CAPCA Meeting May 23, 2016

Fire Service Activities

Fire Service Activities

Over 25 years in the fire service.

Fire-fighter to the rank of Deputy Chief outside Philadelphia.

A.A.S. Degree in Fire Science Technology.

State fire service instructor.

Local fire prevention officer.

Marine Activities

Licensed Captain – 100 Tons since 1993

100+ trips up and down the East Coast

Erie Canal, Great Lakes, Inland Rivers

Great Loop Circle Route

Inspected and Uninspected Vessels to 110’

Have also performed a wide range of activities for manufacturers, dealers and consumers in the boating industry.

Marine Activities

Participate in various
Sales and Service Activities
In Kent Narrows, Grasonville, Maryland

Marine Activities

American Boat and Yacht Council
PTC Member A-4 Fire Fighting Equipment
8 ABYC Technical Certifications
ABYC Master Technician
Past Instructor – Marine Electricity

ABYC®
Setting Standards for Safer Boating

Marine Activities

Surveyor – SAMS / AMS
Society of Accredited Marine Surveyors

Marine Electrical Surveys

Marine Fire Protection

NFPA 302 Watercraft – Committee Chairman

NFPA 303 Marinas and Boat Yards - Member

NFPA Hazardous Marina Voltage Committee

Marine Industry Regulation

CFRs - US Coast Guard

Major role change during the past decade.

CFRs – **Inspected Vessels**

Actively managing and inspecting (passenger for hire) inspected vessels.

Fire protection requirements managed and updated.

CFRs - US Coast Guard

Major role change during the past decade.

CFRs – **Uninspected Commercial Vessels**

Now establishing additional regulations governing uninspected commercial towing and fishing vessels.

Will include new fire protection requirements.

CFRs - US Coast Guard

Major role change during the past decade.

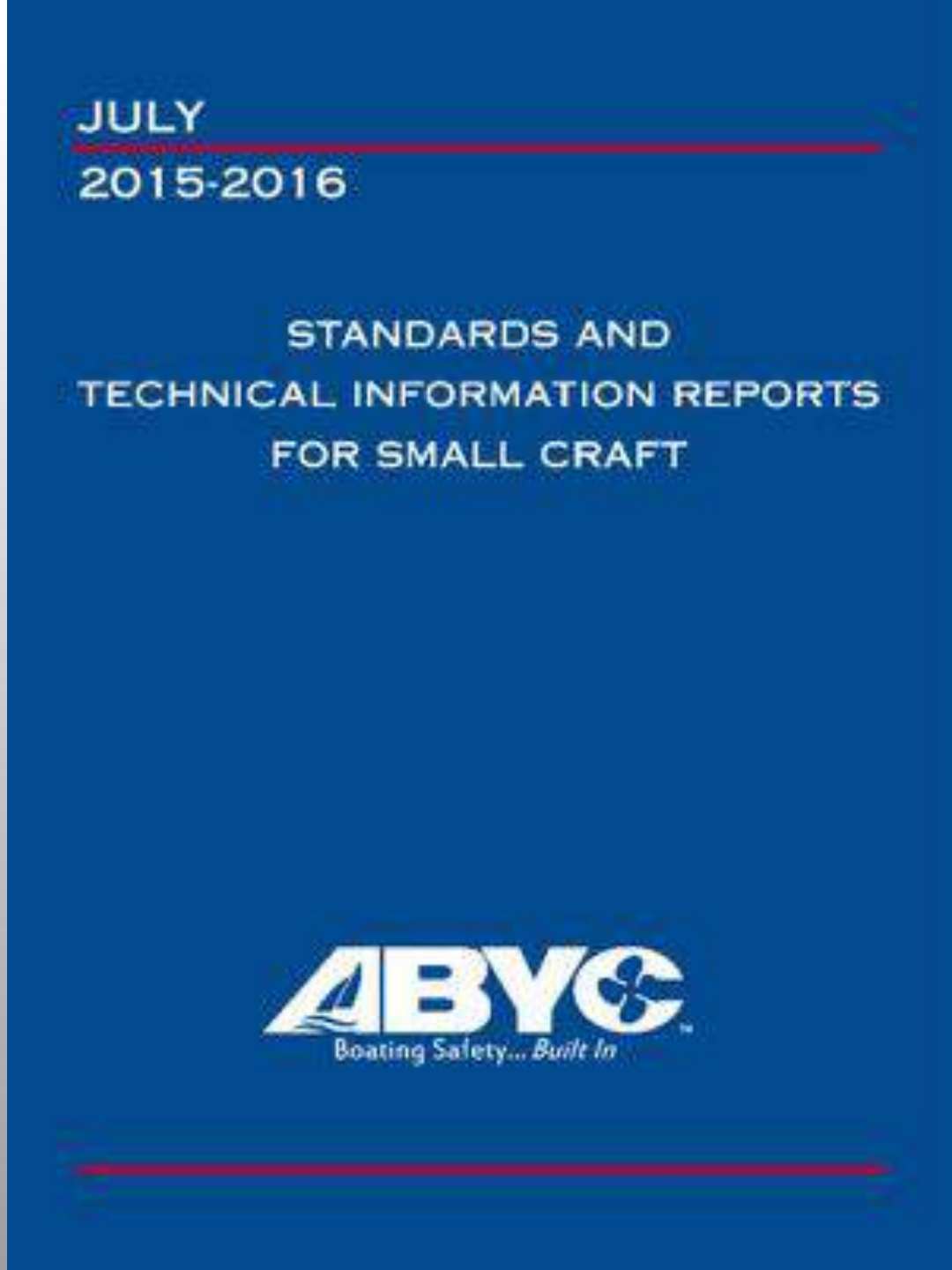
CFRs – **Uninspected (Pleasure) Vessels**

