



Ship fire series: webinar 2

“Containership fires: What can the ship do?”

Wednesday 17 February | 8:30am London (GMT)



The webinar will begin shortly after 8:30am (GMT) as we wait for all attendees to join. Please get in touch regarding any technical issues via the chat function in your control panel.



FIREFIGHTING CAPABILITY

JOHN GOW) Technical Director Marine & Quality Assurance FEBRUARY 2021

The Problem

Frequency

Loss of life

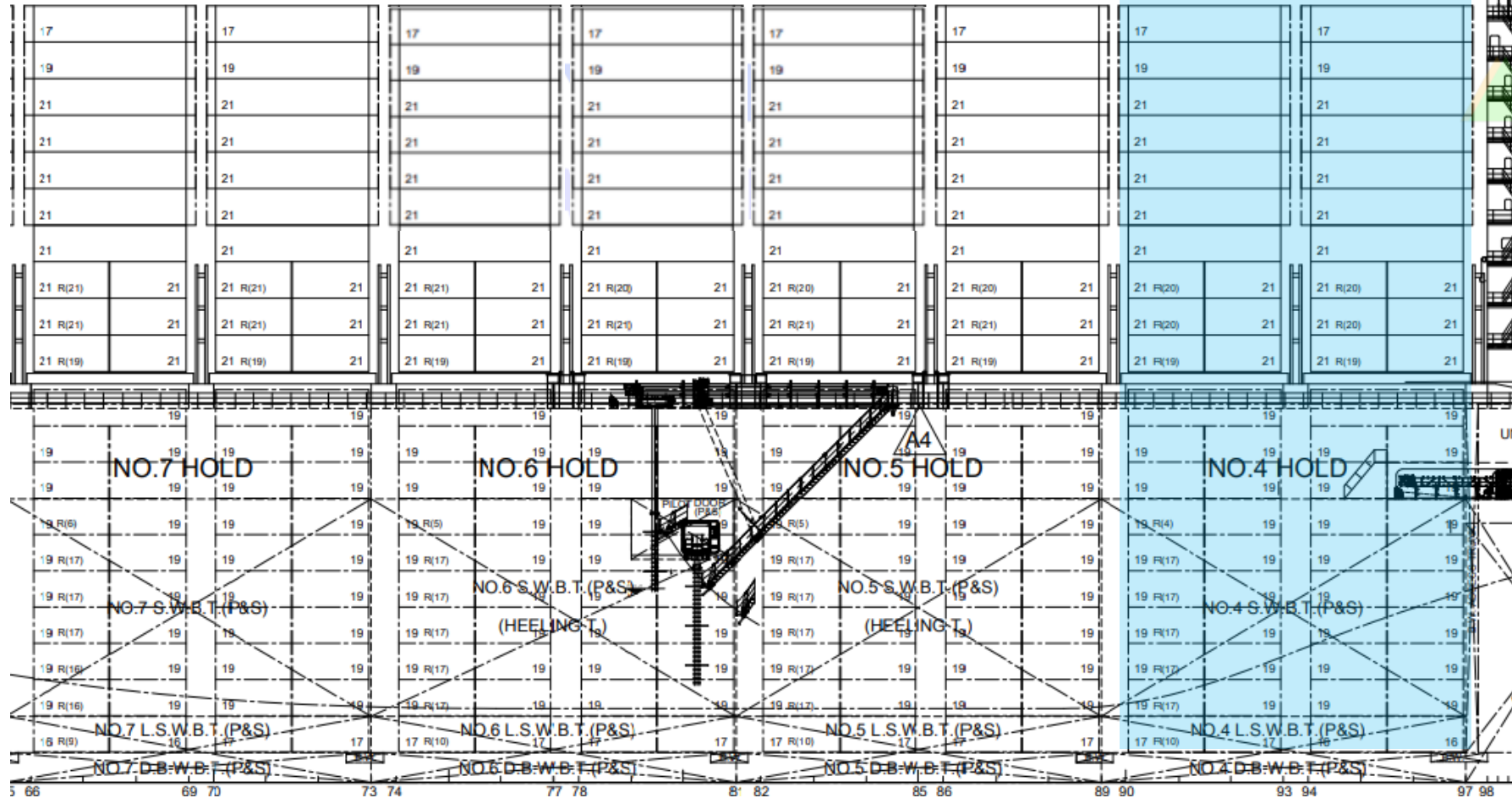
Cost to industry

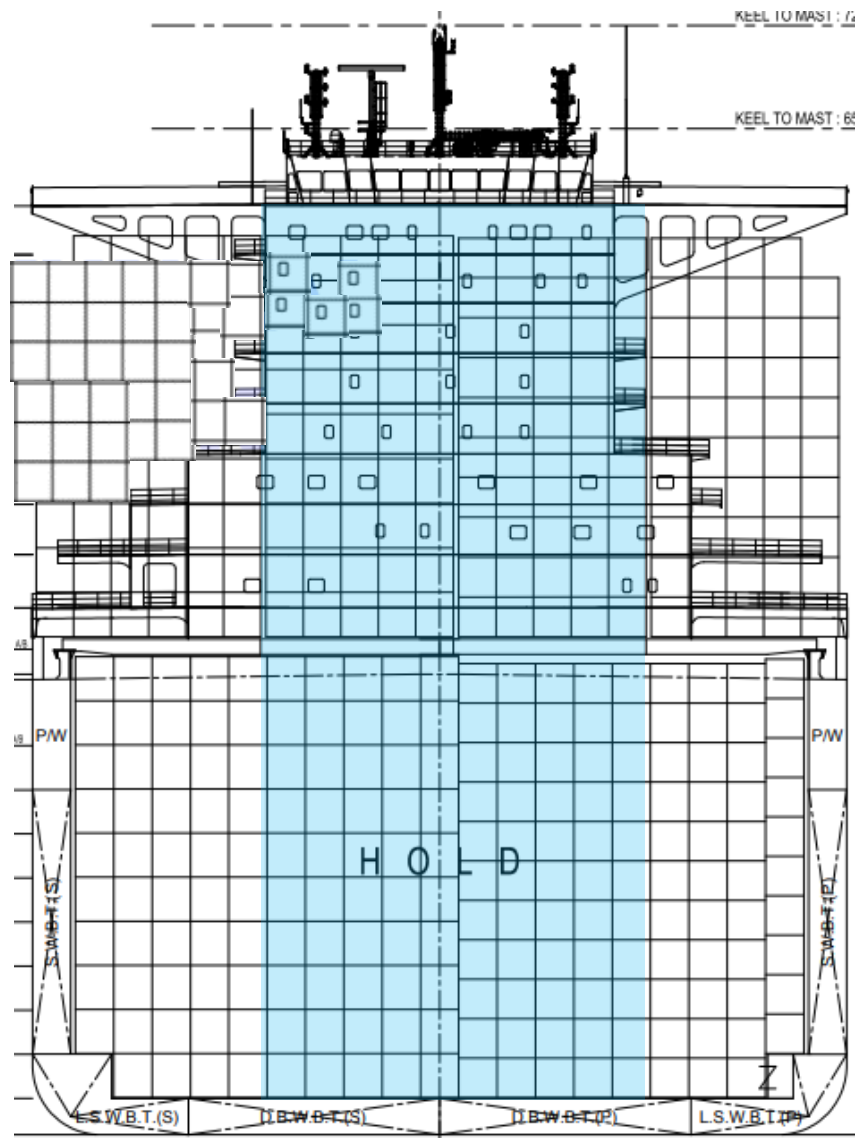
Dangerous goods

Mis-declared cargo



55	(54)	53	51	(50)	49	47	(46)	45	43	(42)	41	39	(38)	37	35	(34)	33	31	(30)	29	27	(26)	25
204		204	204		204	204		204	204		204	204		204	204		204	204		204	204		204
187		187	188		188	188		188	188		188	188		188	188		188	188		188	187		187
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Land Based Firefighting

- PPE
- Construction
- Speed of response
- Ease of access
- Fire protection measures
- Availability of equipment
- Availability of additional resources



Marine

- PPE
- Construction
 - Deck
 - Underdeck
- Speed of response
- Ease of access
 - Deck
 - Underdeck
- Fire detection/protection measures
- Availability of equipment
- Crew size
- Availability of additional resources?



Training – Land based Firefighting

- 12 Weeks initial training (varies)
 - Technical knowledge
 - Core practical skills
 - Breathing apparatus wearing
 - Structural firefighting
 - Working at heights
 - Deployment of foam making equipment
 - Confined space working
 - Hazardous materials
 - Chemical protection clothing and Decontamination
 - Practical exercises
 - Continuous Assessment
 - Assignments
- On return to Station
- Training programme
 - Competency Assessment
 - Experiential learning

Training - Marine

Basic

- Basic course
 - Personal Survival
 - Fire Prevention and firefighting
 - Elementary first aid
 - Personal safety and social responsibility
 - Proficiency in security Awareness
 - On board training

Advanced

- Advanced
 - Principles of controlling fire operations on board
 - Be able to control fire operations on board
 - Organise and train fire parties
 - Inspect and service detection and extinguishing equipment
 - Investigate and compile reports
 - Firefighting operations on board tankers (oil, chemical, liquified gas)
 - On board training

