

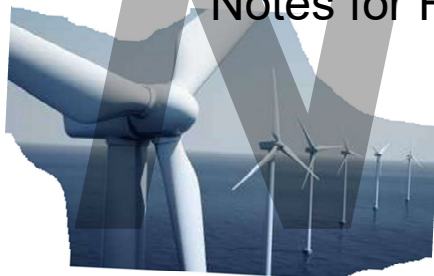


中國驗船中心

CR

離岸風場船舶營運注意事項-人員議題

Notes for Fleet Operation in Offshore Wind Farms – Personnel Issues



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報告大綱



- I. 上船出海人員分類與對應訓練

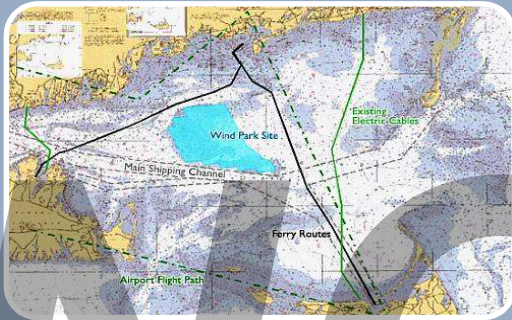
- SOLAS / MODU / A.1079(28), 2014.03.27

- II. 主要船旗國最低船員配額規定

- 賴比瑞亞 / 馬紹爾群島 / 巴拿馬 / 中華民國
- 歐洲執行經驗



離岸風場與人關係密切



調查



建造



營運



為何人員安全重要？



人員傷亡影響離岸風能專案(時程)甚鉅!!





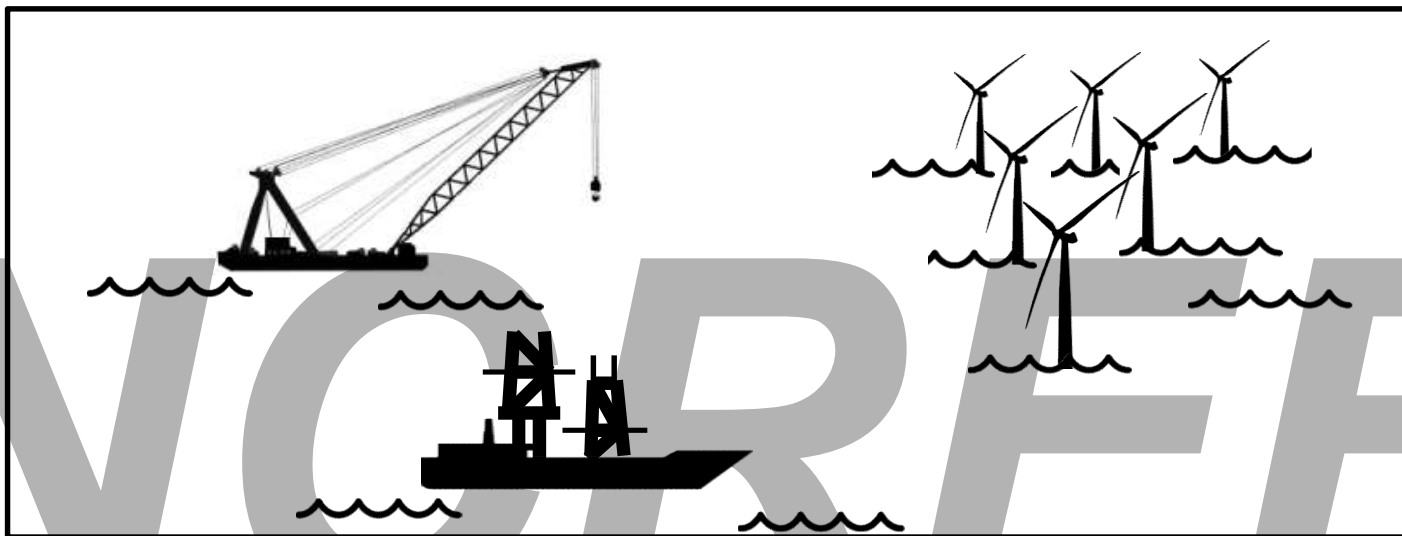
海事環境的影片



!! Dangerous on deck
of an offshore supply tug !!

!! Breaking of anchor chain !!

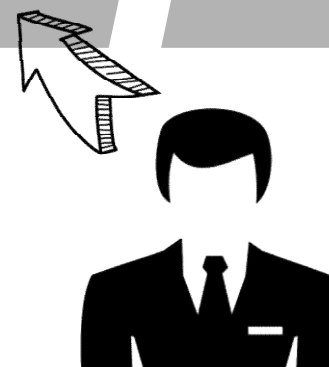
Q1: 什麼人員會搭船到離岸風場?



船員(一般&特殊)



工程師,技師...



業主,訪客...

Q2: 搭什麼船去離岸風場?