Not actively managed for uninspected (pleasure) vessels.

No fire protection changes or additions in over 20 years.

The ABYC

American Boat and Yacht Council



The ABYC
American Boat and Yacht Council

ABYC A-4

Fire Fighting Equipment

Not updated since 2008 (not 2009)

ABYC A-34

Smoke Alarms

Not Published - No Requirement

National Marine Manufacturers Association

The NMMA

The NMMA Vessel Certification Program using ABYC Standards.

Recognizes over 40 of the ABYC Standards

ABYC Applicable Standards – NMMA Certification

LPG Systems	A-01-06
Galley Stoves	A-3-07
Refrigeration and Air Conditioning Equipment	A-6-99
Liquid and Solid Fueled Boat Heating Systems	A-7-06
Electric Navigation Lights	A-16-05
Sound Signal Appliances	A-23-04 Corrected 7/05
Carbon Monoxide Detection Systems	A-24-07
LPG and CNG Fueled Appliances	A-26-06
Cooking Appliances with integral LPG cylinders	A-30-06
Battery Chargers and Inverters	A-31-05
Storage Batteries	E-10-06
A.C. & D. C. Electrical Systems	**E-11-08**
Field of Vision from the Helm	H-01-06
Ventilation Gasoline	**H-02-08**
Windows, Hatches, Doors, and Port Lights	**H-03-08**
****Cockpit Drainage Systems**	**H-04-08**
Capacity	H-05-04
Buoyancy/Flotation	H-08-04 Corrected 7/06
Electric Bilge Pumps	H-22-05
Gasoline Fuel Systems	H-24-07
Portable Gasoline Fuel Systems	H-25-03
Powering	H-26-06
****Seacocks, Thru-Hulls and Drain Plugs**	**H-27-08**
Inflatable Boats	H-28-04
Canoes and Kayaks	H-29-07
Seat Structures	H-31-07
Ventilation Diesel	**H-32-08**
Diesel Fuel Systems	H-33-05
Pontoon Boats	H-35-05
Mini Jet Boats	H-37-06
****Anchoring, Mooring, and Strong Points**	**H-40-08**
Ladders, Handholds, and Rails	H-41-06
Exhaust Systems	P-01-02
Propeller Shafting Systems	P-06-02
Mechanical Propulsion Control Systems	**P-14-08**
Mechanical Steering Systems	**P-17-08**
Manual Hydraulic Steering Systems	P-21-03
Steering Wheels	**P-22-08**
Jet Boat Steering/Propulsion	P-23-01
Electric/Electronic Propulsion Control Systems	P-24-07
Outboard Engine Weight Table	S-30-05 Corrected 7/06
Safety Signs and Labels	T-05-02

