

Maritime safety in the post-*Prestige* era

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Purpose of talk

- Talk about maritime safety policy
- Argue about the need to be “proactive”
- Qualitatively assess recent policies
- Discuss possible pitfalls
- Make some suggestions on how to improve situation

Main references

- Research, various EU projects
- Paper “Maritime safety: to be or not to be proactive”, *WMU Journal of Maritime Affairs*, Vol. 1, Oct. 2002.
(*Prestige* happened a few weeks later)
- Recent developments in maritime safety policy



EU Commissioner Loyola de Palacio,
commenting on the Erika I and II packages.

“The EU now has one of the best regulatory arsenals in the world to guarantee maritime safety. It is essential that these measures should be put into effect with the utmost resolution and speed. The Commission, for its part, will continue its efforts and propose follow-up measures to complete these rules and banish the spectre of a new Erika disaster.”

What is “policy”?

- Laws
- Regulations
- Directives
- Rules
- M.O.U.s
- Resolutions
- Protocols
- Guidelines
- Specifications
- Recommendations
- Standards
- Codes
- Practices
- Other

Policies collectively cover:

- Training requirements for seafarers
- Certification of seafarers
- Fitness for work, use of alcohol and drugs, fatigue
- Working and living conditions onboard
- Common working language between crew members
- Ship equipment and human-machine interface
- Ship-to-ship and ship-to-shore communication
- Vessel traffic services and vessel traffic management information services
- Global maritime distress and safety systems
- Ship reporting systems

Also...

- Port and harbor safety regulations
- Navigation and pilotage
- Loading, stowage and discharging
- Fire-fighting
- Search and rescue
- Environmental protection
- Design of ships
- Construction of ships
- Maintenance of ships
- Survival capability of ships
- Emergency and evacuation procedures
- *Maritime security*

Who develops policy?

- **Main player: IMO**
 - SOLAS
 - STCW
 - ISM Code
 - HSC Code
 - *ISPS Code*
- **Scientific Approach to Maritime Safety:**
Formal Safety Assessment (FSA) methodology

Other players...

- **European Union**
- **Flag states**
- **Port states**
- **Shipping companies**
- **Ports**
- **IACS and classification societies**
- **ILO and labor organizations**
- **Shippers**
- **Shipyards**
- **P&I clubs**
- **Environment groups**
- **Etc, etc, etc!**

Observations:

- Too many policies



- Too many players



Potential problems:

- **Over-regulation**
- **Patchwork regulation**
- **Overlaps in regulation**
- **Inconsistencies in regulation**
- **Gaps in regulation**

Criticism by shipping industry:

- Reduction of competitiveness
- Non-level playing field
- Lack of comprehensive safety regime

- Develop new rules or enforce old ones?

“Proactive” policies:

- Early stage identification of **main factors** that affect safety
- Development of regulatory action to **prevent** undesirable events
- Formulation of policy **BEFORE** event
- Formulation of policy **AFTER** careful analysis of its implications

OBSERVATION 1:

What has mostly driven regulatory activity to date?

- *Herald of Free Enterprise* (1987)
- *Exxon Valdez* (1989)
- *Scandinavian Star* (1990)
- *Estonia* (1994)
- *Erika* (1999)
- *Prestige* (2002)
- Bulk carrier losses (e.g, *Derbyshire*, 1980)

OBSERVATION 2:

- Even though the **human factor** played a critical role in most of these accidents,
- Much of maritime safety policy developed afterwards focused on “**engineering,**” or “**design**” solutions

Examples:

- Tanker design (double hulls, double bottoms)
- Roro/ferry design (internal subdivisions)
- Bulk carrier design (transverse bulkheads, double hulls)

Implications:

- Entire fleets are rendered obsolete
- Expensive conversions, or need for new ships altogether
- Operational capacity of ships seriously affected downwards
 - *(but benefits may accrue to unemployed seafarers!)*

Also..

