

THE ROLE OF THE HUMAN ELEMENT IN SHIPPING AND THE RISK OF TECHNOLOGICAL DEPENDENCE

Presented by:

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Senior Vice President, Maritime Operations

International Registries, Inc. / The Marshall Islands Registry



WHO WE ARE / WHAT WE DO

- International Registries, Inc. and its affiliates (IRI) provide administrative and technical support to the Republic of the Marshall Islands (RMI) Maritime and Corporate Registries.
- IRI provides a broad spectrum of services for the shipping and financial services industries.

RMI AND THE UNITED STATES (US)

- Compact of Free Association (the “Compact”) with the US
- Defense and foreign policy links under the Compact

COMPACT OF FREE ASSOCIATION

ACT OF 1985



PUBLIC LAW 99-239 - JAN. 14, 1986

99 STAT. 1773

TITLE 48 U.S. CODE, SEC 1901

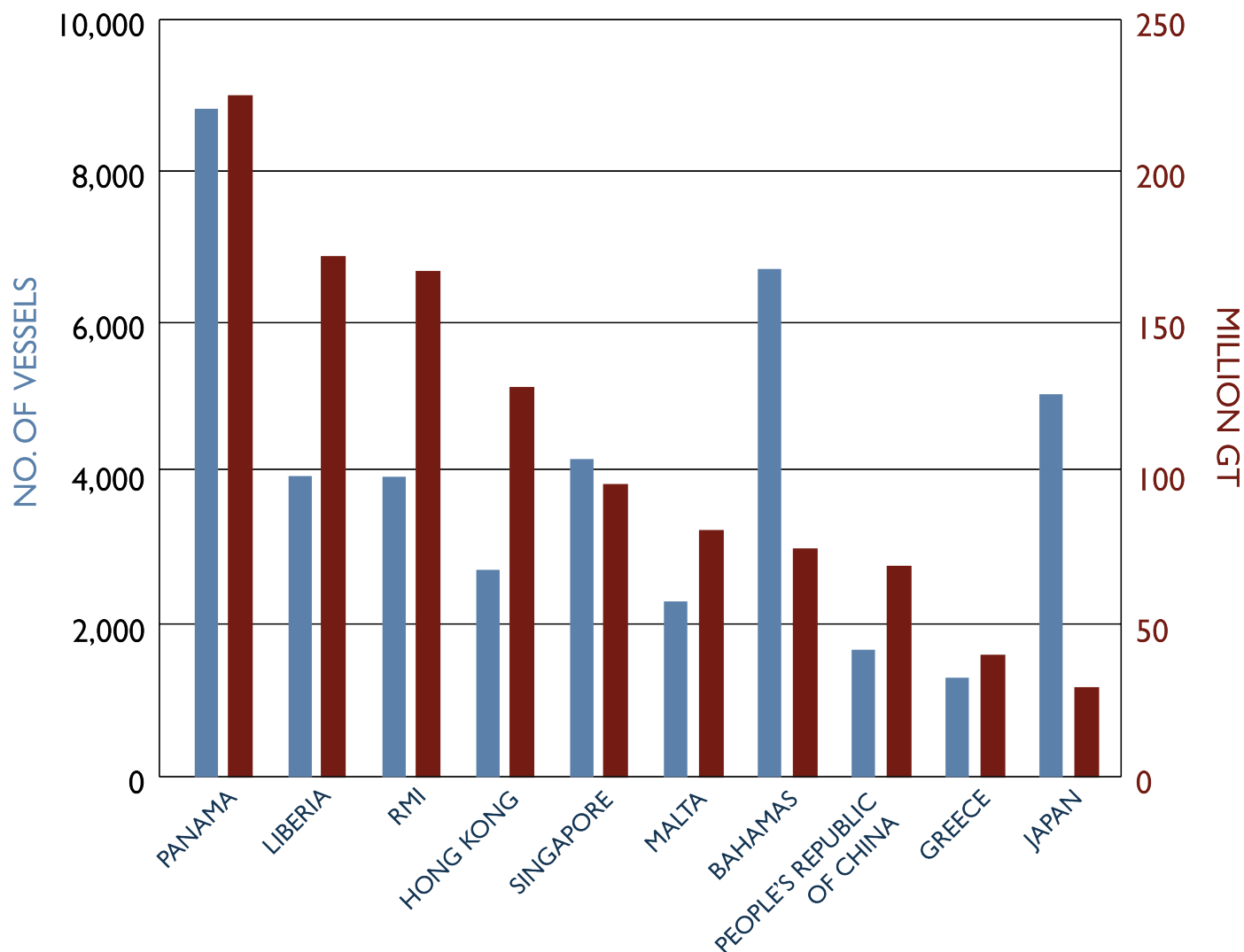
TITLE I—APPROVAL OF COMPACT; INTERPRETATION OF, AND U.S. POLICIES REGARDING, COMPACT; SUPPLEMENTAL PROVISIONS

