

**Lloyd's Register Asia**  
劳氏船级社(亚洲)  
**Regulatory Seminar**  
法规研讨会

## **IMO Environmental Protection Regulations – an Update**

### **IMO环境保护法规 – 最新发展**

**January 2009**

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## BALLAST WATER MANAGEMENT 压载水管理

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### BWM Convention 2004

- Conditions of enter into force – Require 30 States (35% world GT)  
生效条件 – 要得到起码30个国家签署（当中起码要包含35% GT）
- Latest status of conditions – 18 States signed up, 15.27% world GT  
(latest – Albania, Antigua & Barbuda)  
最新情况 – 已经有18个国家签了（当中包含了15.27% GT）
- Requirements 具体要求
  - o Conduct Ballast Water Management 进行压载水管理
  - o Keep onboard approved BW Management Plan and BW Record Book 船上要有拿到认可的压载水管理计划书和纪录簿
  - o Subject to survey and certification (ships ≥400 GT, but not FPSO, etc.)) 需要定期的检验和发证

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IMO BALLAST WATER MANAGEMENT CONVENTION 2004															
Implementation Schedule															
BWM 2004															
Reg	Year of Ship Construction	Ballast Capacity (m3)	Ship Type / Approx. DWT	2009	2010	2011	2012	2013	2014	2015	2016	2017			
B-3, 1.2 *	< 2009 (~ 2008)	BW < 1500	Tanker / DWT < 3400 Bulkier / DWT < 4200 Gen Cargo / DWT < 4100												
B-3, 1.1 *		1500 ≤ BW ≤ 5000	Tanker / 3400 < DWT < 15000 Bulkier / 4200 < DWT < 14200 Gen Cargo / 4100 < DWT < 14000												
B-3, 1.2 *		BW > 5000	Tanker / DWT > 15000 Bulkier / DWT > 14200 Gen Cargo / DWT > 14000												
B-3, 3	≥2009 and < 2012 (2009 ~ 2011)	BW < 5000	Tanker / DWT < 15000 Bulkier / DWT < 14200 Gen Cargo / DWT < 14000												
B-3, 4 *		BW ≥ 5000	Tanker / DWT > 15000 Bulkier / DWT > 14200 Gen Cargo / DWT > 14000												
B-3, 3 B-3, 5	≥ 2012 (2012 ~)	All	All												
* shall comply not later than the 1st intermediate or renewal survey (whichever is earlier), after the ship delivery anniversary date in 2014/2016															
A.1005(25) B-3, 3	in 2009	BW < 5000	Tanker / DWT < 15000 Bulkier / DWT < 14200 Gen Cargo / DWT < 14000												
MEPC 59 B-3, 3	in 2010	BW < 5000	Tanker / DWT < 15000 Bulkier / DWT < 14200 Gen Cargo / DWT < 14000												


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BALLAST WATER TREATMENT SYSTEM APPROVAL STATUS				
Name of System	Country of origin	Approval	Approved at	Approval date
NEI's, Venturi Oxygen Stripping VOS-2500	USA	Type-approved	By Liberia thro' G8	17-Oct-07
Alfa Laval's PureBallast	Norway	Basic & Final	MEPC 56	Oct-06
SEDNA® 250 using active substance	Germany	Type-approved	By DnV for Norway	27-Jun-08
PERACLEAN® Ocean		Basic	MEPC 54	Mar-06
Electro Clean System (ECS)	Korea, R.O.	Final	MEPC 57	Apr-08
		Type-approved	By Germany	10-Jun-08
		Basic	MEPC 54	Mar-06
		Final	MEPC 58	Oct-08
OceanSaver® BWMS	Norway	Type-approved	By Republic of Korea	31-Dec-08
		Basic	MEPC 57	Apr-08
		Final	MEPC 58	Oct-08
Hyde Marine's Hyde Guardian	USA	Type-approved	By DnV for Norway	17-Apr-09
RWO's CleanBallast using EctoSys™	Sweden	Basic	By LR for UK-MCA thro' G8	29-Apr-09
Special Pipe Ballast Water Management System	Germany	Final	MEPC 55	Oct-06
	Japan	Basic	MEPC 55	Oct-06
NK-O3 BlueBallast System (ex-NK BWTS)	Korea, R.O.	Final	Rejected by MEPC 59	
		Basic	MEPC 56	Oct-06
ClearBallast (Hitachi)	Japan	Final	MEPC 59	Jul-09
		Basic	MEPC 57	Apr-08
Greenship Sedinox BWMS	Netherlands	Final	MEPC 59	Jul-09
		Basic	MEPC 58	Oct-08
GloEn-Patrol™	Korea, R.O.	Final	MEPC 59	Jul-09
		Basic	MEPC 57	Apr-08
Ecochlor® BWTS	Germany	Final ?	To be assessed	
		Basic	MEPC 58	Oct-08
Resource Ballast Technologies System	South Africa	Final ?	To be assessed	
		Basic	MEPC 57	Apr-08

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BALLAST WATER TREATMENT SYSTEM APPROVAL STATUS				
Name of System	Country of origin	Approval	Approved at	Approval date
Resource Ballast Technologies System	South Africa	Basic	MEPC 57	Apr-08
TG Ballastcleaner & TG Environmentalguard	Japan	Basic	Final ?	MEPC 58
Blue Ocean Shield	China	Basic	MEPC 59	Jul-09
EcoBallast (HHI)	Korea, R. O.	Basic	Final ?	MEPC 59
AquaTriComb™	Germany	Basic	MEPC 59	Jul-09
Siemens SiCURE™	Germany	Basic ?	To be assessed	
ATLAS-DANMARK		Basic ?		
SUNRUI	CHINA	Basic ?		

- Expert group (GESAMP-BWWG) will hold additional sessions to evaluate more systems:  
专家组 将会多加数次额外的评审会，来评审并向MEPC 建议可否给与压载水处理系统“基本认可”或“最后认可”
  - 10th meeting 14-18 September 2009
  - 11th meeting 19-23 October 2009
  - 12th meeting December 2009

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## BALLAST WATER MANAGEMENT 压载水管理

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### BWM Convention 2004

- Expert group (GESAMP-BWWG) in future will consider corrosion testing requirement for BWTS – PSPC-WBT (?)  
专家组将会考虑对压载水处理系统的压载舱腐蚀的影响或要求 (PSPC-WBT?)
- Guidance on safe handling and storage of chemicals, use and safety procedures development approved (BLG.2/Circ.20) – ISM  
作为ISM的一部分，MEPC 59 审批了安全处理与存储BWTS化学品，使用与编写有关工序的指南，收录在 通函 BWM.2/Circ.20 内
- Demand of BWTS would ease-off due to ships being cancelled or postponed, supply will be approx. 800 BWTS by 2010 – no date changes  
目前取消订单，延迟交船时有发生，对BWTS的需求估计会降低，而在2010 年间生产得了的BWTS 可达800 多台 – 生效日期不再改
- Use of potable water as ballast, exempting BWM or not – to be further considered together with alternative methods at BLG  
使用淡水作为压载水，免除压载水管理的要求与否 – 与替代方法一起在 BLG 考虑

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Country 国家	Ports 港口	Ship Type 船种	BW Exchange 压载水交换	BW Treatment 压载水处理	Sampling 抽样	Document 文件
Argentina	All	All ships	Yes, salt level $\geq 30$ mg/cm <sup>3</sup>	Yes	Yes, random	BWMP, BWM Log
Argentina	Buenos Aires	All ships	same as above, and treat with chlorine (if BW from chloro areas)	same as above, and treat with chlorine (if BW from chloro areas)	Yes, random	BWMP, BWM Log
Australia	All	All ships	Yes	Application submit to AQIS in advance for permission	Yes, targeted and random	BWMP (stamped by Class), BWM Log, and Quarantine Pre-Arrival Report
Brazil	All	All ships	Yes	not known	Yes, targeted and random	BWMP (approved by Class)
Canada	All	All ships	Yes	Yes, to IMO D-2 standard	not known	BWMP, BWM Log, BW Reporting Form (as per TP 13617)
Canada	Vancouver	All ships	Yes	not known	Yes, prior to discharge	BWMP
Chile	All	All ships	Yes	not known	not known	BWMP
Georgia	All	All ships	Yes, at Black Sea	Yes, need to check for acceptable system first	not known	BWMP
Israel	All	All ships	Yes	not known	not known	BW exchange records & reports
Lithuania	Butinge Oil Terminal & Klapeda	All ships	Yes	not known	not known	BWMP
New Zealand	All	All ships	Yes, or use FW	Yes	not known	BWM Log, declaration
Norway	All ports and territorial waters	All ships	Yes, but not treated BW	Yes, approved as per D-2 standards	not known	BWMP, BW Record
Panama	Panama Canal	All ships	No discharge	not known	not known	not known