The NMMA

ABYC A-4
Fire Fighting
Equipment Standard

Is not included as part of the
NMMA Vessel Certification Program

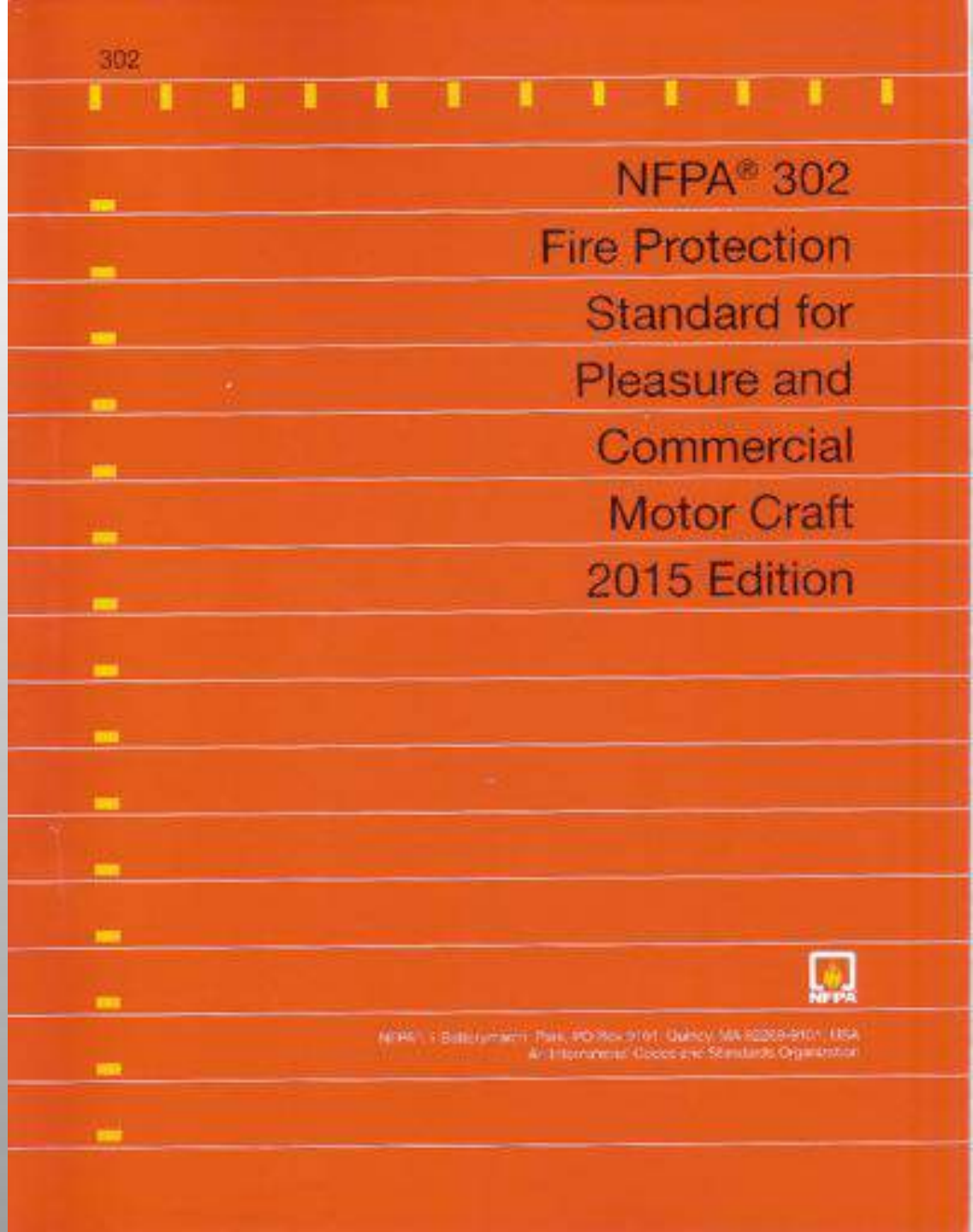
The NFPA - National Fire Protection Association

World Authority on Fire Protection.

A number of standards impact marine.

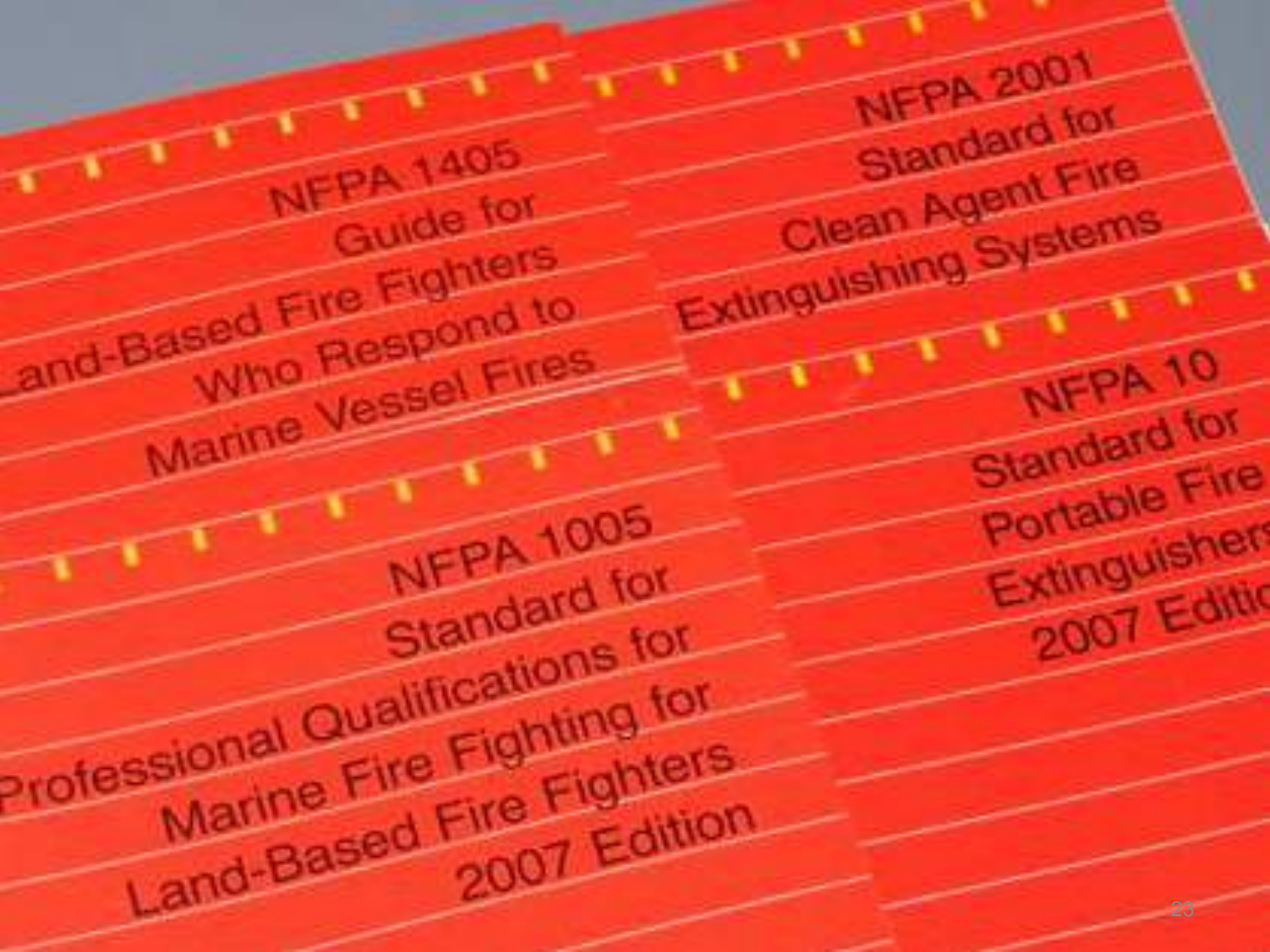
NFPA Standards are widely used by Fire Service/Protection concerns, Educators, Insurance Companies, Governments and marine surveyors.