Deck fire

Limiting Factors

- Space
- Height
- Difficulty of access
- Fire fighting equipment



Cargo Hold Fire

Limiting Factors

- Detection
- Extinguishing Systems
- Ventilation
- Access
- Manual firefighting



ISO Container

- Condition
- Ventilation
- Extinguishing medium
- Penetration



Emerging Risks

Propulsion

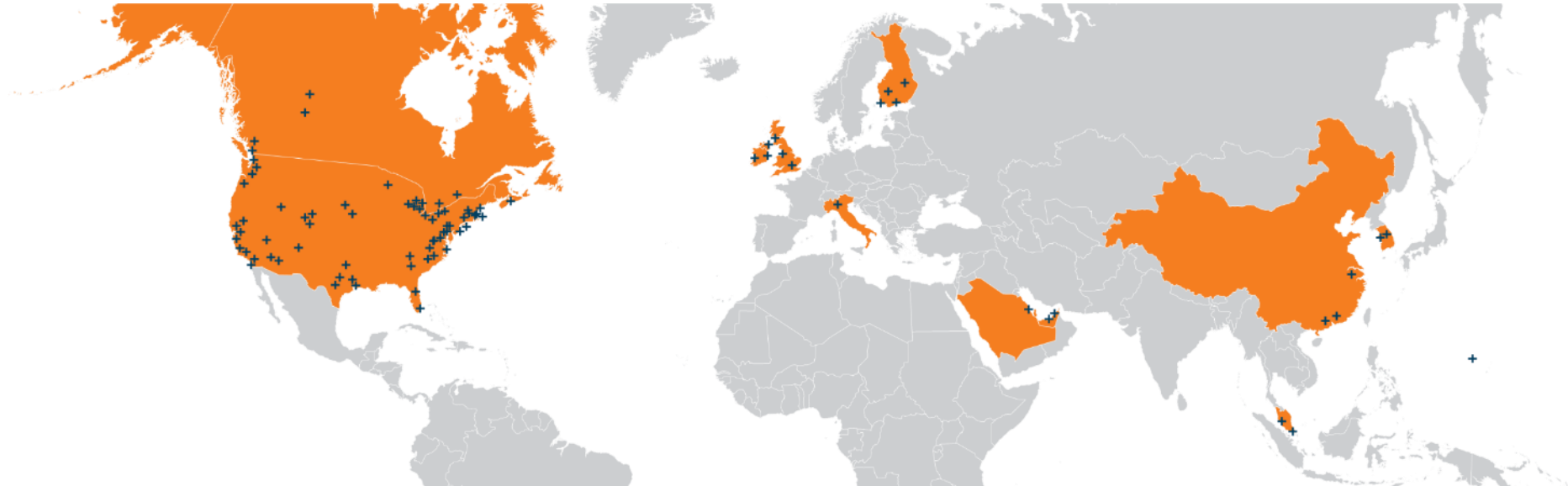
- Electrical
- Hydrogen
- Ammonia

Considerations

- Hazards
- Training
- Procedures
 - SMS
- Equipment

Global Reach, Local Presence

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UK/TT Club Webinar

Containership Fires – Session 2 – What the Ship can do.

Nick Haslam –Brookes Bell

17 February 2021

Nick Haslam



Disclaimer

The opinions expressed in this presentation are mine alone, they do not represent the opinions of Brookes Bell. They are given based on my experience and do not reflect the opinion of my employer.

At no time do any of the comments expressed herein reflect on the professionalism of the crews, the operators or the owners of the vessels highlighted.

This presentation is not meant to criticise any of the parties involved, it is provided without prejudice, solely as a way of learning from previous cases.

Contents

1. Fire Fighting Capabilities
2. Main Challenges
3. Heat of the Moment - Use of Fixed CO₂ Onboard
4. Ship Design
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Fire-Fighting Capabilities



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SOLAS Chapter II-2

Part A – General

Regulation 2 - Fire Safety Objectives and Functional Requirements

1. Fire safety objectives

1.1 The fire safety objectives of this chapter are to:

1.1.4 contain, control and suppress fire and explosion in the compartment of origin;

SOLAS Chapter II-2

Part C – Suppression of Fire

Regulation 7 – Detection and Alarm

2. General requirements

2.1 A fixed fire detection and fire alarm system shall be provided in accordance with the provisions of this regulation.

SOLAS Chapter II-2

Part C – Suppression of Fire

Regulation 10 – Fire-Fighting

1. Purpose

1.1 The purpose of this regulation is to suppress and swiftly extinguish a fire in the space of origin, except for paragraph 1.2. For this purpose, the following functional requirements shall be met:

.1 fixed fire-extinguishing systems shall be installed having due regard to the fire growth potential of the protected spaces;

