

International Safety Management Code

國際船舶安全管理



新興航運

Historic (Marine) Events on Safety

歷史上幾件重大（海事）案件，因而導致海運業界對船舶營運管理的重要改變：

(Marine) Events	International Maritime Convention
1912 Titanic	SOLAS／1960
1967 Torrey Canyon	MARPOL 1973／78
1978 Amoco Cadiz	PSC／1982, STCW 78/95
1987 Herald of Free Enterprise	IMO A647 resolution adopted 1989
1989 Exxon Valdez	OPA-90／1990
1990 Scandinavian Star	ISM-Code／1998
2001 911 Terrorist	ISPS-Code／2004

TITANIC撞上冰山沉沒

- **1912**年號稱海上皇宮，完美無缺永不沉沒的巨型客輪“**TITANIC**”（鐵達尼號）；**4月10日**處女航載運共計**2223**名人員包括船上服務人員，從英國南安普敦開往美國紐約；**4月14日上午0900**時曾接到他船發現冰山報導，約於晚上**0930**時進入浮冰區，但該船並未改變航向，乃以全速**22節**繼續航行；**4月14日晚上1140**時撞上冰山；**4月15日清晨0220**時沉船；**706**人獲救、**1517**人喪生。
- 檢討: 救生艇嚴重不足僅可容納**1200**人員逃生許多旅客落海在**28°F (-2°C)**海面上，身體失溫(**Hypothermia**)而死亡。
- 導致**SOLAS**國際公約制訂，對船舶設計及救生設備加以規範。

Surviving disaster – The Titanic and SOLAS

In 1914, two years after the Titanic disaster of 1912, in which 1,503 people lost their lives, maritime nations gathered in London adopted the International Convention for the Safety of Life at Sea (SOLAS Convention), taking into account lessons learned from the Titanic. The 1914 version was superseded by SOLAS 1929, SOLAS 1948, SOLAS 1960 (the first adopted under the auspices of the International Maritime Organization) and SOLAS 1974. SOLAS 1974 is still in force today, but it has been amended and updated many times. The regulations relating to life saving appliances and arrangements, contained in chapter II of SOLAS, a new version of which entered into force on 1 July 1998, are intended to ensure that in the event of a catastrophe at sea, passengers and crew have the greatest chance of survival. Improved design and equipment, better fire protection, satellite communications, rescue planes and helicopters and trained personnel also contribute to improved safety at sea.

Ice patrol

In the first SOLAS 1914, after the Titanic disaster, ice patrols in the north Atlantic were set up and continue to be a SOLAS requirement.



Public address system

There was no public address system on the Titanic and news filtered to the passengers slowly, adding to the disorder and confusion. Under SOLAS, all passenger ships must be fitted with a public address system.



Lifeboat design

Some people died from hypothermia in the Titanic lifeboats because they were open and gave no protection against the cold. Under SOLAS, lifeboats must be fully or partially enclosed. On passenger ships, partially enclosed lifeboats can be used as they are easier to get into, but they must have a collapsible roof to fold across.



Speed of navigation around ice

The Commission into the Titanic ruled the loss was due to collision with an iceberg brought about by excessive speed at which she was being navigated. Under SOLAS, when ice is reported on or near her course the master of every ship at night is bound to proceed at a moderate speed or alter course.



Training of crew in lifeboat drill

The crew of the Titanic lacked training in loading and lowering the lifeboats and few knew which boat they were assigned to. Lifeboats were not fitted to capacity because senior officers did not know the boats had been tested and were strong enough. Under SOLAS, every crew member must participate in regular practice drills and have easy access to training manuals.



Distress alert

The Titanic used radio which had a limited range of 200 nautical miles. Ships can now communicate globally via satellites.



Marconi radio waves

Helicopters and rescue planes

Unavailable in 1912, helicopters and rescue planes are now used to locate, search for and rescue survivors.



Lifeboat drill

No lifeboat drill was held on the Titanic. Under SOLAS chapter III an 'abandon ship' and fire drill must take place weekly on all passenger ships.

Evacuation chutes

Passengers on the Titanic jumped from windows and doorways into the lifeboats as they were lowered, often injuring themselves or other passengers. New emergency evacuation chutes are both safer and quicker.



Number of lifeboats

The Titanic did not have enough lifeboats for all passengers. Under SOLAS, passenger ships must carry enough lifeboats (some of which can be substituted by liferafts) for all passengers, plus liferafts for 25%.



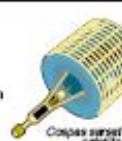
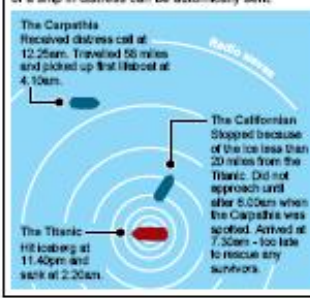
Immersion suits

The sea temperature when the Titanic sank was below freezing point and many people died in the water from hypothermia. Under SOLAS, a specific number of immersion suits must be carried on both passenger and cargo ships, many for the crews of rescue boats.