b) MARSHALL ISLANDS. — The Compact of Free Association set forth in title II of this joint resolution between the United States and the Government of the Marshall Islands is hereby approved, and Congress hereby consents to the subsidiary agreements as set forth on pages 115 through 391 of House Document 98-192 of March 30, 1984, as they relate to such Government. Subject to the provisions of this joint resolution, the President is authorized to agree, in accordance with section 411 of the Compact, to an effective date for and thereafter to implement such Compact, having taken into account any procedures with respect to the United Nations for termination of the Trusteeship Agreement.

President of U.S.

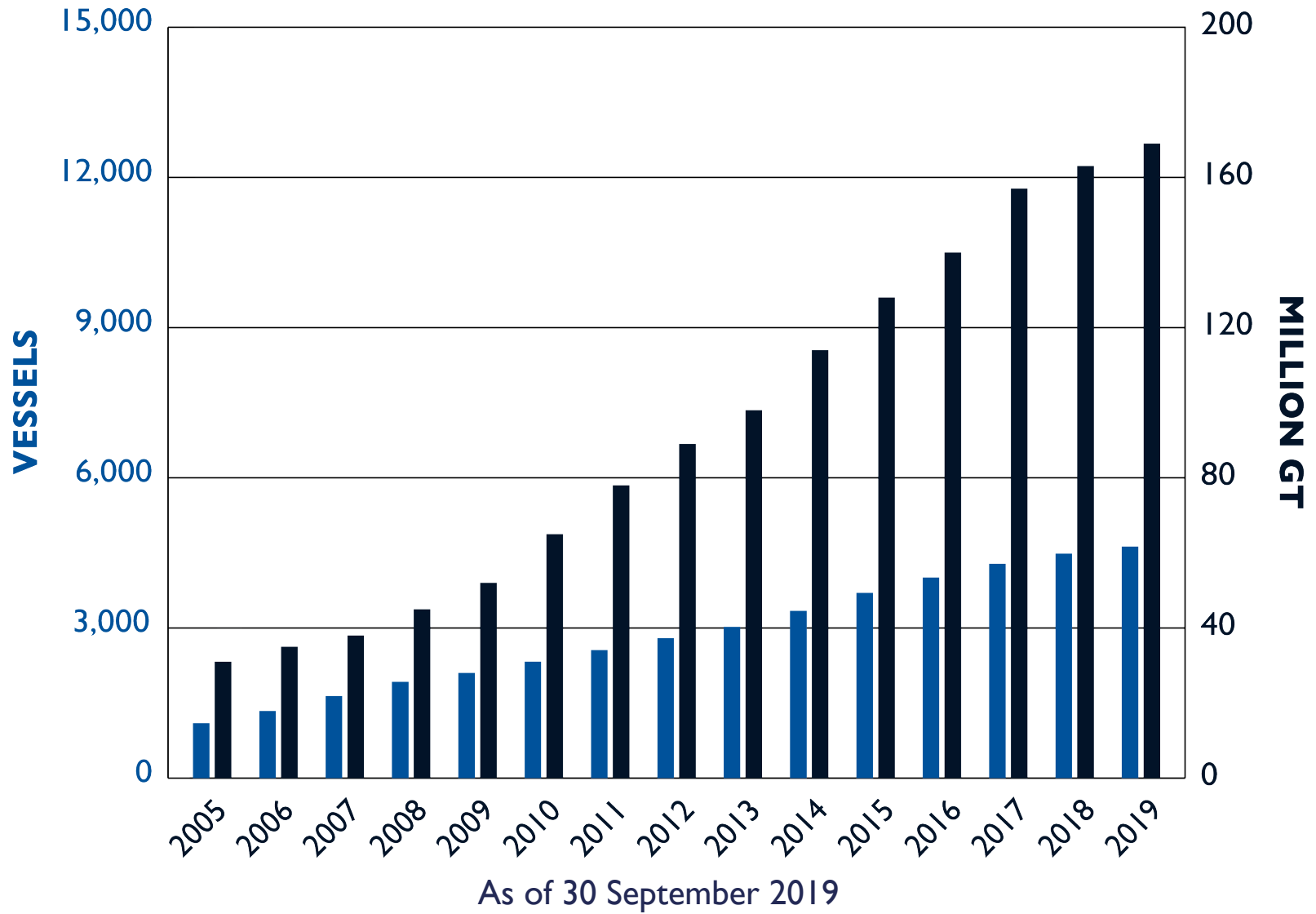
(c) REFERENCE TO THE COMPACT. — Any reference in this joint resolution to “the Compact” shall be treated as a reference to the Compact of Free Association set forth in title II of this joint resolution.