SOLAS Chapter II-2

Part C – Suppression of Fire

Regulation 10 – Fire-Fighting

7. Fire-extinguishing arrangements in cargo spaces

7.3 *Firefighting for ships constructed on or after 1 January 2016 designed to carry containers on or above the weather deck*

7.3.1 *Ships shall carry, in addition to the equipment and arrangements required by paragraphs 1 and 2, **at least one water mist lance.***

7.3.2 *Ships designed to carry five or more tiers of containers on or above the weather deck shall carry, in addition to the requirements of paragraph 7.3.1, **mobile water monitors**^{††} as follows:*

- .1 ships with breadth less than 30 m: at least two mobile water monitors; or*
- .2 ships with breadth of 30 m or more: at least four mobile water monitors.*

7.3.2.2 *A sufficient number of **fire hydrants** shall be provided such that:*

- .1 all provided mobile water monitors can be operated simultaneously for creating effective water barriers forward and aft of each container bay;*

7.3.2.3 *The **mobile water monitors may be supplied by the fire main**, provided the capacity of fire pumps and fire main diameter are adequate to simultaneously operate the mobile water monitors and two jets of water from fire hoses at the required pressure values.*

7.3.2.4 *The **operational performance of each mobile water monitor** shall be tested during initial survey on board the ship to the satisfaction of the Administration. The test shall verify that:*

- .1 the **mobile water monitor can be securely fixed to the ship structure** ensuring safe and effective operation; and*
- .2 the **mobile water monitor jet reaches the top tier of containers** with all required monitors and water jets from fire hoses operated simultaneously.*

STCW Requirements

Regulation A VI/1

Mandatory minimum requirements for safety familiarization, basic training and instruction for all seafarers

2. Seafarers employed or engaged in any capacity on board ship on the business of that ship as part of the ship's complement with designated safety or pollution-prevention duties in the operation of the ship shall, before being assigned to any shipboard duties:

.1 receive appropriate approved basic training or instruction in:

.1.2 fire prevention and fire fighting as set out in table A-VI/1-2,

Regulation A VI/3

Mandatory minimum requirements for training in advanced fire fighting

1. Seafarers designated to control fire-fighting operations shall have successfully completed advanced training in techniques for fighting fire, with particular emphasis on organization, tactics and command, in accordance with the provisions of section [A-VI/3](#), paragraphs 1 to 4 of the STCW Code and shall meet the standard of competence specified therein.



Main Challenges



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Ảnh: C.T.V

Heat of the Moment - Use of Fixed CO₂ Onboard

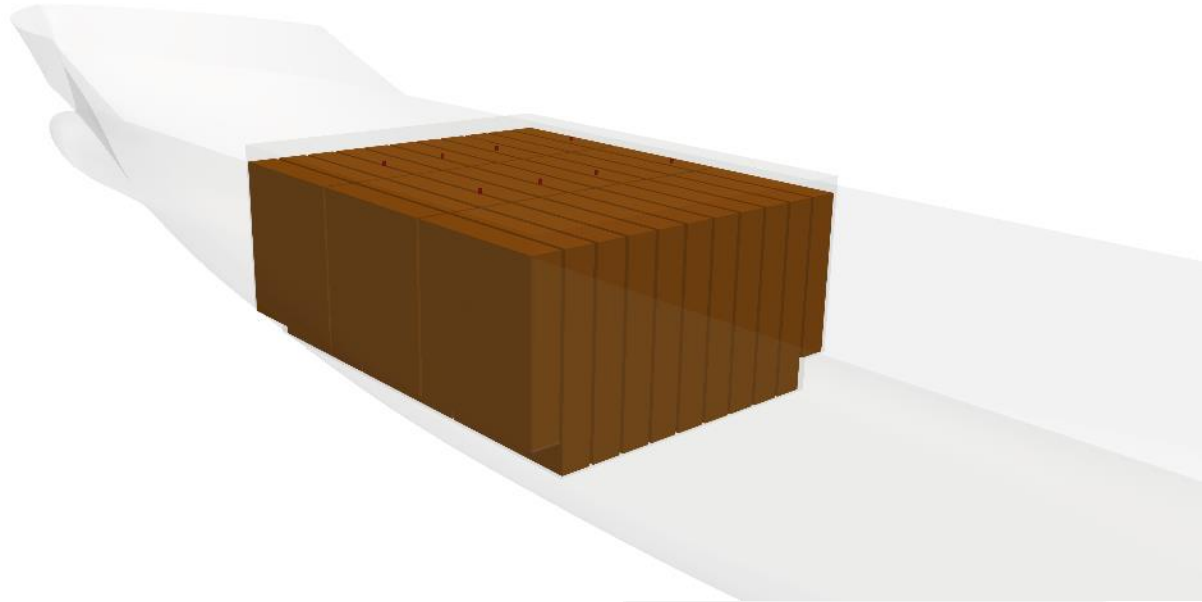




Photographs courtesy <https://www.reactert.com/>
[brookesbell.com](https://www.brookesbell.com)