SOLAS

MODU

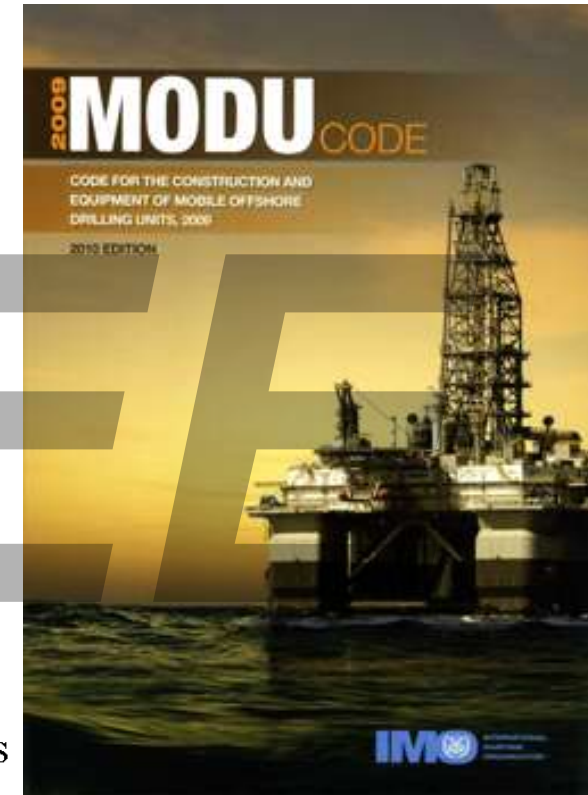


Mobile Offshore Drilling Units 分類



Chapter 2 – Construction, strength and materials

- 2.1 General
- 2.2 Access
- 2.3 Design loads
- 2.4 Structural analysis
- 2.5 Special considerations for surface units
- 2.6 Special considerations for self-elevating units
- 2.7 Special considerations for column-stabilized units
- 2.8 Towing arrangements
- 2.9 Fatigue analysis
- 2.10 Materials
- 2.11 Anti-fouling systems
- 2.12 Protective coatings of dedicated seawater ballast tanks
- 2.13 Construction portfolio
- 2.14 Welding
- 2.15 Testing
- 2.16 Drainage and sediment control



Self-elevating unit

- a unit with movable legs capable of raising its hull above the surface of the sea and lowering it back into the sea. @MODU code 2009, 1.3.47



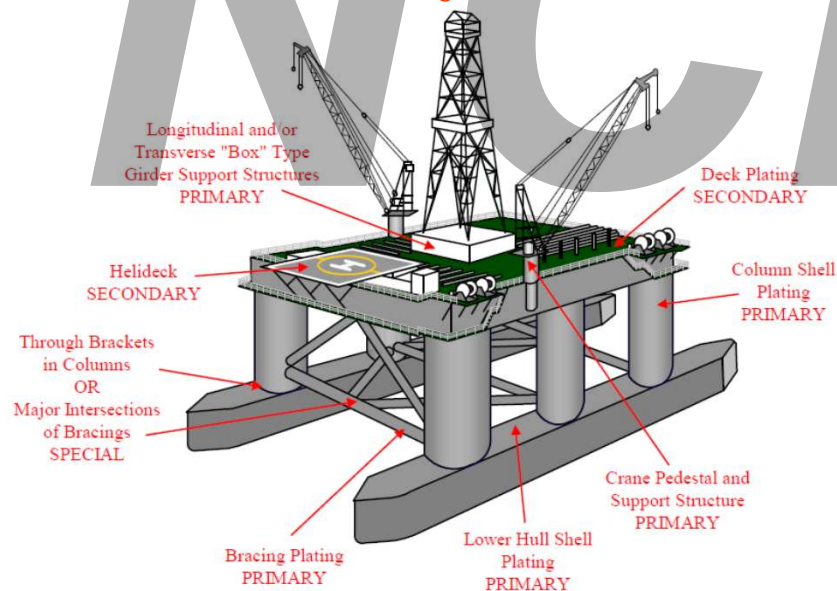
Column-stabilized unit



- a unit with the main deck connected to the underwater hull or footings by columns or caissons.

@MODU code 2009, 1.3.11

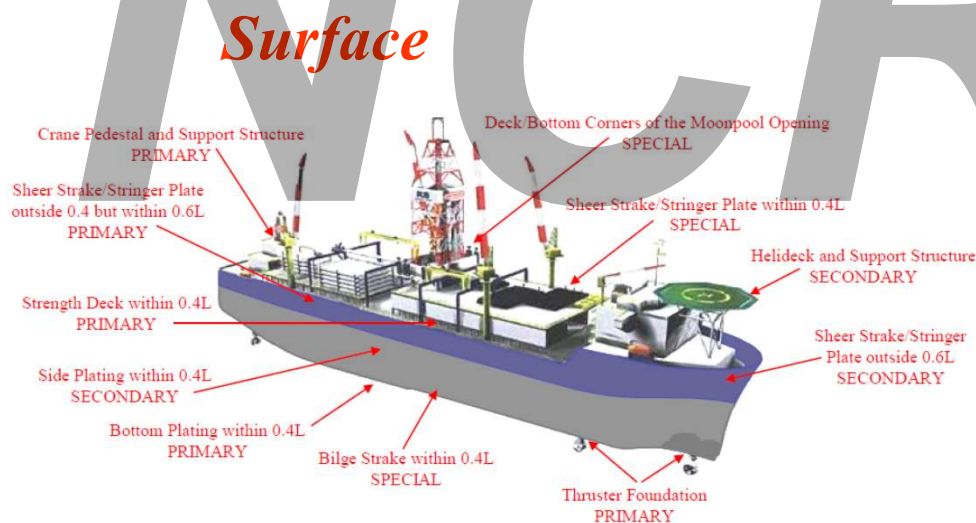
Column-stabilized



Surface unit

- a unit with a ship- or barge-type displacement hull of single or multiple hull construction intended for operation in the floating condition.

@MODU code 2009, 1.3.54

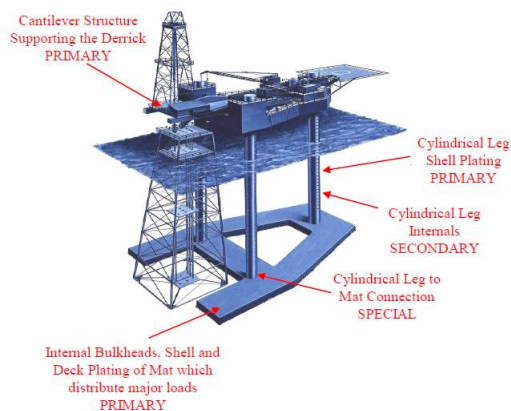




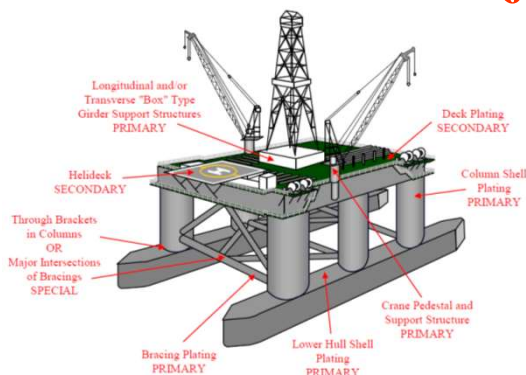
風電安裝船屬於哪一類？



Self-elevating



Column-stabilized



Surface



IMO A.1079(28)