Location

The land station at Cape Race, Newfoundland and ships other than the Carpathia and the Californian heard the Titanic distress call but the messages were cracking and the Titanic's position was misinterpreted. With EPIRBs and global positioning systems, the position of a ship in distress can be automatically sent.



Distress watch

The Californian was less than 20 miles away but the radio officer had gone off duty when the distress messages were sent. Under SOLAS, every ship while at sea must maintain a continuous watch on the distress and safety frequencies.

TORREY CANYON擱淺漏油

- 1967年3月18日，一艘賴比瑞亞籍油輪**TORREY CANYON 118,285 D.W.T.**因趕船期抄近路而擱淺於英國西南方**Scilly Isle** 5哩外，本事故為海事上最大單一油污染事故，計有**121,000**噸原油漏出於海面上，油污染英國、法國之海岸線；範圍長達**200**哩，數萬隻海鳥死亡，海洋生物浩劫難以估計。
- 本海事案件導致**MARPOL**國際公約制定。



英國首相Harold Wilson與其內閣決定放火，企圖將漏油燒掉以免汙染，海空軍出動各式戰機投下各類炸彈與燒夷彈，整整十天才將殘骸燒毀，期間並大量使用清潔劑與化油藥劑來清洗受到汙染的海岸與洋面，造成嚴重之二次汙染。。



AMOCO CADIZ擱淺事件

- **1978年3月17日 AMOCO CADIZ油輪（228,513 D.W.T.）從波斯灣開往法國Le Havre港途中因遭遇惡劣天氣，舵機故障，漂流擱淺於法國北海岸；計有1,619,048桶原油洩出海上。**
- **1980年12月巴黎集會，採納一項宣言：**
加強海上安全、保護海洋環境及改善船員在船上生活與工作條件。
- **1982年1月通過新協定—巴黎備忘錄（Paris Memorandum）**
正式名稱 “European Memorandum of Understanding on Port State Control” 簡稱 “Paris MOU”。
- **1982年7月1日歐洲港口開始對進港之外籍船舶實施PSC檢查。**

AMOCO CADIZ擱淺事件



HERALD OF FREE ENTERPRISE

艙門未關浸水沉沒

- **1987年3月06日1905時RORO渡船“HERALD OF FREE ENTERPRISE”載運459名旅客，81輛汽車，3輛巴士及47輛卡車；自比利時ZEEBRUGGE港開往英國Dover港；在離開碼頭時，船艙門沒有關閉開航，當船速高達18節出港，在低乾舷情況下，海水從船艙灌入汽車貨艙內；在轉向時，穩定度偏移以至於船向右傾斜瞬間翻覆沉沒；266人獲救、193人喪生。**
- **原因探討：**
負責關閉艙門的人沒有去關；大副疏於查核確定艙門已經關好；船長沒有確定艙門已經關好，冒然開航；公司的安全管理不完善。
- **安全管理系統(SAFETY MANAGEMENT SYSTEM)的觀念進入海運業界。**

HERALD OF FREE ENTERPRISE



HERALD OF FREE ENTERPRISE



HERALD OF FREE ENTERPRISE



油輪**EXXON VALDEZ**觸礁漏油

- **1989年滿載油輪EXXON VALDEZ (211,469 D.W.T.)從阿拉斯加開往舊金山**
 - 3月23日**
 - 2130時 出港
 - 2315時 領港下船
 - 2325時 船長向Coast Guard報備必須避開前面浮冰，由出港航道轉到入港航道
 - 2350時 船長交代當值三副，當船抵Reef Bligh Island北方3哩，右轉到出港航道
 - 2355時 三副電話通知船長，通過Busby Island開始轉向
 - 接著瞭望員跑進駕駛台，報告有個紅色閃光靠近Bligh Reef，應在左邊卻在右邊，三副下達右滿舵（但從航向記錄器上發現，7分鐘後才開始轉向並且用了反舵）。
 - 3月24日** 0008~0012 船長在房間感覺到震動，衝到駕駛台，減車並穩定船身以防止翻船；右舷破三個大洞，約1100萬加崙原油漏出。
- 本案件導致美國**Oil Pollution Act 1990 (OPA-90)**產生。

油輪**EXXON VALDEZ**觸礁漏油



SCANDINAVIAN STAR火災

- 1990年4月6日2145時SCANDINAVIAN STAR客輪載送船員99人旅客383人從Oslo港開往Fredrikshaven途中4月7日凌晨0145 -0224時發生火災，0320時船長宣佈棄船；造成158名人員死亡。
- 該火災案件，導致SOLAS對船舶防火設備與逃生路線的規定更加嚴格。