- Shipyards radically alter their designs to adapt to the new rules
 - *(but sales of new ships increase!)*
- Demand for ship scrapping capacity goes at high levels

Fundamental questions:

- What are the benefits of such policies to **maritime safety**?
- To **maritime environment**?
- At what cost these benefits will come about?

Answer:

- To date, such questions remain by and large unanswered..

Tanker accidents



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May 27, 2004

Tanker accidents

- *Torrey Canyon*, 1967
- *Amoco Cadiz*, 1978
- *Exxon Valdez*, 1989
- *Erika*, 1999
- *Prestige*, 2002

OPA' 90 (after *Exxon Valdez*)

- One of most important pieces of maritime legislation in history
- Mandates, among other things, double hulls-bottoms for tankers into US waters
- Has had **worldwide** implications on tanker design, operation and economics

Crucial questions:

- What benefits has this policy eventually produced?
- At what cost?
- *(similar questions can be asked vis-à-vis the Erika I package)*

BENEFITS:

- Reduction of risk
- Damages averted

COSTS:

- Construction costs
- Decreased revenues

Questions:

-What benefits has this policy eventually produced?

-At what cost?

Answer:

Nobody really knows

In both *Exxon Valdez* and *Erika* the **human element** was the most prevalent factor



Why was **human element** the most prevalent factor?

Exxon Valdez:

- Use of alcohol
- Fatigue
- VTMIS manning

Erika:

- Faulty inspection procedures by Class

And yet...

- OPA'90 banned *Exxon Valdez* from visiting Alaska ever again
- Vessel still operates under new name elsewhere
- Use of alcohol by *Exxon Valdez* captain never proven in court
- He is rumored to still have his license!

Erika I, II packages:

- Single hull phase out
- Tighter inspections by class and port state control
- Establishment of EMSA
- Better information and monitoring
- Liability & compensation regime

After Prestige :

- Accelerate single hull phase-out
- Ban heavy fuel oil transport by single hulls
- Ban single hulls inside 200 mile zone
- Unlimited liability for shipowners?
- Financial **and criminal** liability for port authorities? (ports of refuge)
- Erika III package

Commission prepares Erika III

- communication on the implementation of the ILO provisions on the living and working conditions of seafarers;
- update of the Port State Control directive;
- directive on maritime transport management and information system (update of Directive 2002/59/EC);
- regulation on compliance with IMO flag state rules (combined with simplified PSC procedures);
- regulation on the application of the Athens protocol - passengers' liability - for all traffic (national and international);
- directive on maritime accident investigation.

After *Prestige* cont'd:

- *Prestige* captain Mangouras still captive
- EP asks Spain to relax bail terms
- Spain sues ABS (more later)
- EP adopts 'Mare committee' recommendations on **Resolution to Improve Safety at Sea**
- *Tasman Spirit* spill



EP Mare Committee

- Temporary EP committee set up with the aim to further investigate the **causes and consequences** of the *Prestige* accident and to come up with further measures to improve safety at sea.

ISSUES ADDRESSED:

- The need to have a **network of adequately equipped places of refuge** as well as efficient procedures to deal with ships in distress
- The importance of **seafarers' training**.
- The necessity to improve the **traceability of shipowners**.
- The proposal to set up a European **coastguard agency**.
- The suggestion to develop a **code of conduct for shipowners** to promote quality shipping.

Still to come..

- “EP calls on the Commission to submit a legislative package in 2004, entitled 'Prestige', in order to develop a comprehensive and cohesive European maritime policy. In particular, these proposals should introduce a system of liability covering the entire maritime transport chain and the public authorities responsible for safety at sea.”

Bad weather accidents



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Bad weather accidents

- Policy (Greece): Ban sailings if weather is severe enough
 - *Heraklion (1966)*
- Q: How much has this policy increased safety?
 - *Express Samina (2000)*
- Policy needs to be reviewed
- ‘Market-driven’ alternative: Adjust P&I premiums if sailing in bad weather is avoided?