TOP TEN FLAG STATES



Source: Clarksons Research's World Fleet Monitor, Volume 10, No. 9 (September 2019) and Offshore Intelligence Monthly, Volume 9, No. 9 (September 2019)

FLEET GROWTH

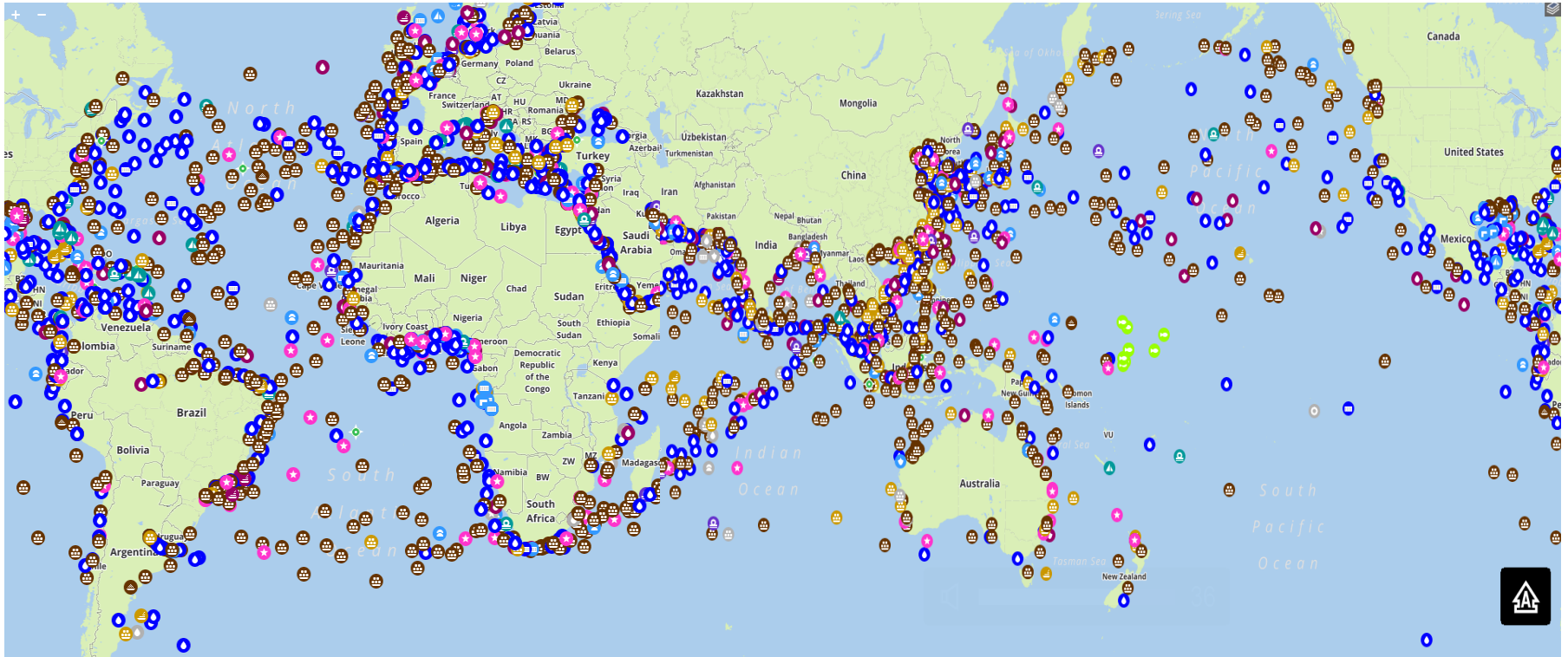


FLEET TYPES

VESSEL TYPE	NO. of VESSELS	% of FLEET	GROSS TONS	% of FLEET GROSS TONS
BULK CARRIER	1,592	34%	67,128,528	39%
CONTAINER	344	7%	18,827,685	11%
GAS CARRIER	194	4%	13,697,845	8%
GENERAL CARGO	172	4%	5,145,172	3%
MISCELLANEOUS	75	2%	425,060	0.25%
MOU	173	4%	7,280,564	4%
OSV	262	6%	513,381	0.30%
PASSENGER	15	0.32%	472,703	0.28%
TANKER	1,214	26%	56,316,814	33%
YACHT	586	13%	180,679	0.11%
TOTAL FLEET	4,627		169,988,431	