NFPA 302 Fire Protection Standard for Pleasure and Commercial Watercraft 2015



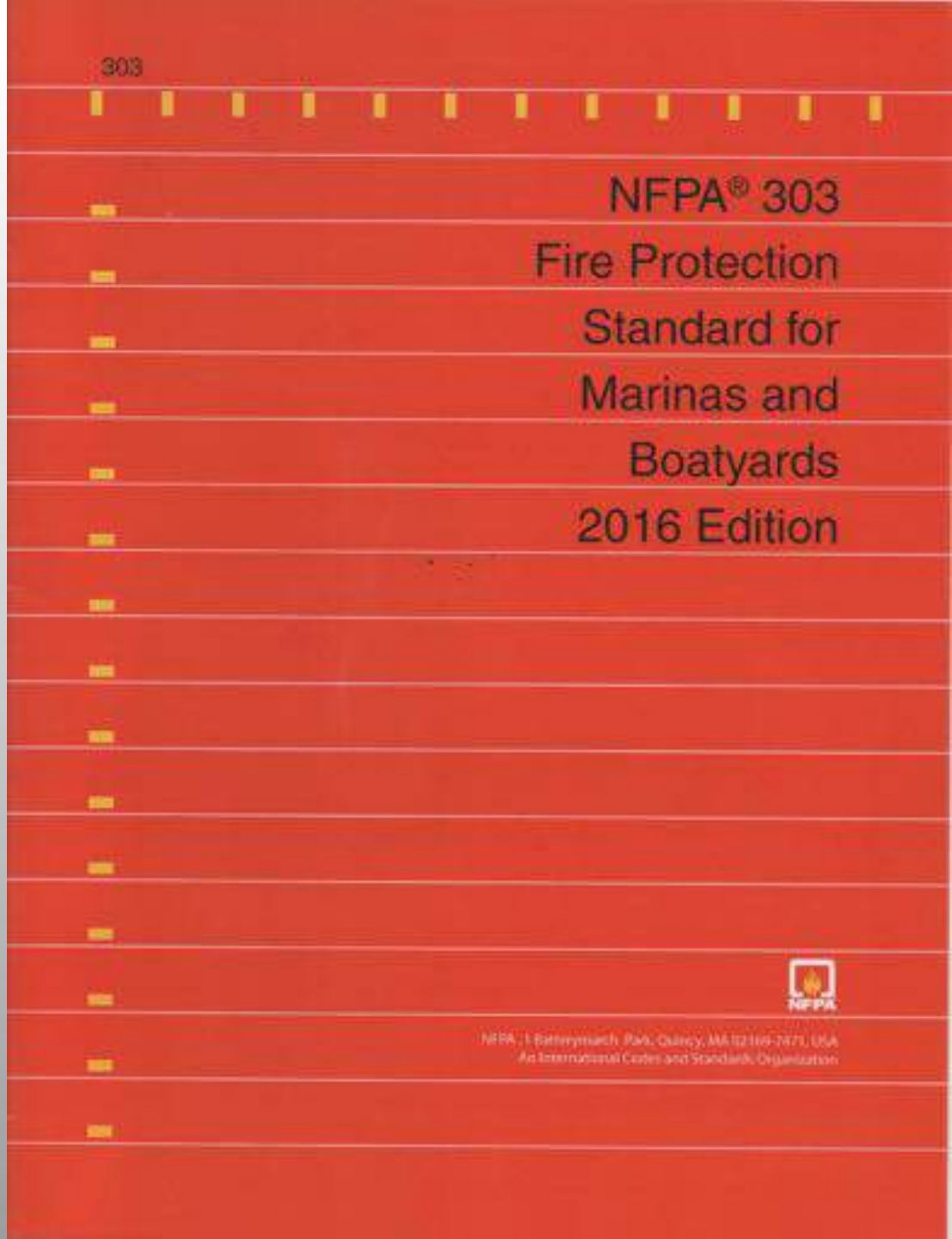

NFPA 302
Fire Protection
Standard for
Pleasure and
mmercial Motor Craft
NFPA® 1925
Standard on
Marine Fire-Fighting
Vessels
2008 Edition
ANSI A119.2
NFPA 1192
Standard on
Recreational
Vehicles
NFPA 303
Fire Protection
Standard for
Marinas and
Boatyard
2006 Editio


NFPA 312
Standard for
ire Protection of Vessels
During Construction,
Repair, and Lay-up
NFPA 306
Standard for the
Control of
Gas Hazards
on Vessels
2001 Edition
NFPA 301
Code for