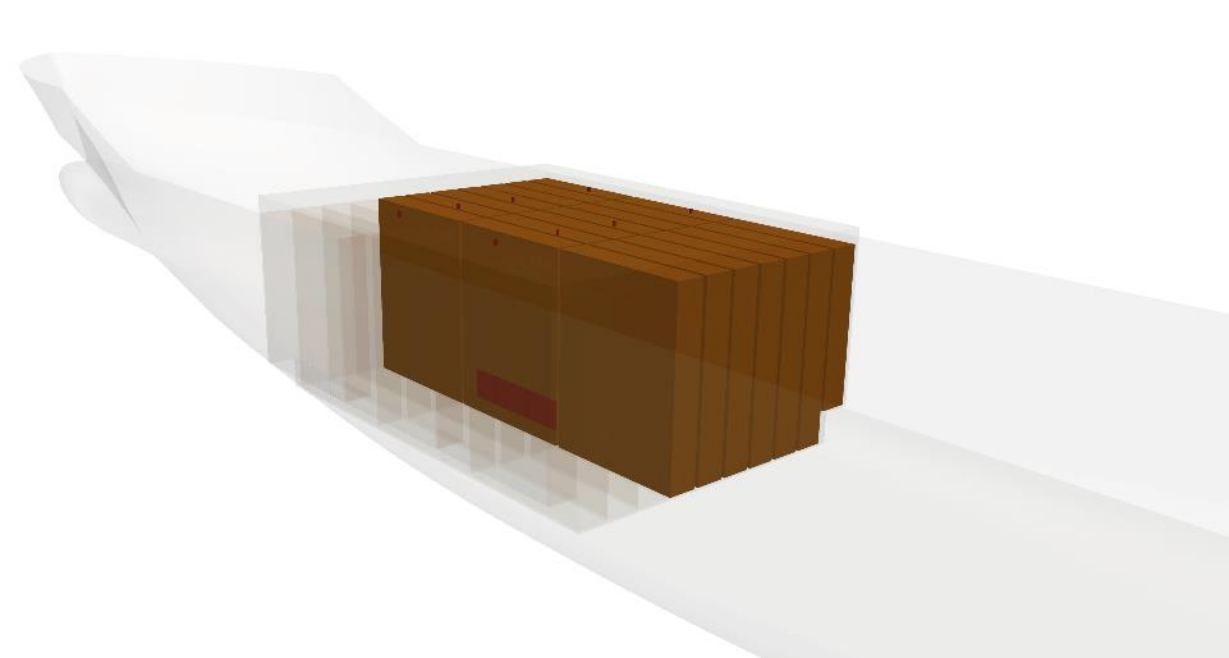


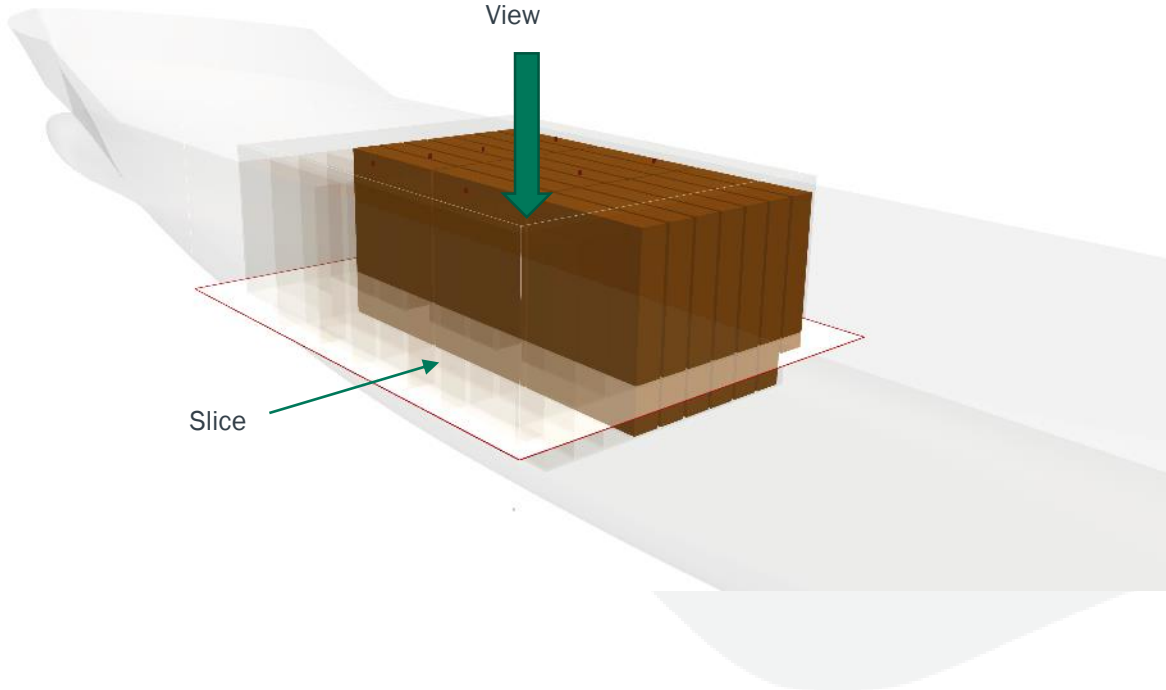
Hatch covers of large containerships are basically used to create a new platform for container stacks. They are not watertight or airtight.