As of 30 September 2019

GLOBAL FLEET



GLOBAL COVERAGE

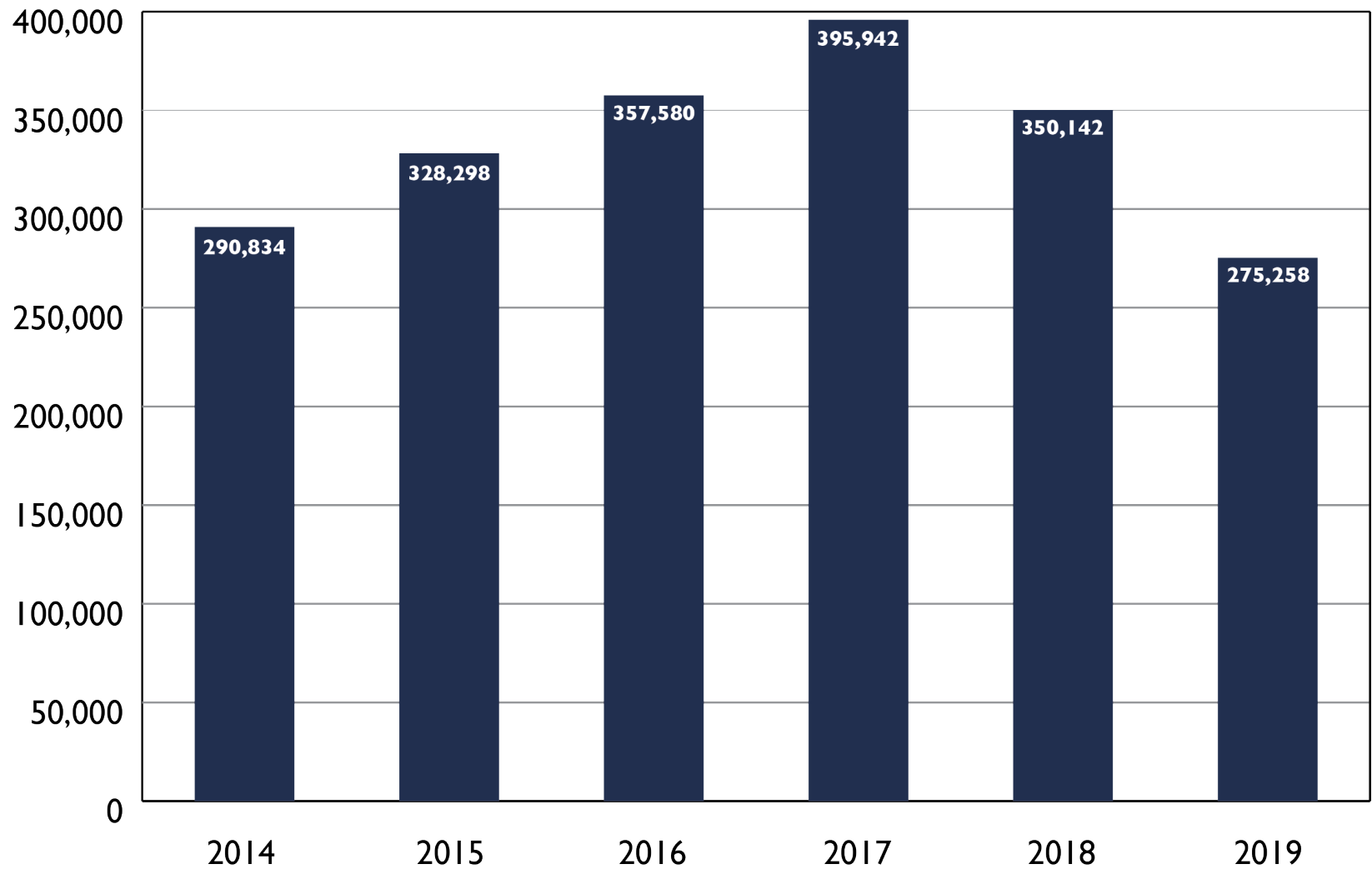


FLAG STATE INSPECTION

- Confirm compliance with the applicable RMI and international safety, security, and environmental protection standards
- Audit the performance of the Recognized Organization and/or Recognized Security Organization
- Identify gaps in the operational management of vessels flying the RMI flag