Safety to Life
from Fire on
Merchant Vessels
NFPA 307
Standard for
the Construction
and Fire Protection
of Marine Terminal
Piers, and Wharv
2000 Edi


NFPA 1405
Guide for
Land-Based Fire Fighters
Who Respond to
Marine Vessel Fires
NFPA 2001
Standard for
Clean Agent Fire
Extinguishing Systems
NFPA 1005
Standard for
Professional Qualifications for
Marine Fire Fighting for
Land-Based Fire Fighters
2007 Edition
NFPA 10
Standard for
Portable Fire
Extinguishers
2007 Editio

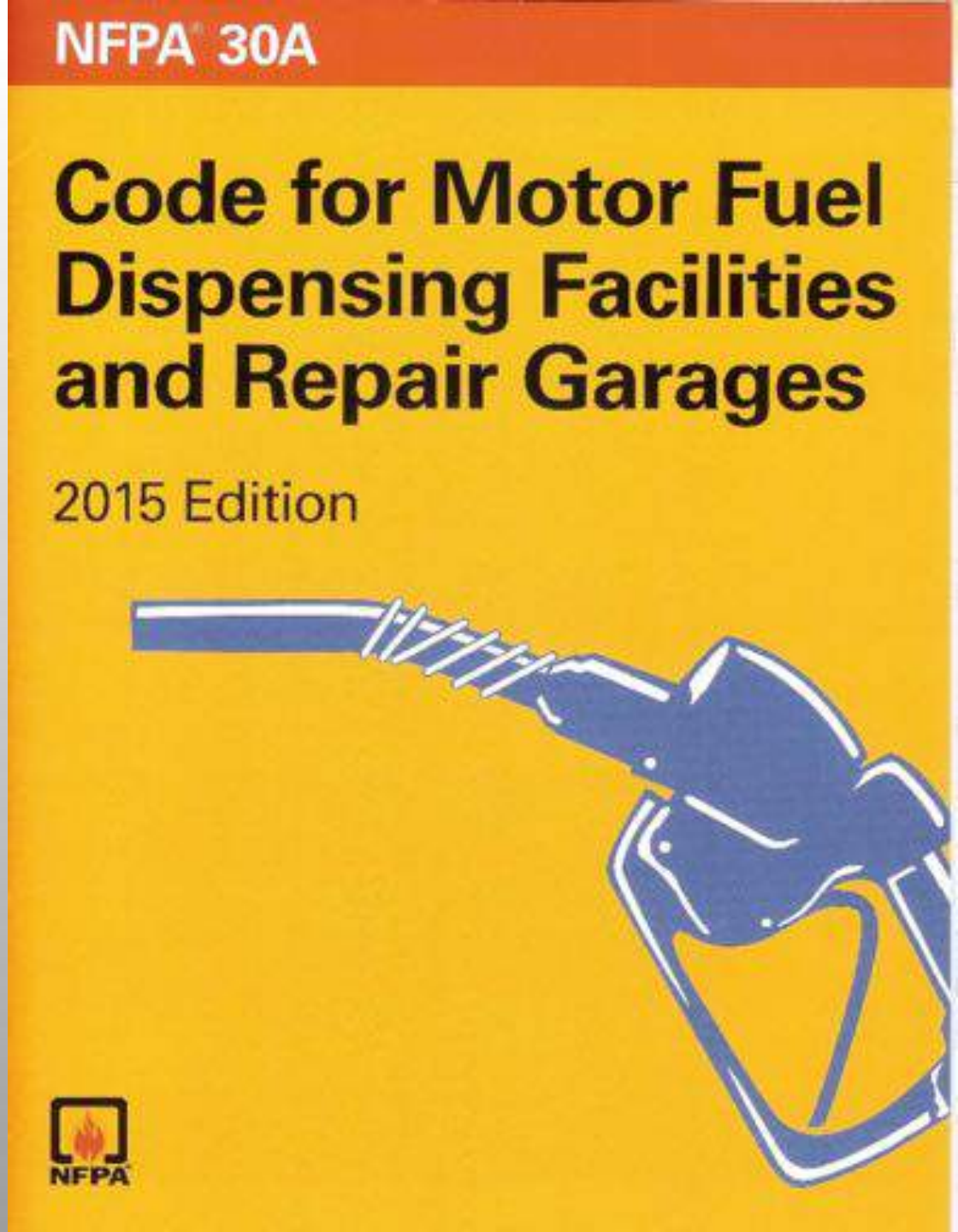
NFPA Rules and Regulations For Marinas and Boatyards