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Country 国家	Ports 港口	Ship Type 船种	BW Exchange 压载水交换	BW Treatment 压载水处理	Sampling 抽样	Document 文件
Peru	All	All ships	Yes	not known	not known	BWMP, BW notification to be submitted
Russia	Novorossiysk	All ships	Can discharge when taken from Black Sea	not known	not known	not known
Ukraine	Odessa and Yuzhnyy	All ships	Exchange with BW from Black Sea	Iron 0.05mg/l & Suspended Matter 1.75mg/l	may be	BWM Log, discharge need approval
USA	All	All ships	Yes	Not yet, and more stringent than D-2 are being developed	not known	BW Report, BWM record
UK Orkney Islands	Scapa Flow	All ships	No, discharge to shore facilities, yes for LNG	not known	not known	not known
USA/Canada	Great Lakes & Seaway	All ships with residual amount of BW	Yes, add-mix-discharge until salt in BW ≥30 ppt	not known	99% of ships inspected in 2008	not known, but need to apply best practice
USA	Michigan	All Ships	Yes	Sodium hypochlorite, Chlorine dioxide, Ultraviolet light, De-oxygenation	not known	BWMP
USA	Minnesota	All Ships	Yes	D-2, 2012-01-01 (new ships) & 2016-01-01 (existing ships)	not known	BWMP, BWM Log
USA	Hawaii	All Ships	Yes	not known	not known	BWMP, advance reporting
USA	Washington	All Ships	Yes	under development	not known	not known
USA	Oregon	All Ships	Yes	under development	not known	not known
USA	California	All Ships	Yes	Yes, more stringent than IMO	Yes	BWMP

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## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

**CONVENTION – LEGAL INSTRUMENTS** 通过大会型式 – 提供法律依据

- INTERNATIONAL CONVENTION FOR THE SAFE AND ENVIRONMENTALLY SOUND RECYCLING OF SHIPS – CONVENTION TEXTS GIVEN IN SR/CONF/45 ANNEX  
《安全和环境友好拆船国际公约》 – 条文收录在 SR/CONF/45 报告附录
- 21 ARTICLES SET THE BOUNDARY OF THE REGULATIONS, SUCH AS  
《拆船公约》的21个条款定立法范围，包括
  - APPLICATION 应用范围
  - SURVEY & CERTIFICATIONS 检验和发证
  - CONDITIONS OF ENTRY INTO FORCE 生效条件
  - INSPECTION (PORT STATE CONTROL) 港监检查, ETC.

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## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

**CONVENTION – LEGAL INSTRUMENTS** 通过大会型式 – 提供法律依据

- 25 REGULATIONS SET THE DETAILED IN 4 CHAPTERS  
在4章内有25条法规
  - GENERAL PROVISION (REG. 1 TO 3)  
总条款（第一到第三条）
  - REQUIREMENTS FOR SHIPS (REG. 4 TO 14),  
对船的要求（第四到第十四条）
  - REQUIREMENTS FOR SHIP RECYCLING FACILITIES (REG. 15 TO 23)  
对拆船厂的要求（第十五到二十三条）
  - REPORTING REQUIREMENTS (REG. 24 TO 25)  
申报要求（第二十四到二十五条）

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## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

#### ARTICLE 17 – ENTRY INTO FORCE

- **REQUIRES SIGNATURES  $\geq 15$  STATES**  
签署国家数量  $\geq 15$  个
- **SIGNATORY STATES GT  $\geq 40\%$  OF WORLD GT**  
签署国船队总吨位  $\geq$  全球总吨位 的**40%**
- **SIGNATORY STATES HAVING 10-YEAR COMBINED SHIP RECYCLING CAPACITY  $\geq 3\%$  OF THEIR 10-YEAR COMBINED MERCHANT FLEET GT**  
签署国在过去**10**年中任何一年的拆船能力(以总吨位算)占签署国在过去**10**年中同一年船队量(以总吨位算)的 **3%** 或以上
- **24 MONTHS AFTER ALL THE ABOVE ARE MET**  
以上3 点全部满足后的**24**个月，拆船公约就会生效

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### 拆船与废船回修公约2009

#### ARTICLE 17 – ENTRY INTO FORCE

Year 1																Total
Party States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Merchant Fleet GT	10.0	18.0	30.0	70.0	60.0	10.0	5.0	2.0	10.0	30.0	40.0	10.0	4.0	2.0	1.0	302.0
Recycl.Capacity GT	0.0	0.3	0.0	0.0	0.0	0.0	1.0	1.0	0.2	1.0	0.0	0.0	0.0	0.0	0.0	3.5
Percentage																1.2%
Year 2																Total
Party States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Merchant Fleet GT	10.0	18.0	30.0	60.0	60.0	10.0	5.0	2.0	10.0	50.0	40.0	10.0	4.0	2.0	1.0	312.0
Recycl.Capacity GT	0.0	0.3	0.0	0.0	0.0	0.3	1.0	1.0	0.6	1.0	0.0	0.0	0.0	0.0	0.0	4.2
Percentage																1.3%
⋮																⋮
Year 9																Total
Party States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Merchant Fleet GT	10.0	20.0	30.0	70.0	60.0	10.0	5.0	2.0	10.0	60.0	40.0	80.0	4.0	2.0	1.0	404.0
Recycl.Capacity GT	4.0	2.0	0.0	0.0	3.0	0.0	1.0	1.0	0.2	1.0	0.0	0.0	0.0	0.0	1.0	13.2
Percentage																3.3%
Year 10																Total
Party States	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Merchant Fleet GT	10.0	60.0	30.0	70.0	60.0	10.0	5.0	2.0	10.0	30.0	40.0	90.0	20.0	2.0	1.0	440.0
Recycl.Capacity GT	0.0	0.3	0.0	0.0	0.0	0.0	3.0	1.0	7.0	1.0	0.0	0.0	0.0	0.0	0.5	12.8
Percentage																2.9%

EXAMPLE

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## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

#### CHAP 2 – REQUIREMENTS FOR SHIPS

##### Part A – Design, construction, operation and maintenance of ships

- ONBOARD SHIPS OF PARTY STATES, PROHIBIT AND/OR RESTRICT THE USE OF HAZARDOUS MATERIALS LISTED IN APPENDIX 1  
在缔约国的船上，禁止 和/或 有限制的使用列于 附件 1 的有害或危险材料
- NOT TO INSTALL SUCH MATERIALS ON THEIR SHIPS OR AT PARTY STATES' FACILITIES  
不能于缔约国的港口，船厂，等 安装列于 附件 1 的有害或危险材料
- NEW SHIPS – WITH “INVENTORY OF HAZARDOUS MATERIALS” ON BOARD  
新造船 – 船上要有《有害或危险材料目录》
  - PART I – INCLUDE MATERIALS LISTED IN APPENDICES 1 & 2 WITH LOCATION, QUANTITY  
第一部 – 包括列于附件 1 和 附件 2 的材料， 位置， 数量

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## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

#### CHAP 2 – REQUIREMENTS FOR SHIPS

##### Part A – Design, construction, operation and maintenance of ships

- EXISTING SHIPS – WITH “INVENTORY OF HAZARDOUS MATERIALS” (IHM) ON BOARD  
营运船 – 船上要有《有害或危险材料目录》
  - PART I – INCLUDE MATERIALS LISTED AT LEAST IN APPENDICES 1 WITH LOCATION, QUANTITY  
第一部 – 包括起码列于附件 1 的材料， 位置， 数量
  - VISUAL / SAMPLING CHECK PLAN TO BE PREPARED  
准备提供观察 / 取样检查大纲
- IHM (PART I) – BE MAINTAINED AND UPDATED THROUGHOUT SHIP'S LIFE  
《有害或危险材料目录》(第一部) – 长期维护与更新，直到船要退役