SCANDINAVIAN STAR 火災



海上人命安全公約(SOLAS)演變

- 1914.1 海運國家第一次在倫敦集會，通過『1914年海上人命安全國際公約』，公約內容僅規範客輪船身構造及救生設備、無線電報設備。
- 1914 第一次世界大戰爆發，公約生效遭擱置。
- 1929.5 第二次集會，通過『1925年海上人命安全國際公約』，公約內容除規範客船外，擴及1600噸以上貨船。
- 1933.1 “避碰規則”通過。
- 1948.1 第三次集會通過『1948年海上人命安全國際公約』，公約內容擴大增加無線電話、穀類與危險品之載運予以原則性規定。
- 1960.5 政府間海事諮詢組織（IMCO）通過『1960年海上人命安全國際公約』，公約內容每章節更詳盡規定；增加『核動力船』之有關規定；為目前所實施SOLAS主要架構。
- 1965.5 SOLAS正式生效。
- 1974.10 第五次集會通『1974年海上人命安全國際公約』，公約範圍增加第IX、X、XI、XII章。
- 1982.5 IMCO更名國際海事組織（IMO）。
- 1995 IMO將ISM-CODE列入SOLAS第9章，公約範圍不僅規範船舶，並擴及船舶所有人與船舶營運人的責任。
- 2002 IMO將ISPS-CODE列入SOLAS第11章，公約範圍不僅規範船舶、船舶所有人、船舶營運人，更擴及港口、櫃場。

SOLAS内容

Chapter I	General provisions.
Chapter II-1	Construction- structure, subdivision and stability, machinery and electrical installations.
Chapter II-2	Construction- fire protection, fire detection and fire extinction.
Chapter III	Life-saving appliances and arrangements
Chapter IV	Radio communications.
Chapter V	Safety of navigation.
Chapter VI	Carriage of cargoes.
Chapter VII	carriage of dangerous goods.
Chapter VIII	Nuclear ship.
Chapter IX	Management for the safe operation of ship.
Chapter X	Safety measures for high-speed craft.
Chapter XI-1	Special measures to enhance maritime safety.
Chapter XI-2	Special measures to enhance maritime security
Chapter XII	Safety measure for bulk carriers.

ISM CODE之背景、沿革

- **1978年ISO 9000**頒佈品質管理系統國際性標準。
- **1991年國際船舶經理人協會（International Ship Management Association簡稱ISMA）**所採用船舶管理章程（**Code of Ship Management Standards簡稱ISMA Code**）。該章程之內容及精神乃源於**ISO 9000**品保系列；然而**ISMA CODE**畢竟不具公約效力的規章，對航商未構成強制性要求。
- **1993年11月4日IMO**通過**A741**決議案，採納國際安全管理章程，簡稱**ISM CODE**，其制定雖然較晚，卻具有公約的效力。睽諸條文內容亦融合**ISO 9000**品保系統精神及船舶安全實務。
1994年5月 締約國通過**ISM CODE**併入於**SOLAS**第**9**章內。
1998年7月1日 客船、油輪、**BC**、**LPG**、**LNG**船強制實施。
2002年7月1日 **500**噸以上貨船強制實施。