- 國際線海事工作船舶均擁有 離岸移動式平台 (Mobile Offshore Units, MOUs) 的國際證書，根據此決議案2.17定義，此類型平台分為六種型式。

表1、離岸移動式平台之定義

章節	英文名稱	中文名稱 ¹	決議案原文定義
2.17.1	column-stabilized unit	柱穩定型平台	a MOU with the main deck connected to the underwater hull or footings by columns or caissons
2.17.2	non-self-propelled unit	非自航式平台	a MOU not fitted with mechanical means of propulsion to navigate independently
2.17.3	self-elevating unit	自動升降式	a MOU with movable legs capable of raising its
		平台	hull above the surface of the sea
2.17.4	self-propelled unit	自航式平台	a MOU fitted with a mechanical means of propulsion to navigate independently
2.17.5	submersible unit	坐底式/可潛式平台	a MOU with a ship-shape, barge-type or novel hull design (other than a self-elevating unit) intended for operation while bottom bearing
2.17.6	surface unit	水面式平台	a MOU with a ship- or barge-type displacement hull of single- or multiple-hull configuration intended for operation in the floating condition



I. 上船出海人員分類與對應訓練



SAFETY FIRST

NCCREE



IMO

政府

I. 上船出海人員分類與對應訓練



	SOLAS (International Convention for the Safety of Life at Sea; 國際海上人命安全公約) 及 相關決議案	MODU code (Code for the Construction and Equipment of Mobile Offshore Drilling Units; 移動式近海鑽探裝置建造及設備章程) 及 相關決議案 A.1079(28) ³
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上船出海人員分類定義



- **SOLAS 旅客定義**: A passenger is every person other than: (i). the master and the members of the crew or other persons employed or engaged in any capacity on board a ship on the business of that ship; and (ii). a child under one year of age.
- **MODU章程的序文(preamble)亦說明該章程上搭載的人員身分要求等同於SOLAS定義**: This Code has been developed to provide an international standard for mobile offshore drilling units of new construction which will facilitate the international movement and operation of these units and ensure a level of safety for such units, and **for personnel on board, equivalent to that required by the International Convention for the Safety of Life at Sea, 1974, as amended,**

A.1079(28)之上船出海人員分類定義



- 離岸移動式平台上人員分類依照該決議案“5.1 Categories of offshore personnel”明確地指出分為4大類
- A-category: Visitors and special personnel not regularly assigned who are on board for a limited period of time, in general not exceeding three days, and who have no tasks in relation to the normal operations of the MOU
- B-category: Other special personnel without designated responsibility for the safety, security and survival of others.
- C-category: Regularly assigned special personnel with designated responsibility for the safety, security and survival of others.
- D-category: Maritime crew members.

I. 上船出海人員分類與對應訓練(1/6)



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I. 上船出海人員分類與對應訓練(2/6)



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船員對應訓練(1/2)

- STCW, Section A-I/1 Definitions and clarifications, 將船員(seafarers)依據工作等級(level)進行對應訓練之要求
- 分別包含管理級(management level)、操作級(operational level)及協助級(support level)

表一、STCW 2010 之章節說明

章節	要求項目	說明
I	Standards regarding general provisions	一般性
II	Standards regarding the master and deck department	船長與甲板部
III	Standards regarding engine department	輪機部
IV	Standards regarding radio operators	無線電操作
V	Standards regarding special training requirements for personnel on certain types of ships	針對油氣船之特殊船舶
VI	Standards regarding emergency, occupational safety, security, medical care and survival functions	基本安全訓練



船員對應訓練(2/2)

- 兩者(職務與訓練)相互對應後所需接受之訓練與取得執照，應由該船之主管機關決定

各職級船員依 STCW 公約 2010 年修正案應受專業訓練對照表

項次	職務 訓練項目	一等船長	一等大副	一等船副	二等船長	二等大副	二等船副	三等船長	三等船副	一等輪機長	一等大管輪	一等管輪	二等輪機長	二等大管輪	二等管輪	三等輪機長	三等管輪	甲板助理員	輪機助理員	電技匠	助理級航行當值	助理級輪機當值	乙級船員	泵匠
		1	電子海圖與資料顯示系統(ECDIS) Electronic chart and information display systems	✓	✓	✓	✓	✓																
2	領導統御與駕駛臺資源管理 Leadership and bridge resource management	✓	✓	✓	✓	✓																		
20	基本安全訓練 (包含人員求生技能、防火及基礎滅火、基礎急救、人員安全及社會責任) Basic training Personal survival techniques, Fire prevention and basic fire fighting, Elementary first aids, Personal safety and social responsibility	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
21	救生艇筏及救難艇操縱	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

船籍?
船級?
船旗?



I. 上船出海人員分類與對應訓練(3/6)



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非船員之出海人員





(T-)BOSIET

- (熱帶地區)基礎離岸安全入門與緊急訓練

((T-)BOSIET, (Tropical-) Basic Offshore Safety Induction and Emergency Training)



Members



- Basic Maintenance Training Standard V.2
- Basic Safety Training Standard V.9
- Basic Safety Training Refresher Standard V.5

- WINDA for Training Providers (訓練機構)
- WINDA for Delegates (雇員)
- WINDA for employers and organizations (雇主)

GW  WINDA

- First Aid
- Manual Handling
- Fire Awareness
- Working at Heights
- Sea Survival
- HUET* (Helicopter Underwater Escape Training) * **NON-GWO ITEM**



實際依各國主管機關為準



- 以中華民國為例，若搭乘“漁船”從事調查研究及協助作業人員，即需符合「租用漁船從事水產資源海洋環境調查研究及漁業管理措施」第五點，人員需取得漁業署核發之漁船船員基本安全訓練結業證書。
- First Aid+ Fire Awareness+ Sea Survival



BOSIET訓練是否需要？



NOCREE

!! Boat-landing failure!!