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### 拆船与废船回修公约2009

#### CHAP 2 – REQUIREMENTS FOR SHIPS

##### Part A – Design, construction, operation and maintenance of ships

- **PRIOR TO RECYCLING – IHM TO BE FURTHER EXPANDED**  
拆船与回收前 – 《有害或危险材料目录》需要扩展
  - **PART II – OPERATIONALLY GENERATED WASTES**  
第二部 – 操作时产生的残余废物
  - **PART III – REMAINING STORES**  
第三部 – 剩余储备
- **IHM – TO BE VERIFIED BY FLAG OR CLASS**  
《有害或危险材料目录》 – 需要通过船旗当局或船级社验证

## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

- **NEW SHIPS – COMPLIANCE SCHEDULE**  
新造船 – 满足时间表
  - **CONTRACT DATE ≥ CONVENTION IN FORCE DATE (CIFD)**  
签合同日期 ≥ 公约生效日 (CIFD)
  - **IF NO CONTRACT, KEEL LAYING DATE ≥ CIFD+6 MONTHS**  
如没有合同, 上船台日期 ≥ CIFD+6个月
  - **DELIVERY DATE ≥ CIFD+30 MONTHS**  
交船日期 ≥ CIFD+30个月
- **EXISTING SHIPS – CIFD+5 YEARS, OR GOING FOR RECYCLING IF EARLIER**  
营运船 – CIFD+5年, 或进行拆船前(如在CIFD+5年之前)

# SHIP RECYCLING CONVENTION 2009

## 拆船与废船回修公约2009

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### ITEMS TO BE LISTED IN THE INVENTORY OF HAZARDOUS MATERIALS

TABLE A\* Materials listed in appendix 1 of the Annex to the Convention

EXAMPLE

No.	Materials	Inventory			Threshold level
		Part I	Part II	Part III	
A-1	Asbestos	x			no threshold level
A-2	Polychlorinated biphenyls (PCBs)	x			no threshold level
A-3	Ozone Depleting Substances	CFCs	x		no threshold level
		Halons	x		
		Other fully halogenated CFCs	x		
		Carbon tetrachloride	x		
		1,1,1-Trichloroethane (Methyl chloroform)	x		
		Hydrochlorofluorocarbons	x		
		Hydrobromofluorocarbons	x		
		Methyl bromide	x		
A-4	Anti-fouling systems containing organotin compounds as a biocide		x		2500 mg total tin/kg

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### STANDARD FORMAT OF THE INVENTORY OF HAZARDOUS MATERIALS

#### Part I HAZARDOUS MATERIALS CONTAINED IN THE SHIP'S STRUCTURE AND EQUIPMENT

EXAMPLE

##### I-1 Paints and coating systems containing materials listed in Table A and Table B of appendix 1 of the Guidelines

No.	Application of paint	Name of paint	Location	Materials (classification in appendix 1)	Approx. quantity	Remarks
1	Anti-drumming compound	Primer, xx Co., xx primer #300	Hull part	Lead	35.00 kg	
2	Anti-fouling	xx Co., xx coat #100	Underwater parts	TBT	120.00 kg	

##### I-2 Equipment and machinery containing materials listed in Table A and Table B of appendix 1 of the Guidelines

No.	Name of equipment and machinery	Location	Materials (classification in appendix 1)	Parts where used	Approx. quantity	Remarks
1	Switch board	Engine control room	Cadmium	Housing coating	0.02 kg	less than 0.01kg
			Mercury	Heat gauge	<0.01 kg	
2	Diesel engine, xx Co., xx #150	Engine room	Cadmium	Bearing	0.02 kg	
3	Diesel engine, xx Co., xx #200	Engine room	Cadmium	Bearing	0.01 kg	Revised by XXXX on Oct. XX, 2008
4	Diesel generator (x 3)	Engine room	Lead	Ingredient of copper compounds	0.01 kg	

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## SHIP RECYCLING CONVENTION 2009

### 拆船与废船回修公约2009

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#### DOCUMENTS AND CERTIFICATES FOR SHIPS 船上文件和证书

Cert / Doc 证书 / 文件	Prepared / Issued by 负责准备 / 发证
Inventory of Hazardous Materials (Part I) – 1&2 Materials 有害或危险材料目录 (第一部分) – 1&2 材料 <b>VALIDITY : CONTINUOUS</b>	Builders or Owners 船厂或船东
International Certificate on Inventory of Hazardous Materials 国际危险材料目录证书 <b>VALIDITY : 5 YEARS</b>	Flag / Class / RO 船旗国 / 船级社 / 认可机构
Inventory of Hazardous Materials (Part II) – Operation Wastes 有害或危险材料目录 (第二部) – 操作时产生的废物	Owners 船东
Inventory of Hazardous Materials (Part III) – Stores 有害或危险材料目录 (第三部) – 残余储备	Owners 船东
Ship Recycling Plan (ship specific) 废船回收计划书 (个别船只)	Ship Recycling Facilities 拆船回收设施 / 拆船厂
International Ready for Recycling Certificate 国际拆船备妥证书 <b>VALIDITY : 3 MONTHS</b>	Flag / Class / RO 船旗国 / 船级社 / 认可机构

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### 拆船与废船回修公约2009

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#### GUIDELINES 指南

- List of priority sequence in developing Guidelines agreed at MEPC 59  
发展先后次序的篇排得到MEPC 59 的同意

List of Guidelines agreed to be developed by SRC 2009 (Res. 4)  
agreed by MEPC 59 to rearrange sequence of priority  
在 拆船与废船回收公约2009 (决议案 4) 得到同意发展的指南清单  
发展先后次序的篇排得到MEPC 59 的同意

1	Guidelines for the development of the Inventory of Hazardous Materials 危险材料目录发展指南
5 2	Guidelines for Safe and Environmentally Sound Ship Recycling 安全和环境友好拆船指南
6 3	Guidelines for the Development of the Ship Recycling Plan 制定拆船计划指南
4	Guidelines for the Authorization of Ship Recycling Facilities 拆船设施授权指南
2 5	Guidelines for Survey and Certification 检验与发证指南
3 6	Guidelines for Inspection of Ships 船舶检查指南
7	Other Guidelines / Circulars as identified by MEPC 其他由MEPC 提示 的指南 / 通函

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### 拆船与废船回修公约2009

#### IMPACT ON THE INDUSTRY 对行业的冲击

- ALL SHIPS NEED TO GET PREPARED FOR SCRAPPING OR RECYCLING  
DESIGN – BUILD – OPERATE – DISPOSAL  
所有的船只要早作准备，考虑到 设计 – 建造 – 营运 – 丢弃
- OWNERS/BUILDERS NEED TO PREPARE AND MAINTAIN A LIST OF  
HAZARDOUS MATERIALS FOR ALL SHIPS – LR'S GREEN PASSPORT  
船东/船厂需要提供和维护危险材料目录 – 劳氏船级社的绿色护照
- OWNERS/BUILDERS NEED TO ARRANGE TO HAVE THEIR SHIPS SURVEYED –  
INITIAL, RENEWAL, ADDITIONAL, FINAL  
船东/船厂需要安排船的初检，更新检验，附加检验，最后检验
- SHIPS NEED IRRC BEFORE BEING RECYCLED  
船在拆船前 需要有国际拆船备妥证书

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## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

- SHIP RECYCLING FACILITIES NEED TO GET APPROVAL AND BE CERTIFIED  
拆船厂需要拿到审批和发证
- SHIPS TO BE DESIGNED WITH MINIMUM HAZARDOUS MATERIALS  
船舶设计将需要考虑减少使用危险材料
- SHIPS NEED TO HAVE THE RECORD OF LOCATION AND QUANTITY OF  
HAZARDOUS MATERIALS, AND TO BE UPDATED  
船舶需要纪录船上危险材料的位置与数量，要作出更新，直到船只寿终为止
- LLOYD'S REGISTER IS HELPING OUT IN SURVEY, VERIFICATION,  
CERTIFICATION, AND TECHNICAL SUPPORT  
英国劳氏 会提供检验，验证，发证，和技术支援
- LLOYD'S REGISTER PROVIDES GREEN PASSPORT APPROVAL AND  
VERIFICATION SERVICES FOR SHIPS, AND ISO 30000 CERTIFICATION  
劳氏为船东或船厂的船提供绿色护照验证与认证服务，和 ISO 30000 认证