NFPA 303 Marinas and Boatyards



NFPA 30A Fuel Dispensing

Includes Chapter 11 Marine Fueling



NEC – NFPA 70 National Electrical Code

Every state has adopted into law some version of the NEC

NEC – NFPA 70 National Electrical Code

Includes:
Article 514, 553, and 555 all Marina Regulations

Every State has adopted into law a State Fire Code

National Fire Protection Assn

NFPA 1 - The Uniform Fire Code

Or

International Code Council

IFC - International Fire Code

Regulation Summary

Our industry needs to strengthen our approach to self regulation if we want to keep boating safe and affordable.

Fire protection is a good example of where the bar should be raised.


Boating
Fire Loss
Statistics
211

Table 16 • ACCIDENT, VESSEL & CASUALTY NUMBERS BY PRIMARY ACCIDENT TYPE 2015

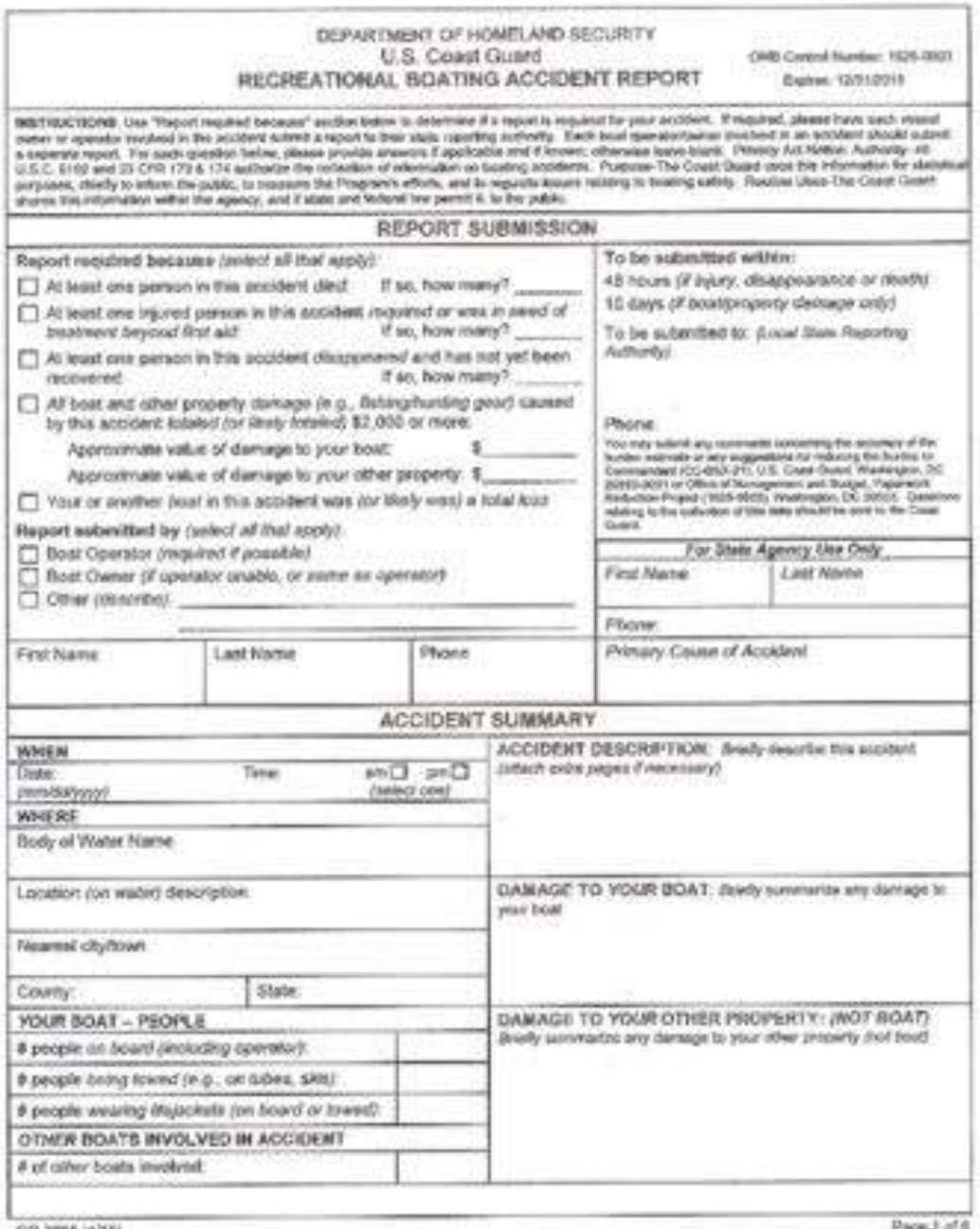
	Accidents	Vessels Involved	Drowning Deaths	Other Deaths	Total Deaths	Total Injuries	Damages
All Accident Types	4158	5560	428	198	626	2613	$41,832,634
Capsizing	299	309	129	41	170	158	$686,316
Carbon monoxide poisoning	12	12	1	7	8	11	$3,500
Collision with fixed object	470	562	32	26	58	321	$4,246,893
Collision with floating object	61	64	5	3	8	28	$548,321
Collision with commercial vessel	29	61	0	3	3	13	$934,500
Collision with governmental vessel	4	8	0	0	0	1	$47,000
Collision with recreational vessel	990	2083	2	34	36	619	$6,121,064
Collision with submerged object	127	131	7	1	8	56	$1,965,274
Departed vessel	86	92	46	10	56	33	$20,615
Ejected from vessel	172	190	14	8	22	143	$338,480
Electrocution	1	1	0	0	0	1	$34,000
Fall in vessel	146	158	3	3	6	154	$65,300
Falls overboard	259	276	125	30	156	107	$78,750
Fire/explosion (fuel)	174	197	0	3	3	135	$3,664,941
Fire/explosion (non-fuel)	67	82	0	0	0	4	$5,807,911
Fire/explosion (unknown origin)	24	30	0	0	0	6	$5,869,925