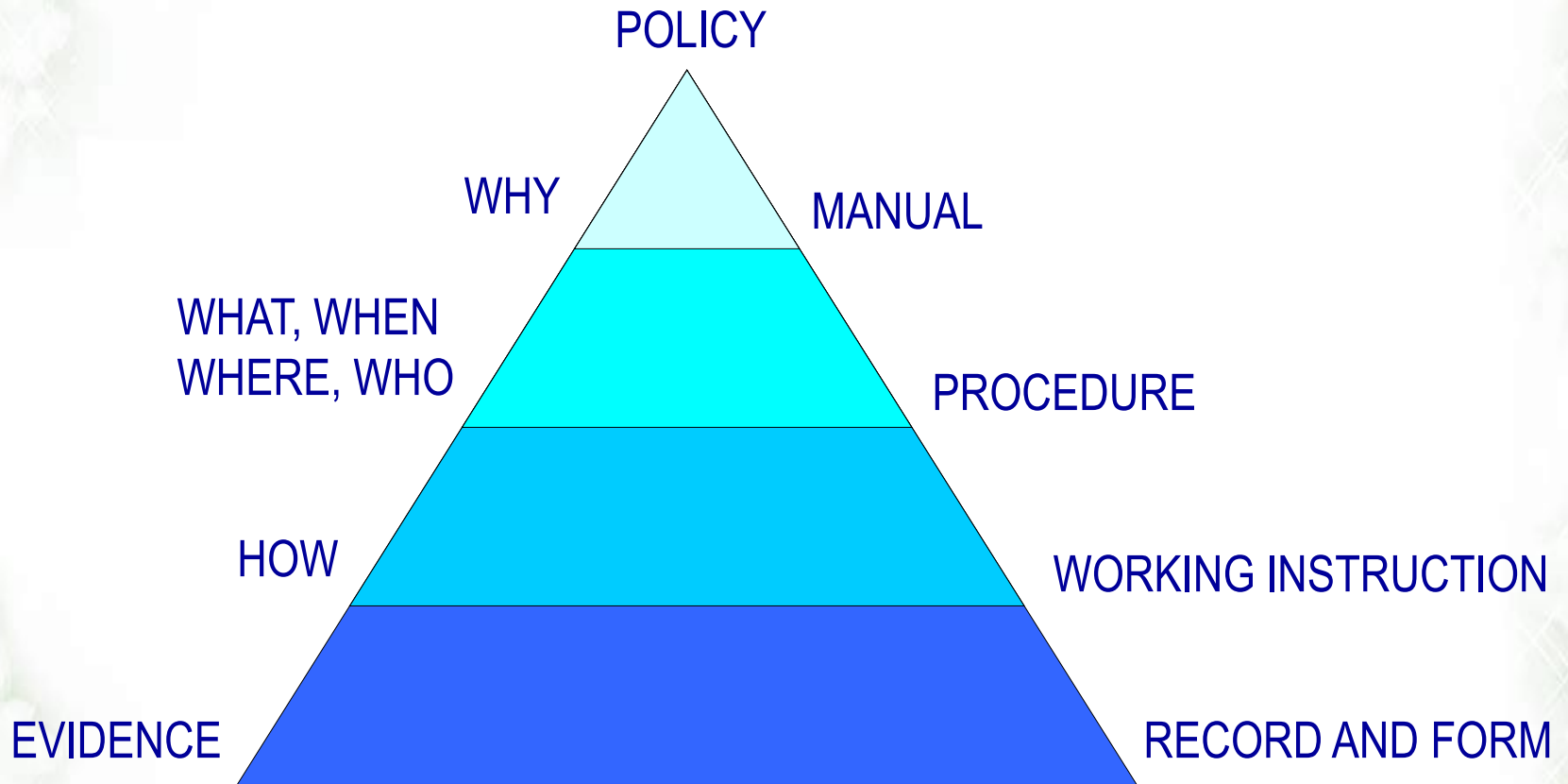
ISM CODE與ISO 9000 STANDARD之應用

	ISM CODE	ISO 9000 standard
適用範圍	船舶之安全與污染防治	產品或服務之品質保證
適用對象	航運管理及船舶營運	客戶與供應商之合約關係
目的	證明符合安全及污染防治之系統能力	證明公司符合客戶要求之能力
施行方法	實施船舶安全管理及營運及污染防治	實施品質保證系統
認證方式	1. 對公司評審合格簽發“符合文件”(有效期5年) 2. 對船舶評審合格簽發安全管理證書(有效期5年)	對公司及船舶評審合格簽發品質系統證書(有效期3年)
證書之維持	1. 對公司作後續追蹤評審(每一年) 2. 對船舶作後續追蹤評審(2.5年) 3. 重新評審(5年)	1. 監督性稽核(公司：每半年一次) 2. 重新評審(3年後)
法令之規定	屬強制性	屬自願性
認證機構	船級機構等	主管官署認可之認證機構

ISO STANDARD PRINCIPLE

- Say what you do(說你想怎做)
- Do what you say (做你所說的)
- Write down what you have done
(記錄你所做的)