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### 拆船与废船回修公约2009

- CHINA POTENTIALLY LEADS THE WORLD IN SHIPBUILDING, SHIPREPAIRING AND SHIP RECYCLING  
中国具有潜在领导世界造船业，修船业，和拆船业的能力
- ECONOMIC DOWNTURN – LEAD TO DEMAND FOR SCRAPPING FACILITIES  
经济下滑 – 带来拆船服务的需求
- SHIPRECYCLING CONVENTION 2009 – LEVEL PLAYING FIELD  
拆船公约 2009 – 提供对安全，环保，工人健康标准，和公平竞争的平台
- CHINA – MEMBER OF INTERNATIONAL SHIP RECYCLING ASSOCIATION  
中国 – 已成为国际拆船协会的会员国
- REALIGNING CHINA'S TERTIARY SHIPYARDS AS QUALIFIED SHIP RECYCLING FACILITIES IS VERY REALISTIC  
中国的非主流的造船厂是有非常大的可行性成为优质和满足国际标准的拆船厂

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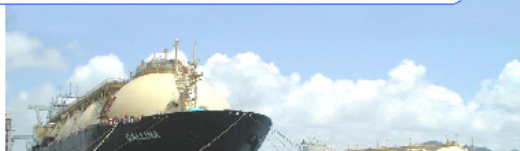
## SHIP RECYCLING CONVENTION 2009

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### 拆船与废船回修公约2009

#### A GUIDE TO THE INVENTORY OF HAZARDOUS MATERIALS (GREEN PASSPORT)

May 2009



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- MARPOL – Clarifications, Interpretations & Amendments  
防污公约 – 澄清, 解释, 与修正
- MARPOL Annex V amendments  
防污公约 附则 V 的修正

## MARPOL ANNEX VI AMENDMENT 防污公约 附则VI 的修正

- MARPOL Annex VI major amendments adopted at MEPC 58, generally coming into force on 1 July 2010 – MEPC.176(58) and MEPC.177(58)  
《防污公约》附则 VI 已于 MEPC 58 通过, 概括来说 于2010年7月1日 生效
- Date was agreed for allowing time to update existing guidelines and to develop new guidelines for smooth implementation  
这生效日期是取决于容许足够时间把现有的指南更新, 便于顺利执行
- MEPC 59 was held in July 2009, and MEPC 60 to be held in March 2010  
指南的更新已于MEPC 59 (2009年7月) 及将于MEPC 60 (2010年3月)考虑和审批
- List of guidelines identified at MEPC 58 for updates or new developments  
已有多条指南和解释的文本在MEPC 58 时列出, 准备作出修正
- MEPC 59 considered results from BLG 13 & Technical Group  
MEPC 59 所设立的技术组与 BLG 13 的讨论指南修正的结果 已于 MEPC 59 考虑

Action	Existing or New	Amended by	Subject
Update	MEPC.128(53)	MEPC.180(59)	Survey guidelines under the Harmonized System of Survey and Certification
Update	MEPC.129(53)	MEPC.181(59)	Guidelines for port State control under MARPOL Annex VI
Update	MEPC.96(47)	MEPC.182(59)	Guidelines for the sampling of fuel oil for determination of compliance with MARPOL Annex VI
Update	MEPC.82(43)	MEPC.183(59)	Guidelines for monitoring the world-wide average sulphur content of residual fuel oils supplied for use on board ships
Update	MEPC.170(57)	MEPC.184(59)	Guidelines for Exhaust Gas Cleaning Systems
Develop	new	MEPC.185(59)	Guidelines for the development of a VOC management plan
Develop	new	?	Guidelines for replacement engines not required to meet the Tier III limit, as required under regulation 13.2.2
Develop	new	?	Guidelines on the provision of reception facilities, as required by regulation 17.2
Develop	new	?	Guidelines called for under paragraph 2.2.5.6 of the revised NOx Technical Code 2008
	new	MEPC.1/Circ.678	Definitions for the cost-effectiveness formula in regulation 13.7.5 to the revised MARPOL Annex VI
	new	MEPC.1/Circ.679	Guidelines for the application of the NOx Technical Code relative to certification and amendments of Tier I engines
	new	MEPC.1/Circ.680	Technical information on systems and operation to assist development of VOC management plans

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## MARPOL ANNEX VI AMENDMENT

### 防污公约 附则VI 的修正

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- Proposed Emission Control Areas  
正申请成为“排放控制区”
  - East & West coast of USA & Canada  
美国和加拿大东、西海岸 200 nm
  - The Hawaiian Islands  
夏威夷群岛 200 nm
- ECA – for SO<sub>x</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>  
ECA – 氧化硫、氮氧化物、PM<sub>10</sub>、PM<sub>2.5</sub>
- Approved at MEPC 59 (11 March 2010) / 已经得到 MEPC 59 通过 (2010年3月) 得到通过
- North America ECA likely to enter into force in March 2011  
北美排放控制区 很大的可能会在 2011 年 3 月 实施
- USA – considering unilateral action if no IMO adoption  
美国正考虑，如 IMO 未能通过，将制定单方面行动

**ATTENTION !**

**TIER III Engines for ships built on or after 1 Jan 2016 when entering ECA**

**请留意！**

**在2016年1月1日建造的船要安装第 III 类 发动机才可进入排放控制区**

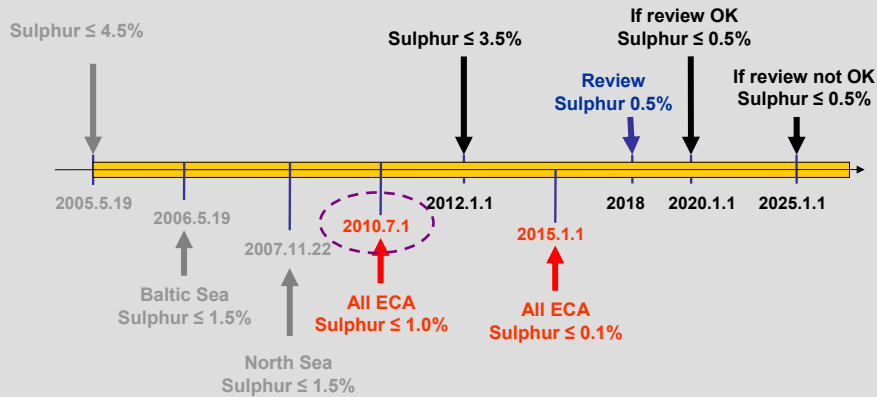
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## MARPOL ANNEX VI AMENDMENT 防污公约 附则VI 的修正

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### MARPOL ANNEX VI – Reg. 14 (Amended) 《防污公约》附则VI 第14 条的修正 REDUCTION OF SO<sub>x</sub> AND PM EMISSIONS 氧化硫和颗粒物质的减排



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Enforcement date Regulation of EU or IMO	Sulphur limit (% m/m)	Grade of fuel	Operating area	Ships affected
01 July 2000 EU	0.2	MGO/MDO	EU Territory	All ships
19 May 2005 IMO	4.5	HFO	Global	All ships
11 August 2006 EU + IMO	1.5	HFO/MDO	Baltic SECA	All ships
11 August 2006 EU	1.5	HFO/MDO	To or from any EU Port & within EEZ	Passenger ships on regular services**
	0.2	MGO	EU Territory	All ships
11 August 2007 EU	1.5	HFO/MDO	North Sea SECA	All ships
22 November 2007 IMO				
01 January 2008 EU	0.1	MGO	EU Territory	All ships
01 January 2010 EU	0.1	All Grades	Inland waterways and at berth for > 2 hours	All ships
01 July 2010 IMO	1.0	HFO	ECA	All ships
01 July 2009 CARB	1.5 (MGO) 0.5 (MDO)	MGO MDO	Regulated California Waters (24 nm)	All ships - Aux. Eng. - Main Eng. - Aux. Boilers
01 January 2012 IMO	3.5	HFO	Global	All ships
01 January 2012 CARB	0.1	MGO, MDO	Regulated California Waters (24 nm)	All ships - Aux. Eng. - Main Eng. - Aux. Boilers
01 January 2015 IMO	0.1	HFO	ECA	All ships
01 January 2020 IMO or 01 January 2025 IMO	0.5	HFO	Global	All ships