上船出海人員分類與對應訓練(4/6)

- A 類人員



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A.1079(28)之上船出海人員分類定義



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A 類人員對應訓練-A.1079(28)



- 安全訓練要求最為單純，於第一次登船及後續周期性乘船時，僅需參照並落實船公司所制訂之個人安全政策即可，船公司亦需保留人員接受安全訓練之文書證據。
- 最低安全訓練範圍包含1.初階安全事宜、安全警示與警報等，尤其需針對人員落水、煙火及硫化氫偵測、消防棄船警報等，2.救生衣、浸水衣(若提供時)、緊急逃離呼吸器 (Emergency Escape Breathing Devices, EEBD)(若提供時)之使用，3.明瞭召集及登乘站、逃生路線，4.了解主管機關制訂之職責適任規定(Fitness for Duty)。

上船出海人員分類與對應訓練(5/6)

- B 類人員



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B 類人員對應訓練-A.1079(28)



- 所有 B、C、D 類人員需具備之 A 類人員安全訓練要求。
- 仍需學習：1. 啟動警報與使用手提式滅火器，2. 在船上獲得額外醫療救助前採取立即性措施，3. 啟閉船上的防火、水密、風雨密門，4. 遵照船上的工作安全規則，5. 了解船上基本組織架構與聯繫管道。
- 上述課程可在岸上執行以符合安全要求，而個人所持有此類安全訓練相關之熟職證書(Certificate of Proficiency, CoP)或證明文件效期不得超過五年。
- 船公司仍需規劃於岸上或船上之定期演習，以期人員熟悉船舶狀態達成安全作業目的。

CoC vs. CoP



- “2.4 適任證書(Certificate of Competency, CoC)” 為由主管機關簽署發行之證書，具有法律效益證明該人員有能力執行此工作。
- “2.5 熟職證書(Certificate of Proficiency, CoP)” 有別於政府所頒發的證書，為用於證明該人員有能力勝任此工作、通過某項訓練等。

B 類人員對應訓練-ISPS

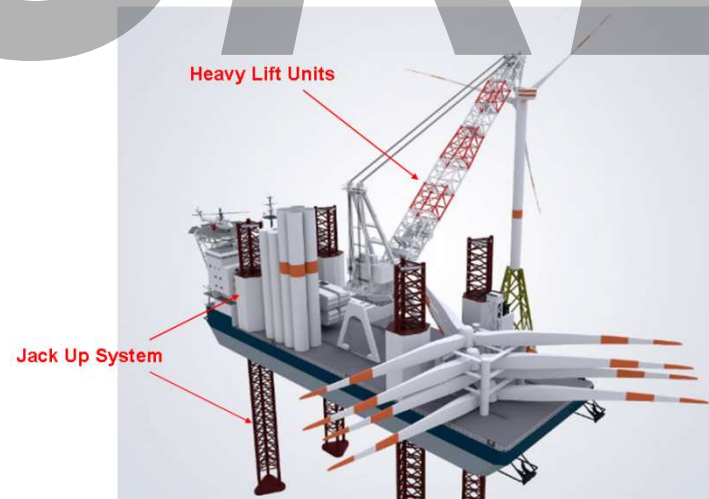


- 一般商船適用的**船舶保全意識**(ship security awareness)亦被本決議案所採用，**所有B、C、D類人員**均需接受跟該離岸移動式平台相關之**船舶保全訓練**，以便執行涉及本身職務之船舶保全業務，而船公司亦需**保留**關於執行保全業務說明用**文件與訓練記錄**等證明文件，這些**訓練有效期不得長於五年期**。

專門技術人員職能訓練



- **自昇系統及重吊系統**因設計型式廣泛、技術差異性大，為此國際上並無特別明文指出需取得何種適任證書，然依國外經驗指出，此兩種系統之**訓練與適任證書**，多參照及倚賴製造廠商所提供之**流程**。



重吊作業VS.安全訓練



!Accident on Crane collapse-1!

!Accident on Crane collapse-2!

上船出海人員分類與對應訓練(6/6)

- C&D 類人員



	SOLAS (International Convention for the Safety of Life at Sea; 國際海上人命安全公約) 及 相關決議案	MODU code (Code for the Construction and Equipment of Mobile Offshore Drilling Units; 移動式近海鑽探裝置建造及設備章程) 及 相關決議案 A.1079(28)³
旅客: 非旅客及 1歲以下嬰兒	旅客 >>>船公司規定	A類: 訪客及 非與MOU操作相關之短期(專業)人員 >>>船公司規定+A.1079(28)
非旅客: 與該船 相關從業人員	非船員 >>>(T-)BOSIET ¹	B類: 無負責他人安危之專門人員 >>>ISM+ISPS+A.1079(28)
	船員 >>>STCW ² +ISM+ISPS	C類: 負責他人安危之專門人員 >>>STCW ² +ISM+ISPS+A.1079(28)
		D類: 船員+關鍵人員 >>>STCW ² +ISM+ISPS+A.1079(28)

¹ (T-)BOSIET: (Tropical-) Basic Offshore Safety Induction and Emergency Training

² STCW: Seafarers' Training, Certification and Watchkeeping (STCW) Code

³ A.1079(28): "Recommendations for the Training and Certification of Personnel on Mobile Offshore (MOUs)"

A.1079(28)之上船出海人員分類定義



- 離岸移動式平台上人員分類依照該決議案“5.1 Categories of offshore personnel”明確地指出分為4大類
- A-category: Visitors and special personnel not regularly assigned who are on board for a limited period of time, in general not exceeding three days, and who have no tasks in relation to the normal operations of the MOU
- B-category: Other special personnel without designated responsibility for the safety, security and survival of others.
- C-category: Regularly assigned special personnel with designated responsibility for the safety, security and survival of others.
- D-category: Maritime crew members.