- Fire/smoke source from low in a central container stack
- Smoke emanates from source at start of simulation
- CO2 is discharged after 20 seconds

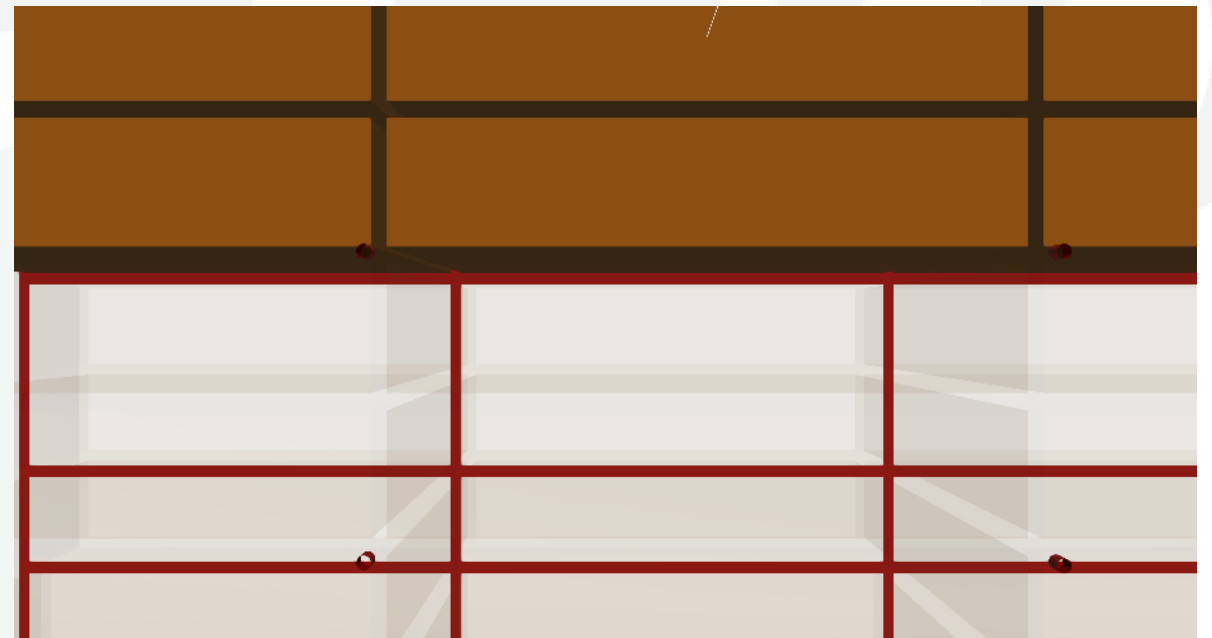
- Container hold at full capacity
- Total of 8 CO2 injection points





- Slice through the model at a constant height around fire/smoke source.

- Viewed from above the concentrations of CO₂ can be visualised around the container stacks.
- Gaps between containers on slice through model shown here in red.