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防污公约 附则 V 的修正

## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT 温室气体 (CO2) 减排 法规发展

### Development Approach at MEPC 59 在MEPC 59 所提出的发展大纲

- Reiterated that the regulatory development stages are in the order of "agreed", "approved", "adopted"  
重申法规发展步骤是有先后次序 – “同意”, “审批”, “通过”

**New ships** concentrates on technical and operational measures which are characterised as "energy efficiency measures"  
专注于技术与操作措施, 总称“节能措施”

- Working Group was tasked to finalise on:  
希望以下的题目能发展到 得到会员国同意的地步:

- o Formula of Energy Efficiency Design Index (EEDI) 计算节能设计指数程式
- o Voluntary verification guidelines for EEDI EEDI 自愿性验证指南
- o Formula in calculating Baseline for EEDI (Baseline) 计算EEDI 基准的程式
- o Ship Energy Efficiency Management Plan (SEEMP) 船舶节能管理计划
- o Review of EEOI interim guidelines 检讨EEOI 暂行指南

**GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT**  
**温室气体 (CO2) 减排 法规发展**

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**Results of Development at MEPC 59 在MEPC 59 对发展的结果**

- To circulate Guidelines on calculating EEDI, testing for robustness (Circ.681)  
存送计算 EEDI 的指南给行业，建议自愿测试其可靠性，提供经验 (通函 681)
- To circulate Guidelines for voluntary verification of EEDI (Circ.682)  
存送自愿性验证EEDI 的指南给行业，建议测试使用，提供经验 (通函 682)
- To circulate Guidelines for development of SEEMP (Circ.683)  
存送发展 SEEMP 的指南给行业，建议测试使用 (通函 683)
- To circulate Guidelines for voluntary use of Energy Efficiency Operation Indicator EEOI (Circ.684)  
存送自愿性使用节能操作指标 (EEOI) 的指南 (通函 684)
- To develop Electric Power Table suitable for use in EEDI (aux. engine power)  
发展“电力负荷计算书”，供计算EEDI 时使用 (发电机组动力)

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**GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT**  
**温室气体 (CO2) 减排 法规发展**

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**Results of Development at MEPC 59 在MEPC 59 对发展的结果**

- To progress development of EEDI baseline  
继续进行发展 EEDI 基准
- To discuss ships with diesel-electric systems  
继续进行对使用柴电系统的船对CO2 减排的讨论

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### Energy Efficiency Design Index (EEDI) 节能设计指数

- MEPC 58 agreed to use the draft interim EEDI finalised by the WG for trial and for gathering experience  
计算EEDI 的程式草案在 MEPC 58 的工作组完成，并建议暂行使用，以摄取经验
- The 2nd Green House Gas Intersessional Working Group (GHG-ISWG2) further developed the EEDI for consideration at MEPC 59  
第二次温室气体会议工作组 (GHG-ISWG2)继续优化 EEDI 程式，让 MEPC 59考虑
- Interim Guidelines on calculation of EEDI was issued, including calculation formula, with definition of the parameters used  
结果 计算 EEDI 的暂行指引出台，包括方程式，并对主要参数作出定义
- Formula has minor changes compared to that resulted at MEPC 58  
与MEPC 58 相比，MEPC 59 所拍板的程式作了些微改动

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### Energy Efficiency Design Index (EEDI) 节能设计指数

$$\frac{\left( \prod_{j=1}^M f_j \left( \sum_{i=1}^{nME} P_{ME(i)} C_{FME(i)} SFC_{ME(i)} \right) + (P_{AE} C_{FAE} SFC_{AE}) + \left( \prod_{j=1}^M f_j \cdot \sum_{i=1}^{nPT} P_{PT(i)} - \sum_{i=1}^{noff} f_{off(i)} \cdot P_{W,off(i)} \right) C_{FAE} SFC_{AE} \right) - \left( \sum_{i=1}^{noff} f_{off(i)} \cdot P_{off(i)} C_{FME} SFC_{ME} \right)}{f_i \cdot Capacity \cdot V_{ref} \cdot f_w}$$

- Clear definition of ship types given, may impact how EEDI develop  
对船种作出明确定义，或会影响 EEDI 将来的发展
- For all ship types defined in guidelines except diesel-electric propelled ships  
方程式适用于指南内所定义的船种，除了柴电推进的船舶
- $V_{ref}$  – Speed of ship, taken at max. load as in approved Loading Manual, deep water, calm weather, no wind, no wave  
– 船的航速，基于拿到认可的装载手册内的满载出港工况，深水航行，良好天气，无风，无浪

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**GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT**  
**温室气体 (CO2) 减排 法规发展**

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**Energy Efficiency Design Index (EEDI)**

**节能设计指数**

$$\frac{\left( \prod_{j=1}^M f_j \right) \left( \sum_{i=1}^{nME} P_{ME(i)} C_{FME(i)} SFC_{ME(i)} \right) + (P_{AE} \cdot C_{FAE} \cdot SFC_{AE}^*) + \left( \left( \prod_{j=1}^M f_j \right) \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{noff} f_{off(i)} \cdot P_{W,off(i)} \right) C_{NAE} \cdot SFC_{AE} - \left( \sum_{i=1}^{noff} f_{off(i)} \cdot P_{off(i)} \cdot C_{FME} \cdot SFC_{ME} \right)}{f_i \cdot Capacity \cdot V_{ref} \cdot f_w}$$

- Capacity – DWT for cargo ships (65% for containership), GT for Pax & Ro-Pax  
– 货船的载重吨 (集装箱船用其65%), 客轮或客滚船 用总吨位
- P – Power of main and auxiliary engines ( $P_{ME}/P_{AE}$ )  
– 主机 和 发电机 的功率 ( $P_{ME}/P_{AE}$ )
- SCF – certified specific fuel consumption, main/aux. engines ( $SCF_{ME}/SCF_{AE}$ )  
– 得到核证的燃油消耗率, 主机/发电机 ( $SCF_{ME}/SCF_{AE}$ )
- $f_j$  – correction factor for specific ship design elements  
– 船舶设计元素的校正因数

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**GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT**  
**温室气体 (CO2) 减排 法规发展**

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**Energy Efficiency Design Index (EEDI)**

**节能设计指数**

$$\frac{\left( \prod_{j=1}^M f_j \right) \left( \sum_{i=1}^{nME} P_{ME(i)} C_{FME(i)} SFC_{ME(i)} \right) + (P_{AE} \cdot C_{FAE} \cdot SFC_{AE}^*) + \left( \left( \prod_{j=1}^M f_j \right) \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{noff} f_{off(i)} \cdot P_{W,off(i)} \right) C_{NAE} \cdot SFC_{AE} - \left( \sum_{i=1}^{noff} f_{off(i)} \cdot P_{off(i)} \cdot C_{FME} \cdot SFC_{ME} \right)}{f_i \cdot Capacity \cdot V_{ref} \cdot f_w}$$

- $f_w$  – weather coefficient (speed reduction factor)  
– 天气系数 (减速因数)
- $f_{eff}$  – availability factor of innovative energy efficient technology  
– 创新节能技术的可用性因数
- $f_i$  – capacity factor of limitation on capacity (e.g. ice-classed ships, or ships with timber deck cargoes)  
– 受到载货/载客量限制的载量因数 (如 冰级的船, 或载了甲板木材的船)

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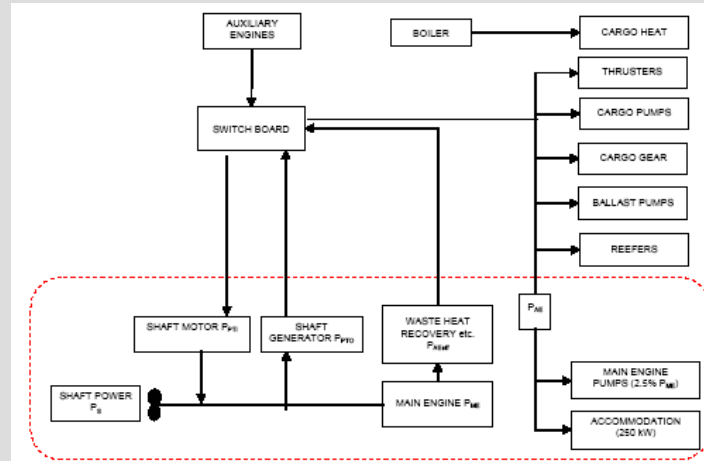
41

