
-Workers at OWEI
-Workers in Shore Base (installation & maintenance)
-Safety, Health & Env. Dept.

AREAS & GROUPS may vary for different Phases: INSTALLATION, OPERATION

Methods: 2.- Identify Areas of Safety Training currently well covered (by Int. maritime Orgz. –IMO- and Global Wind Orgz. –GWO-)

AREAS COVERED BY IMO: FOR CREWS GROUP

For Officers and Crew

 Marine Safety Training: Safety of life at sea, Survival at sea/survival crafts/ Fire fighting/ First aid / Security

For Officers







Wind Industry modules

AREAS COVERED BY GWO: FOR WORKERS AT OWEI GROUP

Offshore specific module

- Marine Basic safety Training (survival at sea)

Methods: 3.- Identify Critical Areas (By Risk Analysis & Safety Environmental Management System –SEMS-)

Some Critical Areas: Installation Phase

- Impact on safety of navigation in the vicinity
- Safe navigation of ships engaged in installation
- ⇒ Control of marine traffic → Training required



S	Some Critical Areas: Operational Phase		
SHORE BASE	SHIPS' SAFETY CREWS & PERSONS ON BOARD	SHIPS WIND TURBINE (OWEI) TRANSITION ZONE	OWEI- MAINTENANCE AND REPAIR ACTIVITIES
CONTROL OF ACTIVITIES COORDINATION	ON BOARD SAFETY in BAD WEATHER	TRANSFER SAFETY	EMERGENCY, EVACUATION, RESCUE OPERATIONS

Methods: 4.- Additional Training: identify Elements by Risk Analysis & SEMS



Safety Areas

Safety Management Systems Safety of Navigation Emergency Coordination Marine Traffic Control

Other Areas

Security at Offshore W.E. Installations

Safe Transfer operations

Environmental Areas

Prevention of pollution Ship's Waste & Water treatment (3) Industrial Sustainbility Environmental Impacts



Conclusions

The results of this study reinforce the convenience to consider training in a wide sense by including a cultural approach to safety and environmental care.

PREVENTIVE SAFETY: Operators /Contractors: to guarantee a safe operation shall take into account the whole **processes safety**.

This means making in-depth analyses of risks at every activity and provide safety measures and procedures to prevent accidents and incidents at all stages.

CONTINGENCY SAFETY: Procedures would be stablished for every emergency considered training relevant personnel in Contingency Plans implementation.

PLANNING STAGE: Training shall be an essential part of SEMS to allow Safety Departments to consider every aspect of activity and its impact in other activities OPERATIONAL STAGE. Every employee shall undergo safety training courses and update/refreshing programmes covering the safety elements identified for their group.

ADDITIONAL TRAINING ELEMENTS besides the Training Elements covered by IMO and GWO Standards other Training Elements are to be considered to achieve safe and clean activities matching green policy of wind power companies Safety of Navigation, Security, Environmental Impact, Waste Management, Emergencies.

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- 2. Offshore Wind. A comprehensive Guide to Successful Offshore Wind Farm Installation. Kurt E. Thomsen. Academic press. 2012. Elsevier
- 3. Ship and offshore. Special Green Tech 2014

Pictures by www.siemens.com/press

This study is part of a doctoral thesis in course prepared by the above author and titled: MARITIME SAFETY PLANS IN OFFSHORE RENEWABLE ENERGY INSTALLATIONS



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