Age limits to ro-ro ferries (Greece)

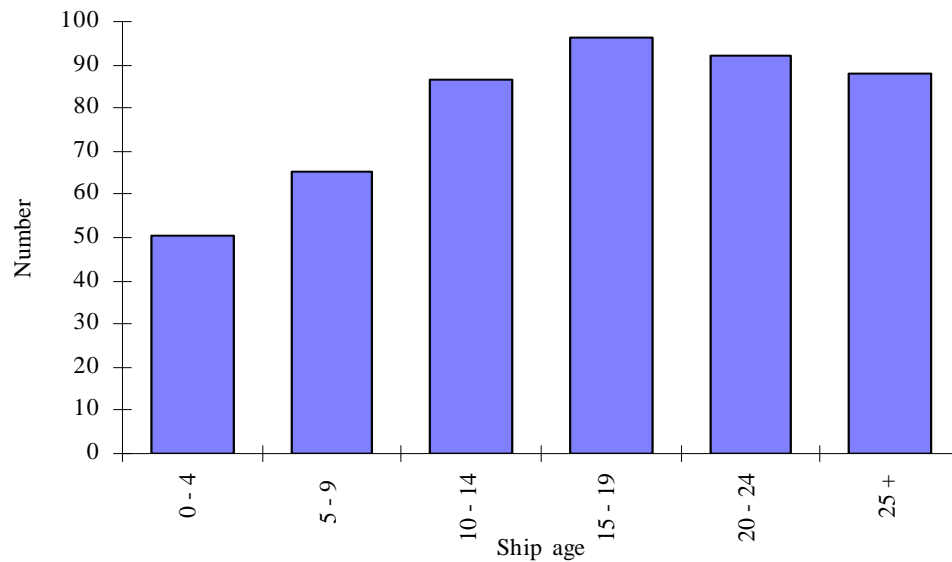


Age limits to ro-ro ferries

- 35 years
- Only for domestic coastal shipping
- New limit: 30 years (phased)
 - *Express Samina (2000)*

Q: Is ship age a safety factor?

Accident frequency (per 1000 ships) [source: SAFECO project]



Interpretation

- Accident risk not monotonic with age
- Some risk reduction after a certain age
 - [If ship has not sunk by then, most bugs have been fixed]
- More analysis needed to fully explain why

Is a younger ship safer?

- Not necessarily (role of maintenance)
- With a shorter age limit (say, 25 years), yards will produce ships of shorter economic life, hence lower standards, hence lower safety!
- Disposable ships?

Policy: “We shall legislate fleet renewal”

- Sounds nice, and looks ‘politically correct’
- Not justified on any scientific, legal basis
- Admission of failure? (cannot increase safety by other means)
- Headlines if repealed: ***THE RUST BUCKETS ARE BACK!***
- Alternative policy?
 - Apply international regulations (Stockholm agreement, etc)
 - Increase market competition so that fleet renews itself

Lord Donaldson in his famous 1994 “Safer Ships, Cleaner Seas” report:

- “The UK government should resist any attempt to introduce arbitrary age limits, as they could encourage owners to curtail maintenance as the specified age approaches. **Age limits will induce a race to build the cheapest, short-life ships.**”

Bulk carrier losses

(*Derbyshire*, 1980, et al)



Bulk carrier losses

- IMO/IACS regulations (design, construction, maintenance)
- FSA to recommend double hulls, initially as voluntary measure
- Q: Was **design** the main cause, as opposed to **human error**? (faulty loading, high speed in bad weather, etc)

Mandate bulk carrier double hulls?