温室气体 (CO<sub>2</sub>) 减排 法规发展

Energy Efficiency Design Index (EEDI)

节能设计指数

Generic and simplified marine power plant 通用和简化的船舶动力装置



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温室气体 (CO<sub>2</sub>) 减排 法规发展

Voluntary verification guidelines for EEDI 自愿性验证指南

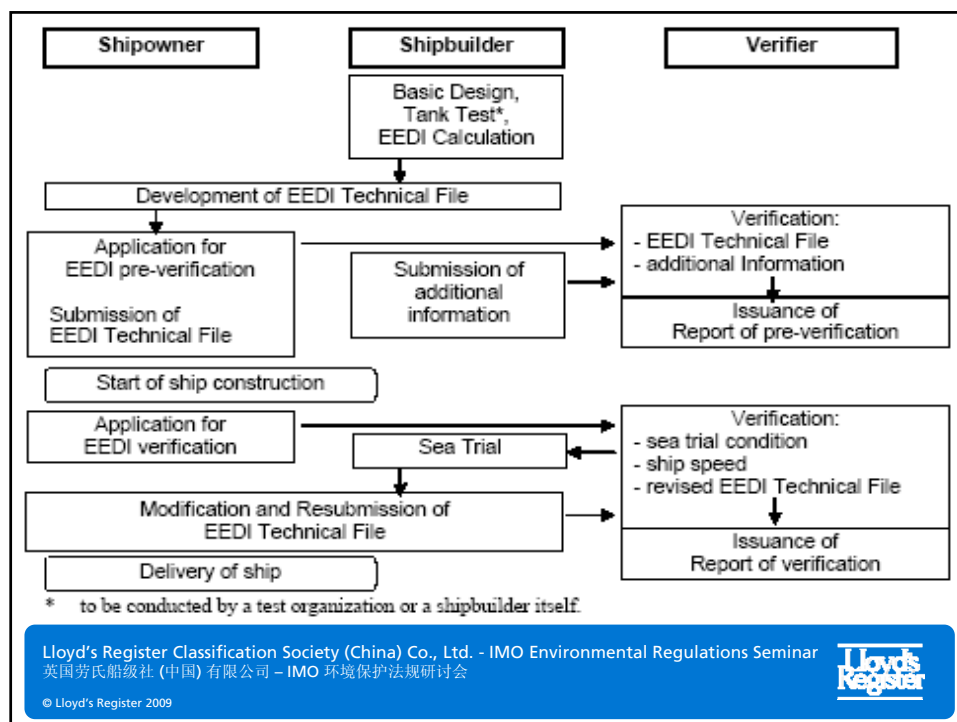
General 总论

- Providing assistance to verifiers in verifying EEDI if builders/owners want to do that voluntarily  
因应船厂/船东的要求而进行自愿性验证 EEDI 时，为验证者提供辅助
- Verifiers = Flag, Class, etc. which have expertise in doing the verification  
验证者 = 拥有相关专门知识的 船旗国，船级社等
- Verification has 2 stages – (1) at design stage; (2) verification at sea trial  
验证分为两阶段 – (1) 设计阶段；(2) 试航时的验证
- Basic flow of verification process :  
基本验证流程 :

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## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

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### 温室气体 (CO2) 减排 法规发展

#### Voluntary verification guidelines for EEDI Preliminary Verification at Design Stage

#### 自愿性验证指南 设计阶段初验证

- EEDI-TF should contain at least 节能设计指数技术文档内容最低要求

EEDI Technical File Contents	节能设计指数技术文档内容
DWT, GT (Pax and Ro-Pax)	载重吨, 总吨位(客轮与滚装客船)
Shaft power of ME/AE	主机/发电机组的轴功率
Ship speed at 75% MCR	在75% MCR 的航速
SCF <sub>ME</sub> at 75% MCR	在75% MCR 的主机燃油消耗率
SCF <sub>AE</sub> at 50% MCR	在50% MCR 的发电机组燃油消耗率
Electric Power Table (some ship types)	电力负荷计算书 (某些船种)
Power-speed curves estimates (full load and sea trial)	初部 功率-航速 曲线 (满载与试航)
Propulsion system & electricity power supply system particulars	推进系统与电力供应系统详细资料
Process & Methodology of power curves estimates	功率曲线估算过程与方法考虑
Energy saving equipment description	节能设备的描述
Calculation of Attained EEDI & results	可达节能设计指数的计算与结果

## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

### 温室气体 (CO2) 减排 法规发展

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#### Voluntary verification guidelines for EEDI 自愿性验证指南 Preliminary Verification at Design Stage 设计阶段初验证

- SCF values should be those from NOx Tech File, but further guidance would be needed  
SCF 的数值应从氧化氮技术文档处取得，但仍需详细考虑如何得到更准确数值
- Parent engine SCF value may not be accurate for member engines  
原型柴油机的SCF数值不一定能准确的代表其同一批量的柴油机的 SCF 数值
- Power curves for preliminary calculation to be obtained via tank tests  
用作初部计算的功率曲线应通过船模试验来获得
- Tank test facilities may need to be authorised  
船模试验设施或需得到授权
- More details/data may be required by verifier  
验证者可能要求提供更多的数据/资料

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## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

### 温室气体 (CO2) 减排 法规发展

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#### Voluntary verification guidelines for EEDI 自愿性验证指南 Preliminary Verification at Design Stage 设计阶段初验证

- More details/data (excluded in EEDI-TF) may be required by verifier, such as:  
或会需要额外提供的资料 (不包含在 EEDI-TF 之内) :

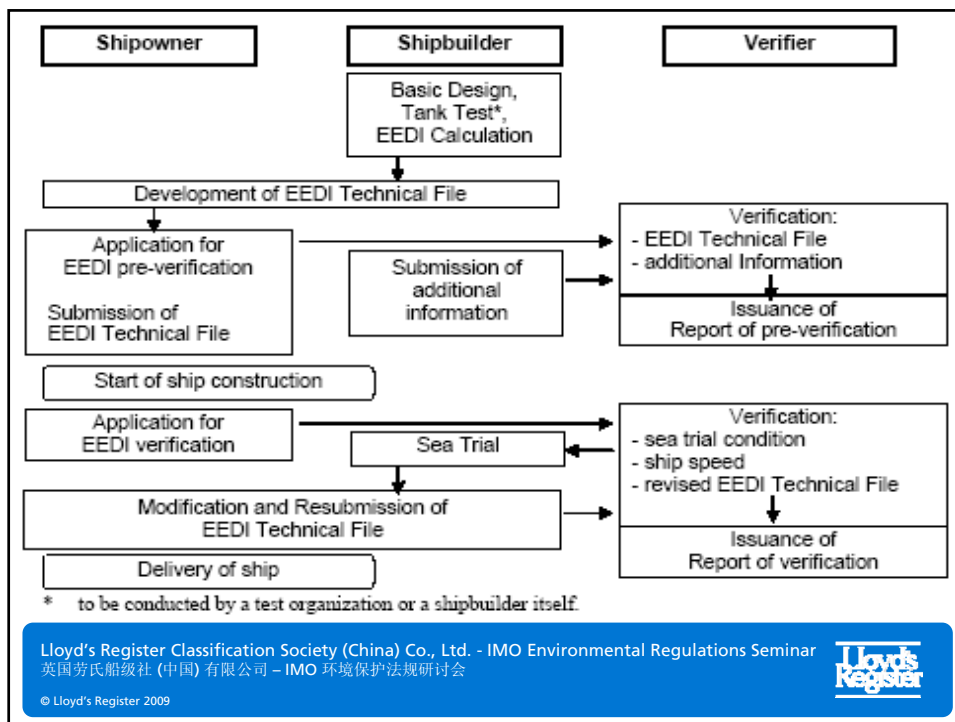
Additional data/info	附加数据 / 资料
Tank test facilities description	船模试验设施的描述
Lines of model and ship	船和模型线型图/表
Lightweight/Hydrostatics	空船重量 / 静水力表
Model Test detail report (full load and sea trail conditions)	船模试验详细报告 (满载和试航工况)
Detailed speed calculations (coefficient of roughness, wake)	详细航速计算 (摩擦系数, 船迹系数)
Tank test exemption with supporting details	免除船模试验的详细理据资料

- Contains confidential data/information, to be returned to submitter  
包含了商业敏感数据/资料, 需要退回送审者