C&D 類人員對應訓練-A.1079(28)



- 所有 B、C、D 類人員需具備之A 類人員安全訓練要求。
- 仍需學習:1.啟動警報與使用手提式滅火器，2.在船上獲得額外醫療救助前採取立即性措施，3.啟閉船上的防火、水密、風雨密門，4.遵照船上的工作安全規則，5.了解船上基本組織架構與聯繫管道。
- 上述課程可在岸上執行以符合安全要求，而個人所持有此類安全訓練相關之熟職證書 (Certificate of Proficiency, CoP) 或證明文件效期不得超過五年。
- 船公司仍需規劃於岸上或船上之定期演習，以期人員熟悉船舶狀態達成安全作業目的。

C&D 類人員對應訓練-ISPS



- 一般商船適用的**船舶保全意識**(ship security awareness)亦被本決議案所採用，**所有B、C、D 類人員**均需接受跟該離岸移動式平台相關之**船舶保全訓練**，以便執行涉及本身職務之船舶保全業務，而船公司亦需**保留**關於執行保全業務說明用**文件與訓練記錄**等證明文件，這些**訓練有效期**不得長於**五年期**。

C&D 類人員對應訓練-STCW



表 3、C、D 類人員之特別訓練

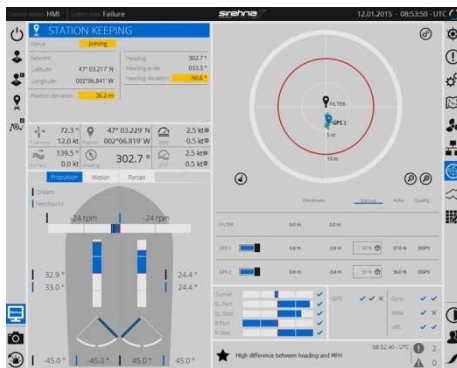
訓練要點	適用章程或規定
Survival craft	Table A-VI/2-1 / STCW Code
Fast rescue boats	Table A-VI/2-2 / STCW Code
Firefighting	Table A-VI/3 / STCW Code
Immediate first aid	Table A-VI/4-1 / STCW Code
Security duties	Table A-VI/6-2 / STCW Code
Helicopter landing officer (HLO)	Accredited HLO course, including basic meteorological observer training
Dynamic positioning operator(s) (DPO)	Guidance provided by industry and recognized by Organization ²

- 藥物需求標準及有效體檢證書 (valid medical certificate) 亦應由主管機關明定之。

專門技術人員職能訓練



- 動態定位系統:STCW 建議性參考的“PART B Section B-V/f Guidance on the training and experience for personnel operating dynamic positioning systems”。
- 然於IMO通告MSC.1/Circ.738/Rev.1及MODU章程4.13均指出參照此訓練要求，為此業界多採納the Nautical Institute所公告之訓練與發證規定。



關鍵人員(key personnel)之訓練要求



- “6 Specialized training and qualification of key personnel”: 離岸移動式平台之操作需配合不同的船舶特性、工作需求等，擁有足夠且具備能力之**關鍵人員(key personnel)**以維護操船安全並完成工作任務。
- 四種關鍵人員：Offshore Installation Manager(OIM)、Barge supervisor(BS)、Ballast control operator(BCO)、Maintenance supervisor(MS)。需擁有主管機關核發之適任證書(Certificate of Competency, CoC)。



船員“轉任”關鍵人員

- 擁有 STCW 證書之船員，欲轉任關鍵人員時，需額外接受訓練要求(A.1079(28)-6.1.2 及

Appendix 2)

表 5、STCW 船員轉任關鍵人員訓練要點

關鍵人員	STCW 職位	額外訓練要點
Offshore Installation Manager (OIM)	Master or Chief Mate	Well control and specific MOU-type stability
Barge supervisor(BS)	Master, Chief Mate, Navigational watch officer	specific MOU-type stability
Ballast control operator(BCO)	Master, Chief Mate, Chief Engineer, Second Engineer, Navigational watch officer, Engineering watch officer	specific MOU-type stability
Maintenance supervisor(MS)	Chief Engineer, Second Engineer, Engineering watch officer	No additional training

主管機關職責



- “7 Fitness for duty”指出主管機關應要求船公司落實離岸移動式平台人員訓練與管理。
- 應採取海事勞工公約 (Maritime Labour Convention, MLC) 中之最低休息周期 (minimum rest period) 規定，即24 小時內不少於10 小時休息時間，且任何7 天內不少於77 小時之休息時間。

人員安全訓練之法令要求



SAFETY FIRST

NICORREE



IMO

政府

上船出海人員分類與對應訓練



	SOLAS (International Convention for the Safety of Life at Sea; 國際海上人命安全公約) 及 相關決議案	MODU code (Code for the Construction and Equipment of Mobile Offshore Drilling Units; 移動式近海鑽探裝置建造及設備章程) 及 相關決議案 A.1079(28) ³
旅客: 非旅客及 1歲以下嬰兒	旅客 >>>船公司規定	A類: 訪客及 非與MOU操作相關之短期(專業)人員 >>>船公司規定+A.1079(28)
非旅客: 與該船 相關從業人員	非船員 >>>(T-)BOSIET¹	B類: 無負責他人安危之專門人員 >>>ISM+ISPS+A.1079(28)
	船員 >>>STCW²+ISM+ISPS	C類: 負責他人安危之專門人員 >>>STCW²+ISM+ISPS+A.1079(28)
		D類: 船員+關鍵人員 >>>STCW²+ISM+ISPS+A.1079(28)

¹ (T-)BOSIET: (Tropical-) Basic Offshore Safety Induction and Emergency Training

² STCW: Seafarers' Training, Certification and Watchkeeping (STCW) Code

³ A.1079(28): "Recommendations for the Training and Certification of Personnel on Mobile Offshore (MOUs)"