Flooding/swamping	449	479	45	11	56	118	$8,443,335
Grounding	350	359	11	6	17	281	$4,888,466
Person struck by propeller	42	43	0	2	2	41	$710
Person struck by vessel	36	45	0	3	3	35	$2,800
Sinking	0	0	0	0	0	0	$0
Skier mishap	301	315	7	5	12	319	$5,490
Sudden medical condition	2	2	0	0	0	2	$0
Other	57	61	1	2	3	49	$62,044

There were
265 boat fire incidents
reported in 2015.
There are nearly 12,000,000
registered vessels in the
United States.

Table 16 • ACCIDENT, VESSEL & CASUALTY NUMBERS BY PRIMARY ACCIDENT TYPE 2015

	Accidents	Vessels Involved	Drowning Deaths	Other Deaths	Total Deaths	Total Injuries	Damages
All Accident Types	4158	5560	428	198	626	2613	$41,832,634
Capsizing	299	309	129	41	170	158	$686,316
Carbon monoxide poisoning	12	12	1	7	8	11	$3,500
Collision with fixed object	470	562	32	26	58	321	$4,246,893
Collision with floating object	61	64	5	3	8	28	$548,321
Collision with commercial vessel	29	61	0	3	3	13	$934,500
Collision with governmental vessel	4	8	0	0	0	1	$47,000
Collision with recreational vessel	990	2083	2	34	36	619	$6,121,064
Collision with submerged object	127	131	7	1	8	56	$1,965,274
Departed vessel	86	92	46	10	56	33	$20,615
Ejected from vessel	172	190	14	8	22	143	$338,480
Electrocution	1	1	0	0	0	1	$34,000
Fall in vessel	146	158	3	3	6	154	$65,300
Falls overboard	259	276	125	30	156	107	$78,750
Fire/explosion (fuel)	174	197	0	3	3	135	$3,664,941
Fire/explosion (non-fuel)	67	82	0	0	0	4	$5,807,911
Fire/explosion (unknown origin)	24	30	0	0	0	6	$5,869,925
Flooding/swamping	449	479	45	11	56	118	$8,443,335
Grounding	350	359	11	6	17	281	$4,888,466
Person struck by propeller	42	43	0	2	2	41	$710
Person struck by vessel	36	45	0	3	3	35	$2,800
Sinking	0	0	0	0	0	0	$0
Skier mishap	301	315	7	5	12	319	$5,490
Sudden medical condition	2	2	0	0	0	2	$0
Other	57	61	1	2	3	49	$62,044