QUALITY MANAGEMENT SYSTEM DOCUMENTATION HIERARCHY



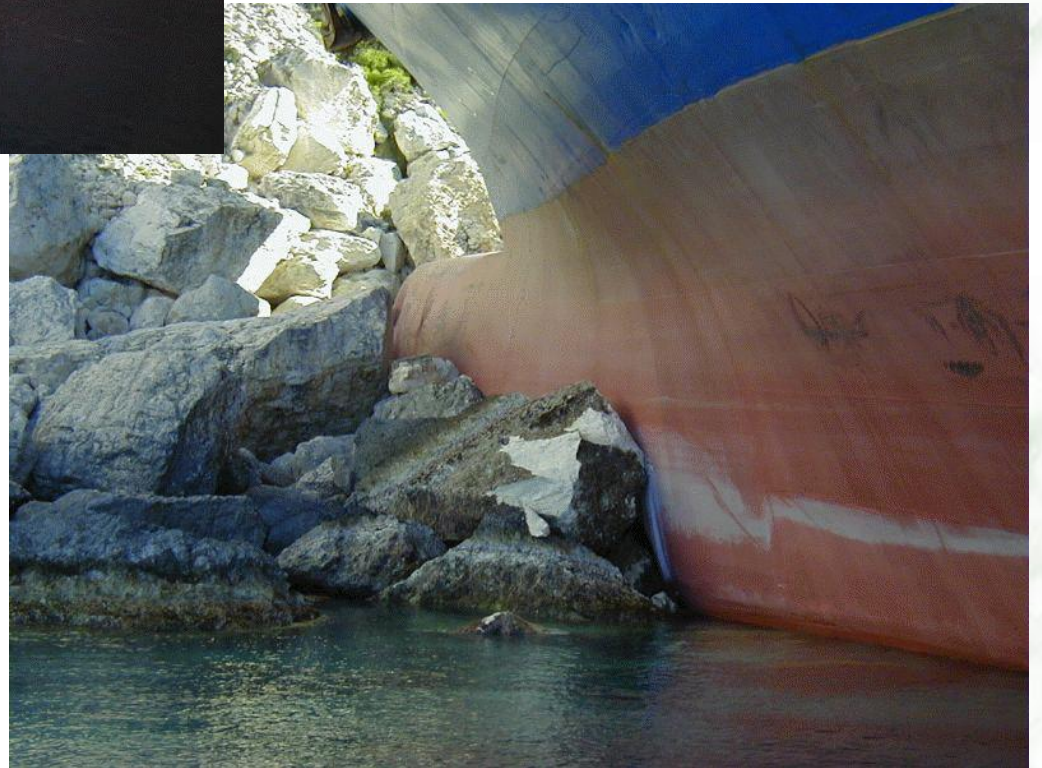
ISM CODE制定之契機

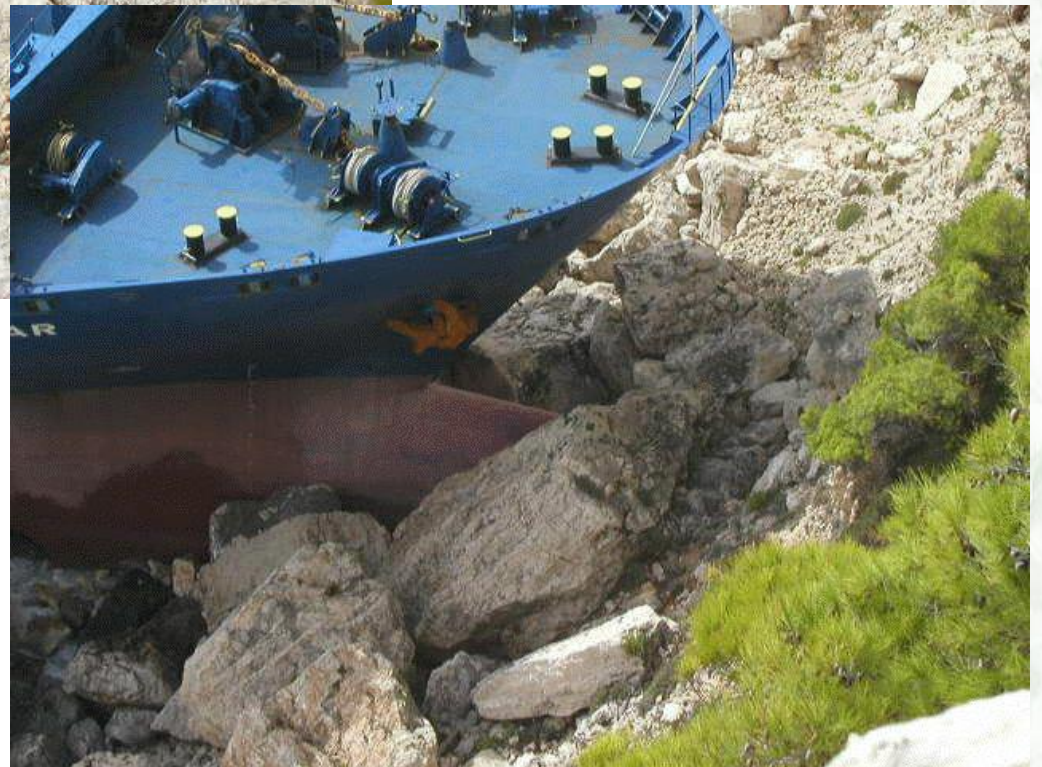
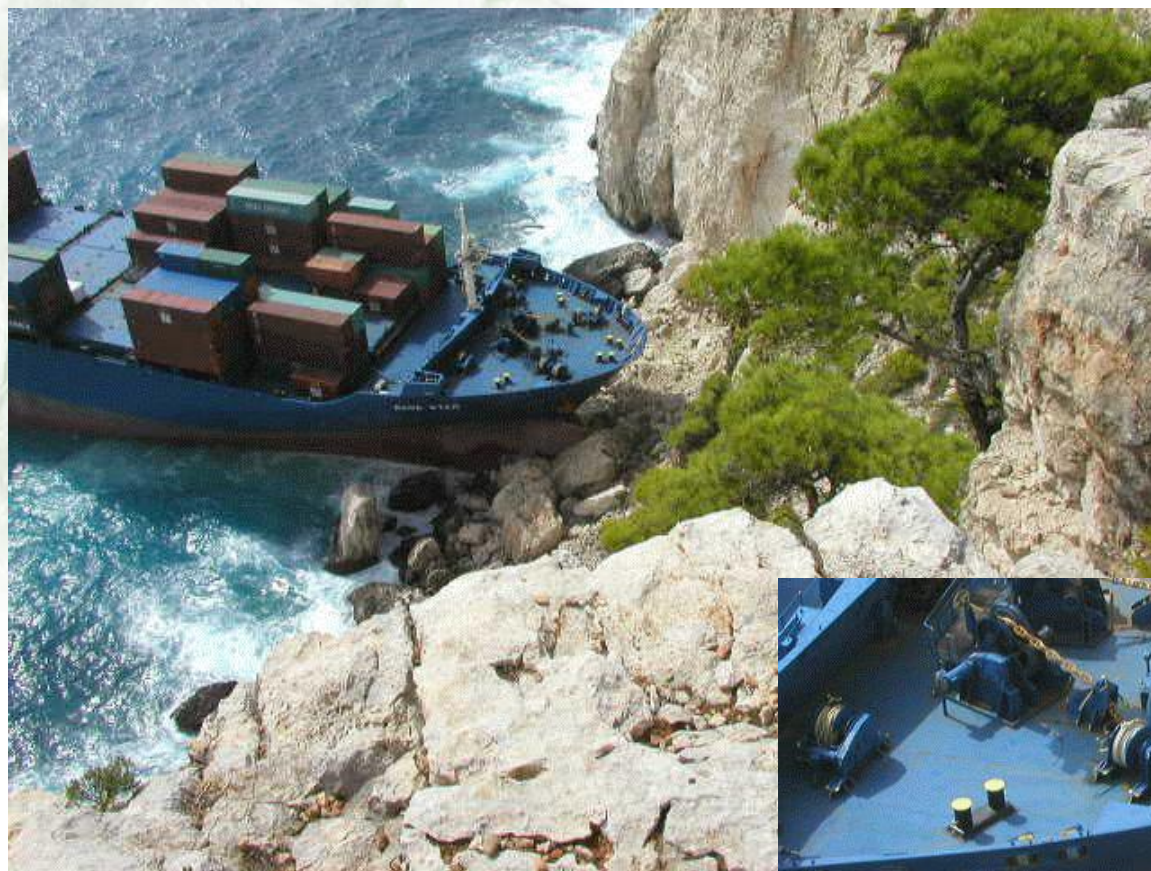
1. 歷年來接連數件重大海難事件，因此促使**IMO**加緊研擬對策：
 - **1987年RO-RO船HERALD OF FREE ENTERPRISE**翻覆，**193**人死亡；原因是船艙門未關，進水而引起。
 - **1989年油輪EXXON VALDEZ** 坐礁貨油流出。
 - **1990年北海渡輪SCANDINAVIAN STAR**火災，**158**人死亡。
2. 另外，**1989**年終至**1992**年初，據統計有大量的海事發生在油輪及散裝貨輪，超過**400**名船員失蹤或喪失生命，海運業界及保險業界均表震驚，惟經保業界研究分析，出於人員疏忽而造成事故為其主要原因，如下表分析：