Ship Design



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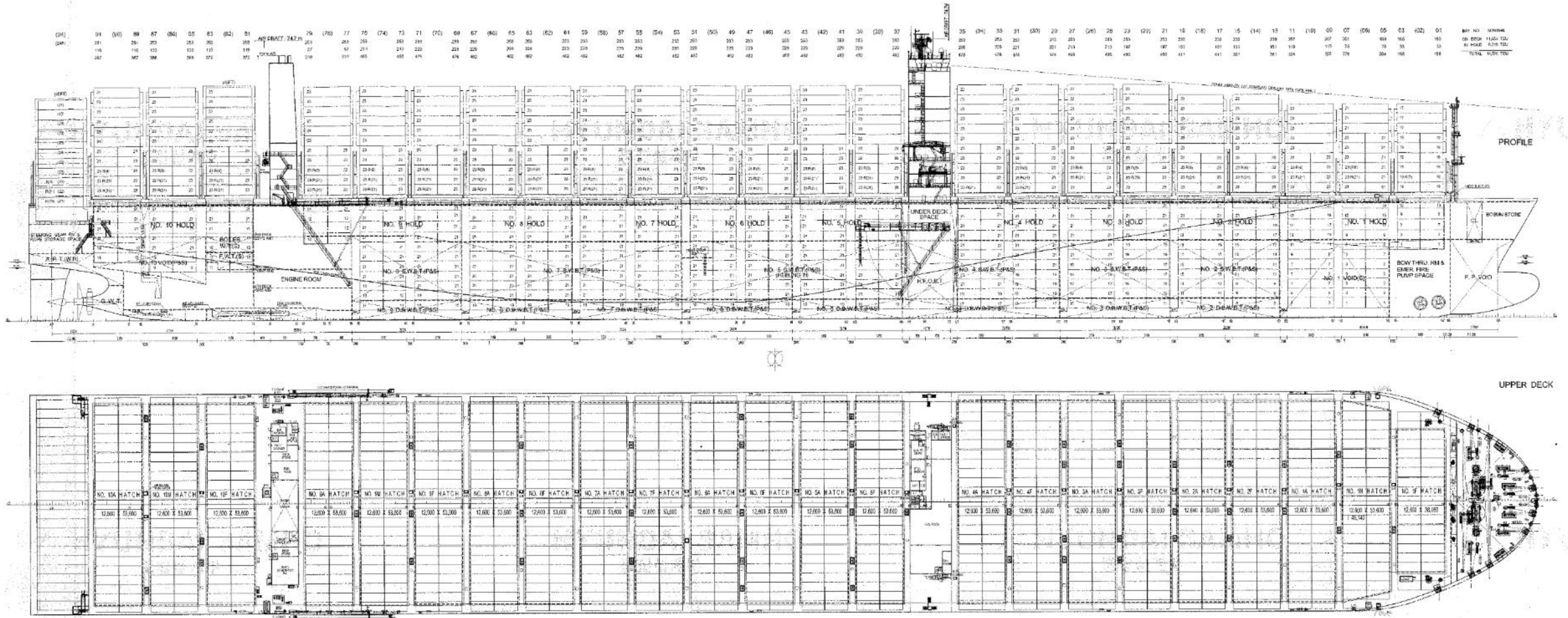
50 YEARS OF CONTAINER SHIP GROWTH