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## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT 温室气体 (CO2) 减排 法规发展

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### Voluntary verification guidelines for EEDI Final Verification at Sea Trial Stage

### 自愿性验证指南 试航阶段最后验证

- Request for final verification should be submitted with Lightweight/DWT report, final hydrostatics, and NOx Technical File  
提出最后验证申请时，应同时递交空船重量/载重量报告，最后的静水力表，和氧化氮技术文档
- Verifier to attend sea trial for confirming engine details, power supply system, etc. given in EEDI-TF, draught & trim, sea conditions, ship speed, shaft power of engines  
去参与试航，验证柴油机的资料，电力供应系统 等是否如EEDI-TF所述，并验证吃水与纵倾，海上条件，船的航速，柴油机的轴功率
- Power curves to be revised, based on measured ship speed & shaft power  
在试航后得到的数据用来修改功率曲线
- EEDI to be recalculated if preliminary & actual Power Curves are different  
如初步与实质的功率曲线有太大的误差，EEDI 应要重算



## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT 温室气体 (CO2) 减排 法规发展

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### Voluntary verification guidelines for EEDI Final Verification at Sea Trial Stage

### 自愿性验证指南 试航阶段最后验证

- EEDI to be recalculated, using the most up to date measured parameters, if 在以下的情况，要使用最新量得到的参数，来重算EEDI
  - preliminary & actual (post sea trial) Power Curves are different 初部与实制(试航后)的功率曲线有别
  - SCF based on manufacturer's report at design stage (preliminary EEDI) 计算初部SCF 时使用制造商的报告 (初部的 EEDI )
- EEDI-TF to be revised with re-calculations due to the above, and include revised EEDI result 由于以上的理由，EEDI-TF 要因应重算而更新，并包含修改后的EEDI 结果
- EEDI-TF to be re-submitted to verifier for confirmation of final EEDI 修改后的EEDI-TF 要重新送审，以确认最后的 EEDI 数据

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### Voluntary verification guidelines for EEDI Verification Report

### 自愿性验证指南 验证报告

- Two verification reports will be issued by the verifier 通过两次验证，会发表两分报告
  - Preliminary Verification Report after completion of verification at Design Stage 在完成设计阶段验证而所作的初部验证报告
  - Final Verification Report after completion of verification at Sea Trial Stage when new data are used in re-calculation of EEDI 在完成试航阶段而所作的最后验证报告

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### Establishment of EEDI Baseline Baseline Formula

### EEDI 基线的制定 基线方程式

- Exponential regression line as agreed at MECP 58 to be retained  
在MEPC 58 同意的指数回归直线将得到保留

$$\text{Baseline value} = a \times \text{capacity}^{-c}$$

- Baseline to be established for each ship type defined in EEDI calculation guidelines

基线应按照在 EEDI 指南内所定的船种个别考虑，并发出指南

Passenger ship	Containership	General cargo ship
Dry cargo carrier	Ro-ro cargo ship: Vehicle carrier	Ro-ro passenger ship
Gas tanker	Ro-ro cargo ship: Volume carrier	
Tanker	Ro-ro cargo ship: Weight carrier	

- Unit of Baseline can be  $\text{g-CO}_2/(\text{t-nm})$  or  $\text{g-CO}_2/(\text{GT-nm})$   
基线的单位可以是  $\text{g-CO}_2/(\text{t-nm})$  或  $\text{g-CO}_2/(\text{GT-nm})$

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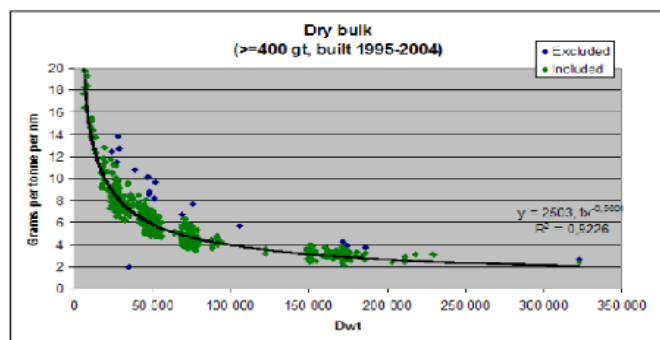
## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT 温室气体 (CO2) 减排 法规发展

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### Establishment of EEDI Baseline Baseline Formula

### EEDI 基线的制定 基线方程式

- Sample baseline =  $a \times \text{capacity}^{-c}$



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## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

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### 温室气体 (CO2) 减排 法规发展

#### Establishment of EEDI Baseline Selection of Data

#### EEDI 基线的制定 数据挑选

- Ship (new construction) data of recent past 10 years to be used  
基线的制定将会考虑过去10年的新造船的资料
- Data with more than 2 standard deviation are removed, then all should be re-analysed  
如数据有高过两个标准差额，此数据不能用 基线要重新计算

## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

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### 温室气体 (CO2) 减排 法规发展

#### Ship Energy Efficiency Management Plan (SEEMP) 船舶节能管理计划

- SEEMP is a management tool to assist a vessel's environmental performance  
SEEMP 是管理工具，来帮助船舶去促进对环保的贡献
- SEEMP to be prepared and used on voluntary basis  
SEEMP 要自愿性的准备和使用
- SEEMP should comprise of 4 steps – planning, implementation, monitoring, and self-evaluation & improvement  
SEEMP 包含了4个层面 – 计划，执行，监控，与自我评价和改进
- Many shipping companies already have Environment Management System (EMS) which should be kept valid with SEEMP  
很多船务公司已有环境管理系统，而此系统与 SEEMP 同样应保持有效
- Voluntary reporting may be seen as socially responsible, and could transform into economic or other benefits – lower port charges, etc.  
自愿性的作出报告会为公司带来正面的社会责任讯息，并带来经济得益(低港口费)

## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

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### 温室气体 (CO2) 减排 法规发展

#### Ship Energy Efficiency Management Plan (SEEMP) 船舶节能管理计划 Best Practice for fuel-efficient Operations

- Considerations for preparing SEEMP: 准备SEEMP 时应考虑:

<b>Fuel Efficient Operations</b>
Improved voyage planning
Weather routeing
Just in time
Speed optimization
Optimized shaft power
<b>Optimized ship handling</b>
Optimum trim
Optimum ballast
Optimum propeller and propeller inflow considerations
Optimum use of rudder and heading control systems (autopilots)
<b>Hull maintenance</b>
<b>Propulsion system</b>
Propulsion system maintenance
<b>Waste heat recovery</b>
<b>Improved fleet management</b>
<b>Improved cargo handling</b>
<b>Energy management</b>
<b>Fuel Type</b>
<b>Other measures</b>

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## GREEN HOUSE GAS (CO2) EMISSION REDUCTION DEVELOPMENT

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### 温室气体 (CO2) 减排 法规发展

#### Guidelines for Voluntary Use of EEOI 自愿性使用 EEOI 指南

- Guidelines assist Owner/Operators in voluntarily evaluating their fleet on CO2 emissions, and indirectly fuel efficiency  
帮助船东去自愿性评价其船队的 CO2 排放，与非直接地监测燃油效率
- Objective is, by calculating the Energy Efficient Operational Indicator (EEOI), to assist users in managing emission reduction in ship operation  
其目标是通过计算 EEOI 来帮助用者去管理营运船的减排
- EEOI is a representative value of energy efficiency over a consistent period and trading pattern, and can be used as a performance indicator  
EEOI 可代表在某段时间和营运模式的节能数字，并可成为性能指标
- Guidelines suitable for implementation within a company environmental management system  
其指南也适用于执行公司的环保管理系统

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### Guidelines for Voluntary Use of EEOI 自愿性使用 节能操作指标(EEOI) 指南

- EEOI is calculated by using the formula for a voyage; and for a period or for a number of voyages :

计算单一航次用左边的方程式；计算一段时间的或多次航次时用右边的方程式

$$EEOI = \frac{\sum_j FC_j \times C_{Fj}}{m_{cargo} \times D}$$

$$\text{Average EEOI} = \frac{\sum_i \sum_j (FC_{ij} \times C_{Fj})}{\sum_i (m_{cargo,i} \times D_i)}$$

where j	fuel type	燃油种类
i	voyage number	航程编号
FC <sub>ij</sub>	mass of consumed fuel (tonnes)	消耗燃油重量
CF <sub>j</sub>	conversion factor (fuel to CO <sub>2</sub> )	换算因数
m <sub>cargo</sub>	amount of cargo (wt., TEU, GT, pax)	运载货物量
D	distance for carried cargo (nm)	运载货物距离