ISM CODE制定之契機

	INCIDENTS (1992)	LOSSES (1992)	HUMAN ELEMENT
FOUNDERED	19%	44%	—
GROUDNING	13%	21%	90%
FIRE EXPLOSION	9%	16%	70%
COLLISION	9%	12%	96%
CONTACT	22%	1%	70%
OTHER CAUSES	28%	6%	—
	100%	100%	













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義大利豪華郵輪柯斯達康柯達號 (Costa Concordia) 2012.01.13日在地中海觸礁傾覆



義大利豪華郵輪柯斯達康柯達號 (Costa Concordia) 2012.01.13日在地中海觸礁傾覆

- 體積龐大的郵輪根本不應靠近，且吉格里奧島有渡輪往返、航線十分清楚，出事時天氣狀況良好，所有條件都不應出事。
- 各方目前均把矛頭指向52歲的船長薛提諾，他不僅指揮郵輪脫離正常航線、而且在乘客未全部獲救之前，即自己先棄船逃難。

Shen Neng 1 Grounded at Great Barrier Reef

深能一號澳洲大堡礁擱淺



Shen Neng 1 Grounded at Great Barrier Reef

深能一號澳洲大堡礁擱淺



Shen Neng 1 Grounded at Great Barrier Reef **深能一號澳洲大堡礁擱淺**

- Chinese owners Cosco maintained their public silence yesterday but face fines of up to \$1 million over the incident, while the captain could be handed an individual penalty of up to \$250,000.
- 中國船東COSCO能保持緘默，除了將面臨100萬美元的罰款，船長也將面臨250,000美元的個別的懲罰。