- Started as voluntary scheme
- Proposed by IACS/LAN some years ago
- Big IACS-IMO push to mandate
- Concerns this may be a big mistake
- Studies for and against

Battle of the studies

- IMO/MSC push based on 3 studies:
 - International collaborative study (led by UK)
 - Japanese study
 - IACS study
- Study to IMO by Greece: “Do not do it”
 - by Univ. of Strathclyde
- Study critically reviewed previous 3 studies
- Greece’s study challenged by UK
- Decision to IMO/MSC

Greece-UK 1-0

(18 May, 2004)

IMO in U-turn over double-hull bulkers

*Greece wins fiery debate with UK over mandatory double sides, writes **Hugh O'Mahony***

Ro-ro ferry losses



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Ro-ro ferry losses

- *Herald of Free Enterprise* (1987)
- *Estonia* (1994)
- Human factor prevalent in both
- Yet, “engineering solutions” again
- Stockholm agreement (float with 50 cm of water on deck)

GENERAL POLICY ISSUE:

Design ships to sustain damage even if operated in a questionable or even reckless fashion?

- Does not discourage such behavior
- May actually encourage it
- No serious documentation of benefits vs. costs

Ship collisions



- Lead to other evils (fires, pollution, loss of life,..)
- Human factor prevalent in most
- Need for better VTMIS, navigation aids
- Why not control traffic like in aviation?
- Infringe on 'freedom of the seas' principle?

Shadows on class?

- Dubious class societies contribute to overall accident risk, **but...**
- *Estonia* (Bureau Veritas)
- *Erika* (RINA)
- *Prestige* (ABS)

Prestige ABS lawsuit

- Lawsuit: >\$700M
- Total claims by Spain and France >\$1B
- Compensation cap: ~\$290M
- Spain: ABS at fault for certifying a vessel unfit to carry oil
- ABS: Spain at fault for not granting safe place of refuge

- Case to set precedent on class liability?
- What does a class certificate certify?

Other class issues

- Difference with other modes
- From IMO to class rules
- Non-uniformity produces problems
- Competition on rules lowers standards?
- Goal-based standards by IMO?
- Substandard flags: to class or not to class

Where do we go from here

- Impressive array of regulations
- Safety record needs further improvement
- Patchwork picture
- Serious overall policy fragmentation
- Conflicting policies
- Most serious policy activity (still) driven by major accidents

Also..

- Most policies focus on **technological solutions**, even though **human element** is most important
- Most concern **after-the-fact** vessel survivability, instead of accident **prevention**
- Costs and benefits **undocumented**, even though economic impact is **monumental**

There is more..

- Politicians & legislators typically do not assume the costs & risks associated with the policies they produce
- These are borne by the industry and society at large
- Little transfer of know-how from other transport modes (air)

And more..

- Use of scientific method growing, but still rather **underdeveloped**
- So far has had **little or no** impact on policy formulation
- Need tools to assess policy alternatives **prior** to their adoption

Q: Should our policy makers reformat their disk?



Reformat their disk???

- Not necessarily, **but**:
- They will have to reassess the current 'patchwork' modus operandi
- Abandon the 'top down' and 'cart-before-the-horse' philosophy
- Adopt a more proactive philosophy

Clear need to:

- Set specific and clear targets on maritime safety improvements
(“how safe is safe enough”)
- Assess society’s willingness to pay for safety
(“what price safety”, “who pays for it”)
- Enhance role of human element (training)
- Analyze policy ramifications of R&D results
- Educate politicians and legislators!

Related research (sample):

- ATOMOS I, II, III, IV
- THAMES
- SAFECO I, II
- THEMES
- CASMET
- POP&C (new)
- AEGEAN (new)

- See our web site for details

Coordinates

- Myself: hnpsar@deslab.ntua.gr
- NTUA Maritime Transport:
www.martrans.org

Reminder

- SNAME International Symposium
Ship Operations, Management and Economics
- May 12-13, 2005, Athens (Evgenideio)
- Abstract deadline: June 15, 2004
- Send an abstract to me!



Thank you very much!