非船員之出海人員





可能適用之勞動部法條

職業安全衛生法

職業安全衛生目

勞動基準法

勞動檢查目

勞動檢查法

勞動條件及就業平等目

起重升降機具安全規則

職業安全衛生設施規則

營造安全衛生設施標準

碼頭裝卸安全衛生設施標準

職業安全衛生管理辦法

職業安全衛生標示設置準則

移動式起重機安全檢查構造標準

固定式起重機安全檢查構造標準

職業安全衛生教育訓練規則

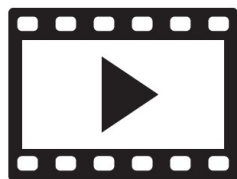
勞工作業環境監測實施辦法

異常氣壓危害預防標準

吊籠安全檢查構造標準

重體力勞工作業勞工保護措施準

危險性機械及設備安全檢查規則



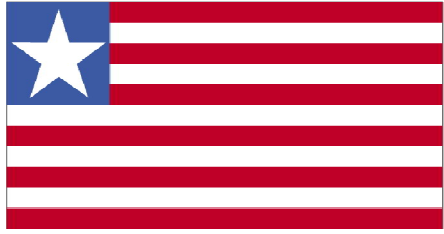
作業環境監測指引



II. 主要船旗國最低船員配額規定



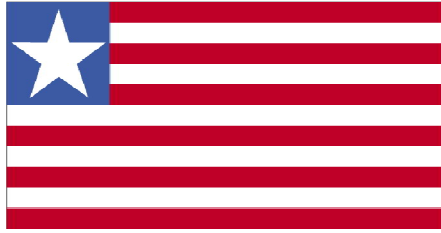
- 參考國際主要船旗國 (Flag States) 規定：
 - 賴比瑞亞 (Liberia), Marine Notice, MAN-004 Rev. 06/12
 - 馬紹爾群島 (Marshall Islands), Marine Notice No. 7-038-2 Rev. 11/12
 - 巴拿馬 (Panama), Merchant Marine Circular, MMC-285



賴比瑞亞(1/2)



- 賴比瑞亞海事局(Liberia Maritime Authority)於 Marine Notice, MAN-004 Rev. 06/12
- 離岸移動式平台之最低船員配額規定(Manning Requirement for Mobile Offshore Units (MOUs))，**“2.12.2 Basic Manning Scales”**之表格明確地指出離岸移動式平台根據**“平台類型”**與**“自航能力”**而決定於**“航行(fieldmoves/underway)”**與**“場址工作(on location)”**所需之最低船員數目。



賴比瑞亞 (2/2)



MODU or MOU – Non Self Propelled		
Application	On Location	Field Moves/Underway
Non-self-propelled Column Stabilized	1 Off shore Installation Manager 1 Barge Supervisor 2 Ballast Control Operators 3 Ordinary Seamen or (Ordinary Seamen MODU)	1 Off shore Installation Manager 1 Barge Supervisor 2 3 3 St
Non-self-propelled Self Elevating	1 Off shore Installation Manager	1 M 3 St



MODU's (Self-Propelled (SP))		
Application	On Location	Field Moves/Underway
Self Propelled Mobile Offshore Drill Ship	1 Master STCW II/2 (if Master is an OIM an additional OIM is not required) 1 Off shore Installation Manager 1 Chief Mate STCW II/2 3 Able Seamen (or Able Seafarer Deck) 2 Ordinary Seamen (Ordinary Seafarer Deck) 1 Chief Engineer 1 Second Engineer 2 Engineering Watch Officers 2 Oiler or Motormen 1 Engine Rating Or 3 Able Seafarer Engine	1 Master STCW II/2 1 Chief Mate STCW II/2 2 Navigational Watch Officer (STCW II/1) (*Not required for moves less than 12 hours) 3 Able Seamen (STCW II/4) or Able Seafarer Deck (STCW II/5) 2 Ordinary Seamen 1 Chief Engineer (STCW III/2) 1 Second Engineer (STCW III/2) 2 Engineering Watch Officers (STCW III/1) 2 Oiler or Motormen (STCW III/4) or 1 Engineering rating (STCW (III/4) Or 3 Able Seafarer Engine (STCW III/5)
	The notes will require two persons for each watch to be trained as DP operators (STCW 2009 Section B-V/f* Guidance on the training and experience for personnel operating DP systems) if fitted with DP. If classed for Periodically Unattended Machinery Space the number of engineers may be reduced.	The notes will require two persons for each watch to be trained as DP operators (STCW 2009 Section B-V/f* Guidance on the training and experience for personnel operating DP systems) if fitted with DP. If classed for Periodically Unattended Machinery Space the number of engineers may be reduced.





馬紹爾群島(1/2)



- Marine Notice No. 7-038-2 Rev. 11/12之
- “2.2.5 Reductions from Basic Manning - MOU”該章之表格可知，該船旗國針對“**平台類型**”、“**自航能力**”及“**航行時間**”進行船員最低配額規定。



馬紹爾群島(2/2)

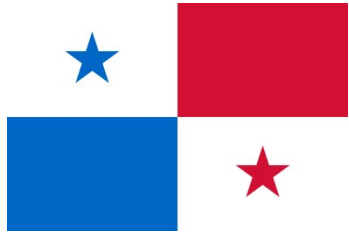


- 我國執行離岸風場安裝船可能類別分別為“具備動態定位系統 (DP) 且自航式的 Schedule DPV”與“非自航、非底部支撐 (bottom bearing) 式的 Schedule C”

Application	On Location/ Field Move	Underway
Dynamically Positioned (DP) Unit and Drilling Ships	Master Offshore Installation Manager Chief Mate Third Mate Two (2) Able Seafarers MODU One (1) Ordinary Seafarer MODU Chief Engineer Maintenance Supervisor First Assistant Engineer Two (2) Officers in Charge of an Engineering Watch (OICEW) Two (2) Oiler/Motors MODU	Master Chief Mate Two (2) Officers in Charge of a Navigation Watch (OICNW) Three (3) Able Seafarers or Able Seafarers Deck Two (2) Ordinary Seafarers Chief Engineer 1 st Assistant Engineer Two (2) Officers in Charge of an Engineering Watch (OICEW) Three (3) Oiler/Motors or Able Seafarers Engine
For voyages of less than 72 hours but more than 16 hours		Master Chief Mate Two (2) Officers in Charge of a Navigation Watch (OICNW) Three (3) Able Seafarers or Able Seafarers Deck Two (2) Ordinary Seafarers Chief Engineer 1 st Assistant Engineer Two (2) Officers in Charge of an Engineering Watch (OICEW) Two (2) Oiler/Motors or Able Seafarers Engine
For voyages 16 hours or less, but more than 8 hours		Master Chief Mate Two (2) Officers in Charge of a Navigation Watch (OICNW) Three (3) Able Seafarers or Able Seafarers Deck Two (2) Ordinary Seafarers Chief Engineer 1 st Assistant Engineer Two (2) Officers in Charge of an Engineering Watch (OICEW) Two (2) Oiler/Motors or Able Seafarers Engine
For voyages of 72 hours or more		Master Chief Mate Two (2) Officers in Charge of a Navigation Watch (OICNW) Three (3) Able Seafarers or Able Seafarers Deck One (1) Ordinary Seafarer Chief Engineer 1 st Assistant Engineer Two (2) Officers in Charge of an Engineering Watch (OICEW) One (1) Oiler/Motor or Able Seafarer Engine