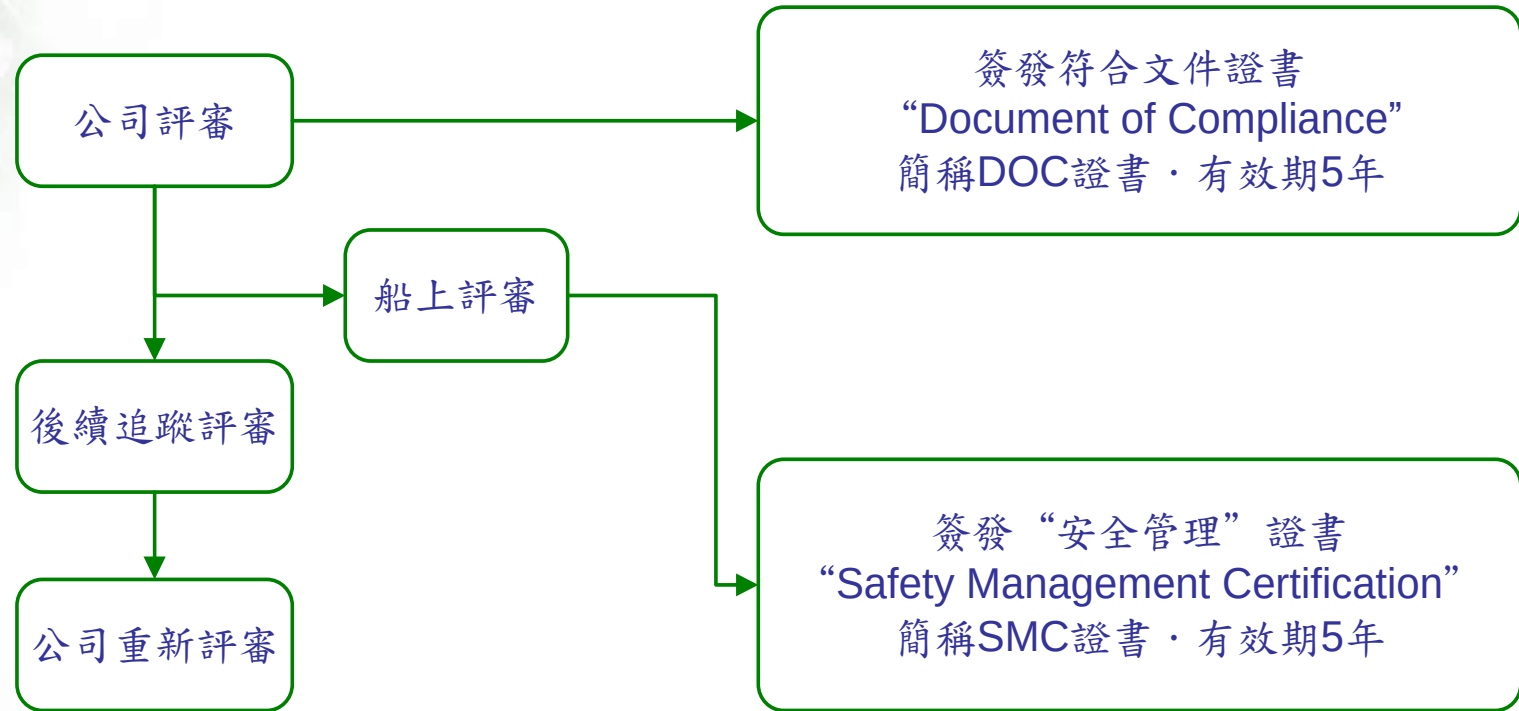
INTERNATIONAL SAFETY MANAGEMENT CODE (ISM-CODE)

1. General
2. Safety and environmental protection policy
3. Company responsibilities and authority
4. Designated person(s)
5. Master's responsibility and authority
6. Resources and personnel
7. Development of plans for shipboard operations
8. Emergency preparedness
9. Reports and analysis of non-conformities; accidents and hazardous
10. Maintenance of the ship and equipment
11. Documentation
12. Company verification, review and evaluation
13. Certification and periodical verification
14. Interim certification
15. Verification
16. Forms of certificates

ISM Code 條文介紹

- **Code 1.** 總則：定義、目標、適用範圍、安全管理系統的功能要求
- **Code 2.** 安全和環境保護政策
- **Code 3.** 公司的責任和權力
- **Code 4.** 指派人員
- **Code 5.** 船長的責任和職權
- **Code 6.** 資源和人員
- **Code 7.** 船上作業計劃之制定
- **Code 8.** 應急準備
- **Code 9.** 發生不符合、意外及危害事故之報告與分析
- **Code 10.** 船舶和設備之維護
- **Code 11.** 文件管理
- **Code 12.** 公司查核、檢討和評估
- **Code 13.** 發證、查驗與管制
- **Code 14.** 臨時證書
- **Code 15.** 查驗
- **Code 16.** 證書格式

ISM-CODE 認證步驟





CERTIFICATE No: 87946

DOCUMENT OF COMPLIANCE

Issued under the provisions of the **INTERNATIONAL CONVENTION
FOR THE SAFETY OF LIFE AT SEA, 1974**, as amended

under the authority of the Government of

THE REPUBLIC OF PANAMA

by the **AMERICAN BUREAU OF SHIPPING**

Name and address of the Company: EVERGREEN MARINE CORPORATION (TAIWAN) LTD.
NO. 163, HSIN-NAN ROAD, SEC. 1 LUCHU
TAOYUAN HSIEN, TAIWAN
REPUBLIC OF CHINA
(see paragraph 1.1.2 of the ISM Code)

THIS IS TO CERTIFY THAT the Safety Management System of the Company has been audited and that it complies with the requirements of the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) for the types of ships listed below (delete as appropriate):

Passenger Ship
Passenger High Speed Craft
Cargo High Speed Craft
Bulk Carrier
Oil Tanker
Chemical Tanker
Gas Carrier
Mobile Offshore Drilling Unit
Other Cargo Ship

This Document of Compliance is valid until 28 OCTOBER 2007, subject to periodical verification.