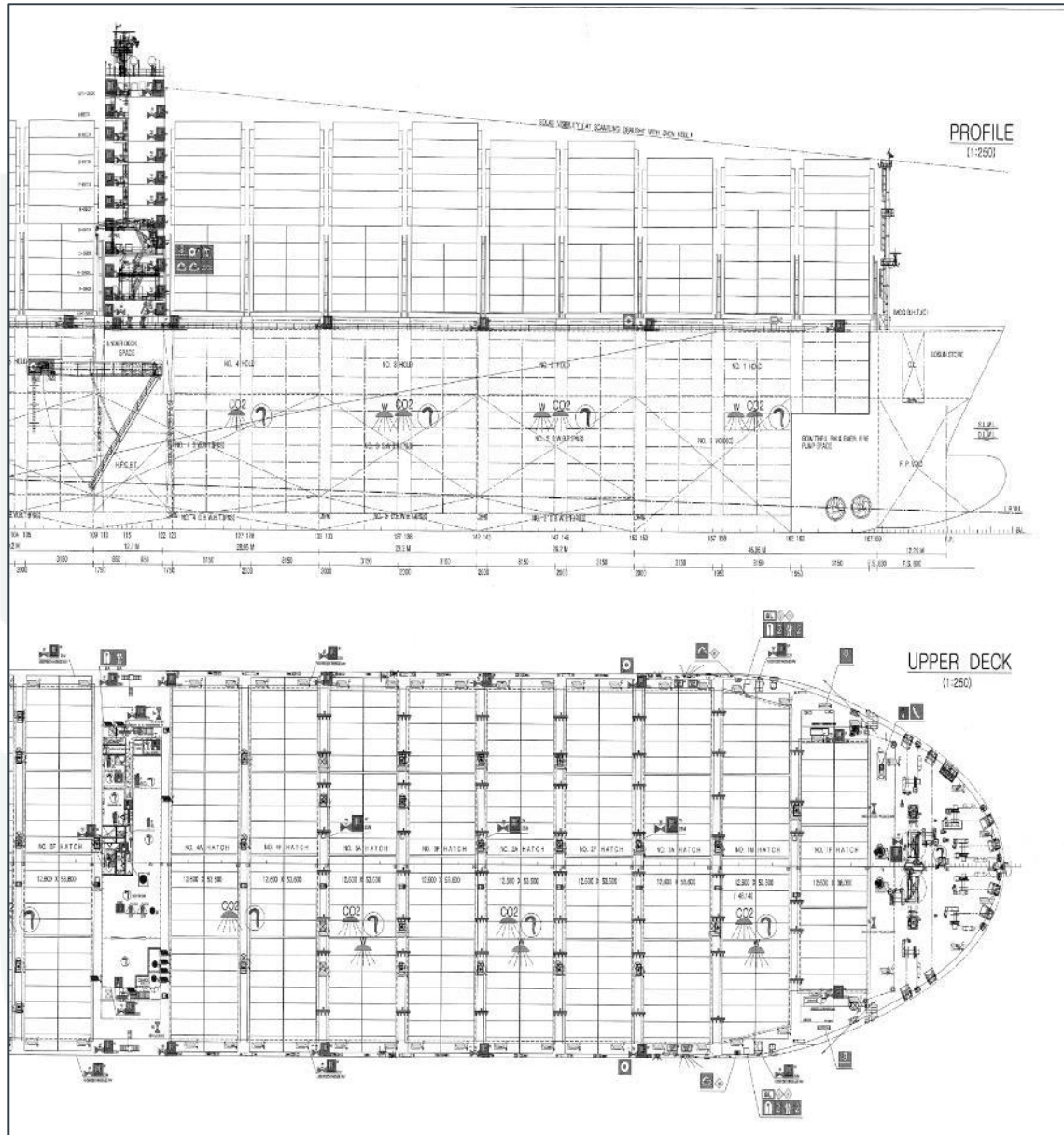


Container-carrying capacity has increased by around **1,500%** since 1968 and has almost doubled over the past decade



<https://www.hellenicshippingnews.com/loss-trends-larger-vessels-bring-bigger-losses/>





Summary



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24,000 TEU Class ULCV

LOA: 399.901 metres
Breadth: 61.55 metres
Moulded Depth: 33.2 metres
TEU: 23,756
Deadweight: 228,149 tonnes

24 TEU across – 11 high below deck – 11 high on deck



<https://maritime.ihs.com/Ships/Details/Index/9839430>



<https://www.dnvgl.com/news/dnv-gl-awards-msc-new-container-ship-fire-safety-notation-168423>



International Convention for the Safety of Life at Sea, 1974 (SOLAS)

- Numerous amendments over the years

International Convention on STCW for Seafarers, 1978 (STCW)

- Major amendment under the Manila Amendments to the Annex to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978

International Maritime Dangerous Goods (IMDG) Code

- Latest Edition 2018 came into force 01 January 2020 and re-issued every two-years

The fire safety objectives of SOLAS are to prevent fires and explosions and reduce risk to life, environment and property, as well as to contain fires in the compartment of origin (SOLAS Part A, Reg. 2, paragraph 1.1).

These objectives are seldom met onboard the container ships of today. There will be no viable solution to address the risk of fire aboard modern container ships without revised IMO regulations.

It is *imperative* that SOLAS, STCW and IMDG are revised to reflect modern container ships and made fit for purpose to ensure the safety of our seafarers and ships in the future.

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Thank You For Listening



Ship fire series: webinar 2

“Containership fires: What can the ship do?”

Q&A



“

Do the panel believe containerships should be fitted with water monitors as opposed to fire hoses to protect ships crews

”

“

How can we further assist ship staff for on-board fire fighting, especially on large container ships

”



Considering the increase in ship size and carriage capacities, are further measures required in terms of fixed firefighting / CO2 extinguishing systems? Once a fire is noticed especially inside the cargo spaces, it could already be too late.



“

Has reduced manning along with increase in vessel size decreased the ability of those on-board to fight fire?

”

“

***How can the on-board response time between (fire/smoke) alarm and action be reduced?
Are infrared distance thermometers being practically used?***

”

“

Recognizing that there is no single fire-fighting medium that serves to extinguish all cargo/fire types, are there any new technologies/solutions that could be considered?

”



In the context of firefighting on board, how impactful are blast proof bridge/accommodation blocks?





What can be learned from those fire related incidents that are successfully managed and controlled on board container ships? How can information be more effectively shared for the greater good?



Ship fire series: webinar 3

“Containership fires: clearing the mess”

Wednesday 17 March | 8:30am London (GMT)

Peregrine Storrs-Fox, Risk Management Director at the TT Club, hosts the second webinar in our ship fire series, discussing incident investigation. He will be joined by:

- Thomas Starr, Senior Claims Director at UK P&I Club
- Penelope Cooke, Managing Scientist at Brookes Bell