	Application	On Location/Field Move	Underway/Towed
Schedule B	Non-self-propelled Bottom Bearing Unit	Offshore Installation Manager Two (2) Able Seafarers MODU One (1) Ordinary Seafarer MODU	Offshore Installation Manager Two (2) Able Seafarers MODU One (1) Ordinary Seafarer
Schedule C	Non-self-propelled Unit (excluding Non-self-propelled Bottom Bearing Unit)	Offshore Installation Manager Barge Supervisor Two (2) Ballast Control Operators Two (2) Able Seafarers MODU One (1) Ordinary Seafarer MODU	Offshore Installation Manager Barge Supervisor Two (2) Ballast Control Operators Two (2) Able Seafarers MODU One (1) Ordinary Seafarer





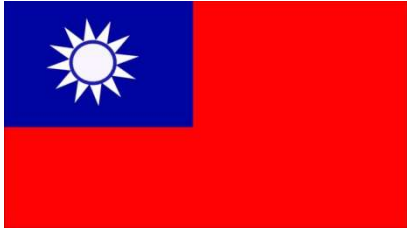
巴拿馬



- 巴拿馬海事局 (Panama Maritime Authority) 於 **MMC-285通告**提及離岸移動式平台最低船員配額。
- 主要依據該國之決議文 603-04-222-ALCN of 27 October 1986 和 603-04-42-ALCN of 8 April 1987，內容指出最低船員數將參照 **IMO 之決議文 A.1047(27) “Principles of Minimum Safe Manning”**
- 此通告並無對應之明確人數規定，巴拿馬海事局則是提供**參考表單**，由船東自行填寫，並送交其審查而後同意之。

Minimum Safe Manning Certificates Application Forms

SEG-01-09-01	Application For Manning Certificate
SEG-01-09-02	Application For FPSO or FSU Minimum Safe Manning Certificate
SEG-01-09-03	Application For Mobile Offshore Units (MODU) Minimum Safe Manning Certificate
SEG-01-09-04	Single Voyage Minimum Safe Manning Application Form
SEG-01-09-05	Laid Up Application Form



中華民國(1/2)



- 「航行船舶船員最低安全配置標準」第四條，提及“動力、非動力工作船船員最低安全配額，應依附表四之規定配置
- 附表四將工作船依據“是否具備動力”、“總噸位大小”及“執行工作水域”進行不同最低船員配額之要求。



第一代: since 1977, ~30m, ~600t, 2-4 × 2.3-3.6MW



SEA JACK
Platform

Create notifications for this Vessel | Fleet controls: Add to Fleet | Suggest update

IMO: 8767264 | Gross Tonnage: 6558
MMSI: 219015648 | Deadweight: 3626 t
Call Sign: OXKR2 | Length Overall x Breadth Extreme: 95.6m × 33m
Flag: Denmark [DK] | Year Built: 2003
AIS Vessel Type: Tug | Status: Active

Voyage Info

For full access: Upgrade


DK FDH | ATD: 2016-07-11 11:32 | DK GRE | ATA: 2016-07-12 08:35

Past Track | Route Forecast

Distance Travelled: ●●●●●

Draught: 5.6m

Speed recorded (Max / Average): 6.8 / 5.8 knots



© Stan Laundon
MarineTraffic.com

● SEA JACK:

- **GT: 6,558**
- Year: 2003
- 95.6m × 33m
- Flag: Denmark



第二代 since 2008, ~45m, ~1000t, 4-6 × 2.3-3.6MW



MPI ADVENTURE
Platform

Create notifications for this Vessel | Fleet controls: Add to Fleet | Suggest updated v

IMO: 9530084 | Gross Tonnage: 19533
MMSI: 245924000 | Deadweight: 20739 t
Call Sign: PCKV | Length Overall x Breadth Extreme: 136.4m x 40m
Flag: Netherlands [NL] | Year Built: 2011
AIS Vessel Type: Other | Status: Active

Voyage Info

For full access Upgrade

DE BRV | GB MID
ATA: 2017-02-03 17:33 | ATA: 2017-02-05 09:34

Past Track | Route Forecast

Distance Travelled: ●●●●●

Draught: 5.6m

Speed recorded (Max / Average): 8.9 / 8.1 knots

Itineraries History > | Latest Positions >

Reported ETA Received: 2017-02-17 07:27 UTC (3 min ago)

© S. Storebø
MarineTraffic.com



● MPI ADVENTURE:

- **GT: 19,533** - Year: 2011
- 136.4m x 40m - Flag: Netherlands

第三代 since 2012, ~65m, ~1500t, 4-5 × 5-7MW



PACIFIC OSPREY
Offshore Supply Ship

IMO: 9621704
MMSI: 210286000
Call Sign: 5BUF3
Flag: Cyprus (CY)
AIS Vessel Type: Other

Gross Tonnage: 24586
Deadweight: 13174 t
Length Overall x Breadth Extreme: 161.3m x 49.03m
Year Built: 2012
Status: Active

Voyage Info

DK EBJ
ATD: 2016-08-03 02:16
ATA: 2016-08-15 10:52

Distance Travelled: ●●●●●
Draught: 5m
Speed recorded (Max / Average): 10.9 / 8.9 knots

Itineraries History > Latest Positions >

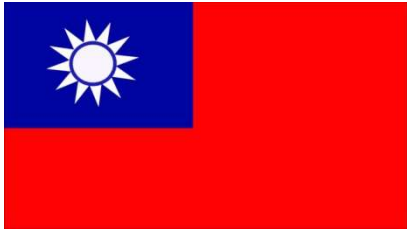
Reported ETA Received: 2017-02-17 07:34 UTC (2 min ago)

Latest Position In Range

Position Received: 3 min ago (2017-02-17 07:33 UTC)
Vessel's Local Time: 2017-02-17 08:33 (UTC +1)



- **PACIFIC OSPREY:**
 - **GT: 24,586**
 - **Year: 2012**
 - **161.3m x 49.03m**
 - **Flag: Cyprus**



中華民國(2/2)



目前無法適用!