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《防污公约》附则 VI 的修正
- Green House Gas (GHG) Emission Reduction Development  
温室气体 (GHG) 减排 法规发展
- MARPOL – Clarifications, Interpretations & Amendments  
防污公约 – 澄清, 解释, 与修正
- MARPOL Annex V amendments  
防污公约 附则 V 的修正

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## MARPOL – CLARIFICATIONS, INTERPRETATIONS & AMENDMENTS

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### 防污公约 – 澄清，解释，与修正

#### MARPOL Annex I Reg. 12A – Clarification (conversion)

##### 《防污公约》附则 I 第12A条 – 改装船的燃油舱双壳保护

- Applying MARPOL I/12A to ships converted to Bulk/Ore carriers confirmed at MEPC 58 – whole ship need to comply  
在 MEPC 58 已对应用 MARPOL I/12A 于整条改装后的散货/矿砂船作出确认
- MEPC 59 further clarified that MARPOL I/12A also apply to all ships after “major conversions” which is defined in MARPOL I/1.28.9  
在 MEPC 59 也作出对所有按照 MARPOL I/1.28.9 所定义的“重大改装”后的船，MARPOL I/12A 适用于整条船

## MARPOL – CLARIFICATIONS, INTERPRETATIONS & AMENDMENTS

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### 防污公约 – 澄清，解释，与修正

#### MARPOL Annex I Reg. 23.7.3.2 – Unified Interpretation

##### 《防污公约》附则 I 第23.7.3.2条 – 货油舱意外溢油计算 统一解释

- Unified Interpretations

- o Regulation texts 法规条文：

*“The cargo level after damage shall be calculated as follows:*

$$h_c = \{(d_s + t_c - Z_1)(\rho_o) - (1000p)/g\}/\rho_n$$

*where the overpressure p is defined as:*

*“p = if an inert gas system is fitted, the normal overpressure, in kilopascals, to be taken as not less than 5 kPa; if an inert gas system is not fitted, the overpressure may be taken as 0.”*

- o MEPC 58 agreed interpretation found exceeding over-conservative  
MEPC 58 所同意的统一解释被发现明显过份保守

- o MEPC 59 revised interpretation as MEOC 59 修改了统一解释如下

*If an inert gas system is fitted, the normal overpressure, in kPa, is to be taken as 5 kPa.”*

- o Application – Contract date 1 April 2009  
在2009年4月1日后签合同

## MARPOL – CLARIFICATIONS, INTERPRETATIONS & AMENDMENTS

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### 防污公约 – 澄清, 解释, 与修正

#### MARPOL Annex I new Ch. 8 Reg. 40, 41, 42

《防污公约》附则 I 新的第8章 第40, 41, 42 条

- Application – all oil tankers  $\geq 150$  GT, conducting transfer of cargo oil between oil tankers at sea (STS)  
适用于 – 所有150GT 和以上的油轮, 当进行海上货油输送操作 (STS)
- STS plan to be approved by Flag/RO and provided onboard on or before the 1st Annual or Intermediate or Renewal survey after 1 January 2011  
STS 计划需要得到船旗国/认可机构的审核, 并于2011年1月1 日后的第一个年检 / 中检 / 更新检验, 或之前, 放在船上
- Effective date –  $\geq 1$  April 2012, or earlier if STS Plan is approved earlier  
生效日期 – 在2012年4月1日或以后, 或是 STS 计划在这天前得到审批
- Not applicable to oil transfer with FPSO/FSU, fixed or floating platforms, and not to bunkering operations  
不适用于与FPSO/FSU, 固定/浮式平台, 也不适用于添加燃油的操作

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## MARPOL – CLARIFICATIONS, INTERPRETATIONS & AMENDMENTS

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### 防污公约 – 澄清, 解释, 与修正

#### MARPOL Annex I new Ch. 8 Reg. 40, 41, 42

《防污公约》附则 I 新的第8章 第40, 41, 42 条

- SPS Plan to be developed on the basis of industry best practice guidelines (ICS/OCIMF "Ship to Ship Transfer Guide, Petroleum" 4<sup>th</sup> edition 2005)  
SPS计划需要按照行业指引来编写 (国际航运商会/石油公司国际海事论坛 出版的“船对船输送指引, 油类”, 第4版, 2005)
- Records of STS operations to be retained on board for 3 years, and ready for inspection by ship inspectors  
STS 操作纪录要保存在船上3 年, 并随时提供给船检检查
- Tankers operating STS in the territorial waters or EEZ shall notify the Authority not less than 48 hours in advance  
油轮在签署国的领海或专属经济区进行 STS 操作的至少 48 个小时前要通知签署国

Lloyd's Register Classification Society (China) Co., Ltd. - IMO Environmental Regulations Seminar  
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## MARPOL – CLARIFICATIONS, INTERPRETATIONS & AMENDMENTS

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### 防污公约 – 澄清，解释，与修正

#### MARPOL Annex I new Ch. 8 Reg. 40, 41, 42

#### 《防污公约》附则 I 新的第8章 第40, 41, 42 条

- The following to be included in the Notification: 通知中要包含以下:

Ship details	船的资料(船名, 船旗, IMO no., ...)
Date, time, location	进行输送日期, 时间, 地点
At anchor or underway	在锚地或航行时
Oil type/quality	货油种类 / 量
Duration	需时多长
ID of service provider	服务供应上 / 负责人的身份
Confirm SPS Plan onboard	确认拿到认可的SPS 计划已在船上

- If expected difference of arrival versus planned arrival more than 6 hours, Master/Owner shall submit revised notification  
如果估计到预算到达与实际到达相差超过 6 个小时, 船长/船东要通知签署国

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拆船和废船回收
- Amendments of MARPOL Annex VI  
《防污公约》附则 VI 的修正
- Green House Gas (GHG) Emission Reduction Development  
温室气体 (GHG) 减排 法规发展
- MARPOL – Clarifications, Interpretations & Amendments  
防污公约 – 澄清，解释，与修正
- MARPOL Annex V amendments  
防污公约 附则 V 的修正



- Ongoing, correspondence group (CG) actioned, reported to MEPC 59  
附则 V 修正仍然进行, 通讯小组作出行动, 并向MEPC 59 作出报告
- CG not able to finalise specific amendments to Annex V and its Guidelines  
通讯小组未能为 附则 V 和其指南 作出具体修正的建议
- CG recommends ships to discharge cargo wash water at reception facilities  
个别题目来说, 通讯小组建议把货舱洗涤水丢弃在岸上设施
- Comment at MEPC 59 was raised that no holding tanks in bulk carriers, and reception facilities not adequate, definition of cargo residue unclear  
有组织在 MEPC 59 提出, 散货船是没有存储舱, 岸上设施又不足, 货物残渣定义不清
- MEPC/Circ.675 issued – clarifying cargo residue is not treated as garbage in Gulfs area and Mediterranean Sea area, and cargo hold wash water can be discharged outside 12 nm from shore of these Special Areas  
MEPC 59 发表了通函 675, 针对海湾区与地中海区, 澄清货物残渣不属于垃圾, 而货舱洗涤水可以在此特殊区域12海里以外地区抛掉

- CG re-established for developing draft MARPOL V and Guidelines amendments, targeted to be completed by end 2010, specifically:  
通讯小组 将会重组, 开发防污公约附则V与指南的修正, 完成目标时间为2010 年底, 重点讨论:
  - Definitions of important terms 重要词汇的定义
  - Prohibition of discharges 禁止丢弃垃圾
  - Minimising waste onboard 尽量减少船上废物
  - Reducing lost of fishing gear 减少打鱼工具的丢失
  - Port reception facilities 港口废物接收设施
  - Cargo residues 货物残渣
  - Other technical matters 其他技术方面
- To be report to MEPC 60 (interim) and for MEPC 61 for approval  
将会向 MEPC 60 提交中期报告, 并可能在 MEPC 61 得到审核

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**THANK YOU!**

**非常感谢!**

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## **LIFE MATTERS**

The Lloyd's Register Group works to enhance safety and approve assets and systems at sea, on land and in the air – because life matters.

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