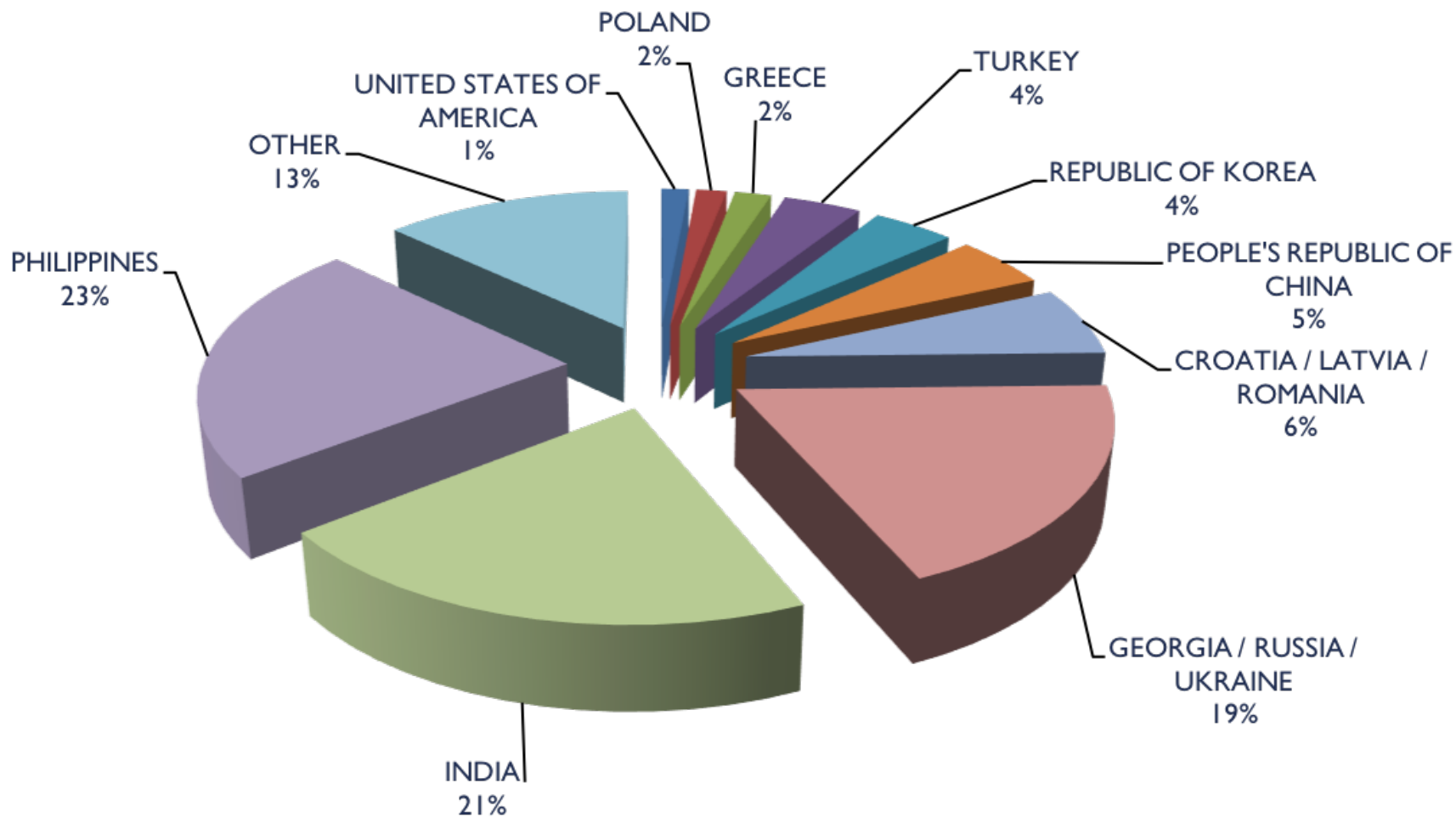


SEAFARER DOCUMENTATION GROWTH



As of 30 September 2019

OFFICER CERTIFICATES BY NATIONALITY



As of 30 September 2019

TRADE COMPLIANCE

- Offices vet all known persons and entities involved in any known transaction through World-Check
 - Vessels
 - Seafarers
 - Nautical Inspectors
 - Corporate Entities and Officers
 - Corporate Formation Specialists / Qualified Intermediaries
 - Beneficial Owners
 - Any other known individual, such as the Company Security Officer, Ship Security Officer, Designated Person Ashore, etc.