(含拖船) 其他工作船	總噸位 5,000 以上, 未滿 10,000	沿海	動力	員額	1	1	1	4
				資格	二等船長	二等大副	二等船副	
(含拖船) 其他工作船	總噸位 5,000 以上, 未滿 10,000	外海航線	動力	員額	1	1	1	4
				資格	二等船長	二等大副	二等船副	

未來?



船 其他工作	總噸位 500 以 上	沿海	非動力	員額				2
				資格				

是否適用?

目前歐洲離岸風場執行經驗(1/3)

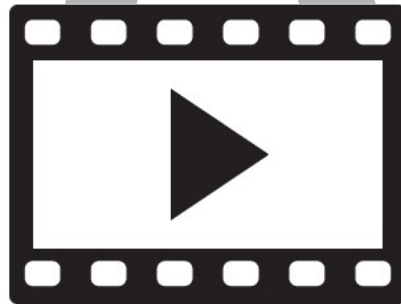


- 採用**非自航式**離岸移動式平台時，將根據該平台之**總噸位(Gross Tonnage, GT)**大小而決定雇用之船員數量。
- 通常**8000GT以上**會雇用包含船長在內的4位甲級船員 (officers) 及1位輪機員 (engineer)。
- **8000GT以下**則會雇用包含船長在內的2位甲級船員及1位輪機員。

目前歐洲離岸風場執行經驗(2/3)



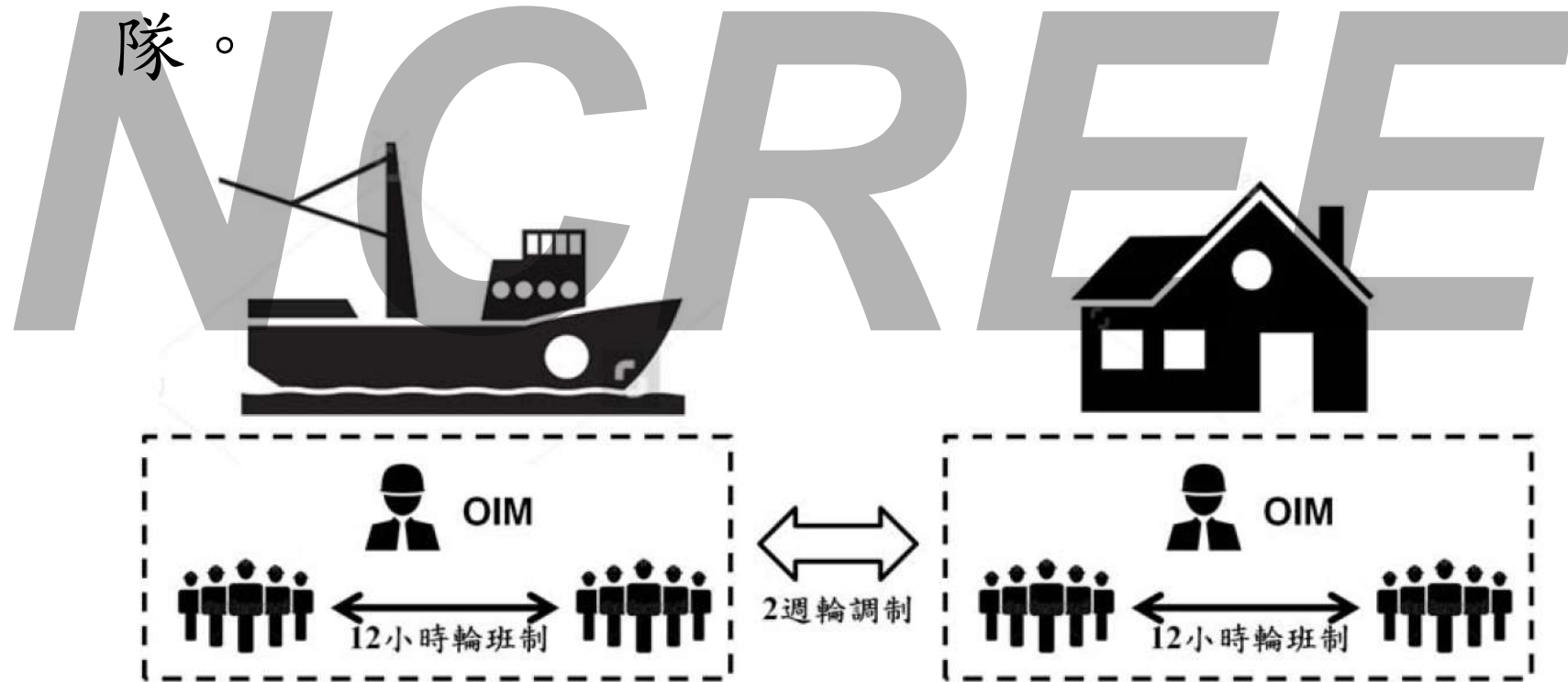
- 離岸海事工程啟動後會**24 小時持續進行**，故船上將採取**12 小時制輪班**，船上會需要完整的**兩組施工與船員團隊**，前述的**關鍵人員 Offshore Installation Manager(OIM)**則通常僅一位，主要**白天工作但全天待命**。



目前歐洲離岸風場執行經驗(3/3)



- 若工程時間**兩週以上**，**岸上**亦會籌組包含OIM及12小時輪班制的**兩組**施工與船員團隊。



結論



- 人員安全重要，基本訓練即可避免重大損失。
- 主管機關、開發商、EPCI等應盡早參照國際規定。
 - 國內法令將被迫跟上 ex:電業法
 - 時程延宕影響投資甚鉅



中國驗船中心

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報告完畢 敬請指導

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