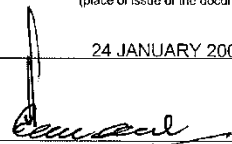
Completion date of the audit on which this certificate is based: 29 OCTOBER 2002
(dd/mm/yyyy)



ABS

Issued at: SINGAPORE
(place of issue of the document)

Date of issue: 24 JANUARY 2003


(Signature of the duly authorized officer issuing the certificate)
CAPT. HEMANT JUNEJA



CERTIFICATE No: 87945

SAFETY MANAGEMENT CERTIFICATE**COPY**Issued under the provisions of the **INTERNATIONAL CONVENTION
FOR THE SAFETY OF LIFE AT SEA, 1974**, as amended

under the authority of the Government of

THE REPUBLIC OF PANAMAby the **AMERICAN BUREAU OF SHIPPING**

Name of Ship: UNI-PROMOTE
Distinctive Number or Letters: H3UJ
Port of Registry: PANAMA
Type of Ship¹: Other cargo ship
Gross Tonnage: 17887
IMO Number: 9202211
Name and Address of Company: EVERGREEN MARINE CORPORATION (TAIWAN) LTD
NO. 163, HSIN-NAN ROAD, SEC. 1, LUCHU
TAOYUAN HSIEN, TAIWAN
REPUBLIC OF CHINA
(refer to paragraph 1.1.2 of the ISM Code)

THIS IS TO CERTIFY THAT the Safety Management System of the ship has been audited and that it complies with the requirements of the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code), following verification that the Document of Compliance for the Company is applicable to this type of ship.

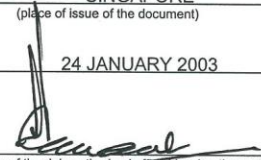
This Safety Management Certificate is valid until 30 DECEMBER 2007, subject to periodical verification and the Document of Compliance remaining valid.

Completion date of the audit on which this certificate is based: 31 DECEMBER 2002
(dd/mm/yyyy)



Issued at: SINGAPORE
(place of issue of the document)

Date of Issue: 24 JANUARY 2003


(Signature of the duly authorized official issuing the certificate)
CAPT. HEMANT JUNEJA

¹ Insert the type of ship from among the following: Passenger Ship; Passenger High Speed Craft; Cargo High Speed Craft; Bulk Carrier; Oil Tanker; Chemical Tanker; Gas Carrier; Mobile Offshore Drilling Unit; Other Cargo Ship

時速兩百的Porsche撞上一隻雞 會是怎樣??

真實血淋淋案例

鑒於愈來愈多的鳥擊事件危及飛行器的安全，美國的航太總署(NASA)的工程師與科學家設計了一種槍砲，可以把死雞當砲彈，打到噴射機戰鬥機以及太空梭的駕駛艙玻璃上，模擬高速飛行時在空中與飛鳥撞擊的情況，以測試駕駛艙玻璃的設計規格。

製造**Porsche**的英國工程師知道了，於是提出要求，希望能夠借用這種槍砲，以便測試他們新款的高速列車擋風玻璃窗。透過聯繫安排，這套測試系統不久就運到英國。

測試當天，工程師將從冰箱取出之死雞從砲管發射出來高速撞擊在防碎玻璃窗上，但結果卻把英國工程師們嚇壞了，因為死雞不但打破了玻璃，在駕駛室爆裂開來，砸毀了控制台，還把駕駛座打斷並且釘在艙壁上。



驚甫未定的英國工程師發現他們的車窗設計竟然如此脆弱不安全，連忙把這個慘不忍睹的測試結果告訴NASA，並且附上詳細的列車擋風窗設計，低聲下氣希望美國方面能夠提供建議改進。

NASA很快地回覆了，不過內容只有一行字：

時速兩百的Porsche撞上一隻雞 會是怎樣??

真實血淋淋案例 發生原因

“Defrost the chicken.”～...."雞要先解凍“

- 嚴重的『人為疏失』～～
- 你有看過陸上的鳥是冷凍的嗎？

加拿大紐芬蘭海岸管理局人員與美國海軍船艦的 真實無線電通話記錄

真實案例

這是發生在1995年10月份，加拿大紐芬蘭海岸管理局人員與美國海軍船艦的真實無線電通話抄本。美國海軍總部在1995年10月10日公布此通話記錄。

加拿大人員：請改變你的航向朝南15度以避免碰撞。

美國人員：建議你改變你的航向朝北15度以避免碰撞。

加拿大人員：不，你必須改變你的航向朝南15度以避免碰撞。

美國人員：這是美國海軍軍艦艦長，我再說一次，改變你的航向。

加拿大人員：不，我再說一次，你要改變你的航向。

美國人員：這是美國海軍林肯號航空母艦，美國大西洋艦隊第二大船艦，我們與三艘驅逐艦、三艘巡洋艦及多艘支援船隻同行。我要求你改變你的航向朝北15度。我再說一次，朝北15度，否則將採取反制措施以確保本艦的安全。

加拿大紐芬蘭海岸管理局人員與美國海軍船艦的 真實無線電通話記錄

真實案例

加拿大人員：這裡是燈塔，換你說。

• **THANK YOU !!**