Republic of the Marshall Islands

PUBLICLY TRADED COMPANIES

NYSE

Ardmore Shipping Corporation (ASC)	Navios Maritime Acquisition Corporation (NNA)
Costamare Inc. (CMRE)	Navios Maritime Holdings Inc. (NM)
Danaos Corporation (DAC)	Navios Maritime Partners L.P. (NMM)
DHT Holdings, Inc. (DHT)	Safe Bulkers, Inc. (SB)
Diamond S Shipping Inc. (DSSI)	Scorpio Bulkers Inc. (SALT)
Diana Shipping Inc. (DSX)	Scorpio Tankers Inc. (STNG)
Dorian LPG Ltd. (LPG)	Seadrill Partners LLC (SDLP)
Dynagas LNG Partners LP (DLNG)	Seaspan Corporation (SSW)
GasLog Partners LP (GLOP)	Teekay Corporation (TK)
Genco Shipping & Trading Limited (GNK)	Teekay LNG Partners L.P. (TGP)
Global Ship Lease, Inc. (GSL)	Teekay Offshore Partners L.P. (TOO)
Höegh LNG Partners LP (HMLP)	Teekay Tankers Ltd. (TNK)
International Seaways, Inc. (INSW)	
KNOT Offshore Partners LP (KNOP)	
Navigator Holdings Ltd. (NVGS)	

NASDAQ

Capital Product Partners L.P. (CPLP)
DryShips Inc. (DRYS)
Eagle Bulk Shipping Inc. (EGLE)
EuroDry Ltd. (EDRY)
Euroseas Ltd. (ESEA)
Globus Maritime Limited (GLBS)
Golar LNG Partners LP (GMLP)
Navios Maritime Containers L.P. (NMCI)
Performance Shipping Inc. (DCIX)
Seenergy Maritime Holdings Corp. (SHIP)
Star Bulk Carriers Corp. (SBLK)
StealthGas Inc. (GASS)
TOP SHIPS Inc. (TOPS)

Note: The above entities may be trading securities on other exchanges worldwide.

as of 30 September 2019

REAL AND PRESENT DANGERS



The implications of seamless data exchange between ship and shore has the potential to revolutionize the marine industry in any number of ways, but it also poses serious threats to vessel safety and security!

NAVIGATION AND BRIDGE CONTROL THREATS

- Increased vulnerability of shipboard systems
 - Bridge navigation and communications systems
 - Global Positioning System
 - Automatic Identification System
 - Electronic Chart Display Information System
 - Automated drilling systems
 - Cargo care and handling systems
 - Emergency control systems

ENGINEERING THREATS

- Automated ship engine systems
 - Dynamic positioning systems
 - Automated propulsion controls
 - Fuel supply injection and control
 - Liquefied gas propulsion systems
 - Power generation and control
 - Ballast control and stabilization programs

THREATS AT SEA

- Pirates and terrorists



- Memory sticks and hackers



CONSEQUENCES

- To the international maritime industry as a whole, the stakes could be enormous
- A hack involving a maritime asset could be as simple as concealing the whereabouts of a single vessel in order to influence its charter rate, or at the other end of the spectrum, could include all out, state-sponsored cyber warfare, in theory affecting everyone and everything at sea



PREVENTION VERSUS REMEDIATION

- Vigilance and monitoring of systems is key
 - Checklists for equipment scans and tests
- Training and awareness of possible threats
 - Not just a “glitch” or “gremlin” in the system
- Alternatives and backups readily available
 - What is “plan B?”
- Maritime industry needs to be proactive not simply reactive
- Plan for *when*... not *if*... it happens

MARITIME CYBERSECURITY



Maritime Cyber Risk Management

- Proposed inclusion in the International Ship and Port Facility Security (ISPS) Code
- Required in Safety Management Systems by 2021
- Seafarer training and awareness will be essential for mitigating the risk of cyber attacks

THANK YOU



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