USCG Recreational Boating Accident Report



DEPARTMENT OF HOMELAND SECURITY
U.S. Coast Guard
RECREATIONAL BOATING ACCIDENT REPORT

OMB Control Number: 1625-0003
Expires: 12/31/2019

INSTRUCTIONS: Use "Report required because" section below to determine if a report is required for your accident. If required, please have each vessel owner or operator involved in this accident submit a report to their state reporting authority. Each boat operator/person involved in an accident should submit a separate report. For each question below, please provide answers if applicable and if known; otherwise leave blank. Privacy Act Notice: Authority: 46 U.S.C. 6102 and 33 CFR 173 & 174 authorize the collection of information on boating accidents. Purpose: The Coast Guard uses this information for statistical purposes, chiefly to inform the public, to measure the Program's efforts, and to respond to issues relating to boating safety. Routine Uses: The Coast Guard shares this information within the agency, and if state and federal law permit it, to the public.

REPORT SUBMISSION

Report required because *(select all that apply)*:

- ☐ At least one person in this accident died. If so, how many? _____
- ☐ At least one injured person in this accident *required or was in need of treatment beyond first aid*. If so, how many? _____
- ☐ At least one person in this accident *disappeared* and has not yet been recovered. If so, how many? _____
- ☐ *All boat and other property damage (e.g., fishing/hunting gear)* caused by this accident *totaled (or likely totaled)* $2,000 or more:
  - Approximate value of damage to your boat: $_____
  - Approximate value of damage to your other property: $_____
- ☐ Your or another *boat* in this accident was *(or likely was)* a *total loss*

Report submitted by *(select all that apply)*:

- ☐ Boat Operator *(required if possible)*
- ☐ Boat Owner *(if operator unable, or same as operator)*
- ☐ Other *(describe)*: _____

To be submitted within:

48 hours *(if injury, disappearance or death)*
10 days *(if boat/property damage only)*

To be submitted to: *(Local State Reporting Authority)*

Phone:

You may submit any comments concerning the accuracy of the burden estimate or any suggestions for reducing the burden to Commandant (CG-BSX-21), U.S. Coast Guard, Washington, DC 20593-0001 or Office of Management and Budget, Paperwork Reduction Project (1625-0003), Washington, DC 20503. Questions relating to the collection of this data should be sent to the Coast Guard.

For State Agency Use Only

First Name	Last Name

Phone:

Primary Cause of Accident

First Name	Last Name	Phone

ACCIDENT SUMMARY

WHEN

Date: *(mm/dd/yyyy)* Time: a/m☐ p/m☐ *(select one)*

WHERE

Body of Water Name:

Location (on water) description:

Nearest city/town:

County: State:

YOUR BOAT – PEOPLE

# people *on board (including operator)*:	
# people *being towed (e.g., on tubes, skis)*:	
# people *wearing lifejackets (on board or towed)*:	

OTHER BOATS INVOLVED IN ACCIDENT

# of other boats involved:	

ACCIDENT DESCRIPTION: *Briefly describe this accident (attach extra pages if necessary)*

DAMAGE TO YOUR BOAT: *Briefly summarize any damage to your boat*

DAMAGE TO YOUR OTHER PROPERTY: *(NOT BOAT) Briefly summarize any damage to your other property (not boat)*

CG-3865 (4/15)

Page 1 of 6

NFPA Water Transport Vessel Fires

Water Transport Vessel Fires
2007-2011 Annual Averages

Marty Ahrens
Fire Analysis and Research Division
National Fire Protection Association

June 2015

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471
www.nfpa.org

2007 to 2011 Vessel Fires Annual Average

	USCG	NFPA
Boat fires	**237**	**1760**
Dollar Losses	**$17 Million**	**$40 Million**


Actual boating industry
fire losses are…
…far greater than reported by the
US Coast Guard Safety Statistics…

…and the incomplete statistics should not be used as a justification for or against fire safety provisions.

ABYC Smoke Detection Systems for use on Recreational Boats

A Discussion of Significant Issues Involved

By

Miles Beam, P.E.
[redacted]
(for ABYC)

CONTENTS


Boating
Fire
Problems

In my opinion and
absent accurate fire loss data:

There are three types
of marine fire problems
that represent the
largest losses from fire.


First fire type,
Explosive
Vapor Events


Causes are…
…fueling events…


Grand Rivers, KY
Fatality
THERAPY


Fatality
Delray Beach
Fuel Dock


Fatality
Erie Yacht Club
Fuel Dock


…and
unskilled
or careless…


…maintenance
events.


Fatality
Palm Beach
Florida


Second fire type,
open water fires…


…that usually start in
propulsion equipment…


...and
burn undetected
for some time.
OR ISSUES


Over 70% of
open water fires…


...start in the
engine room.
According to the USCG


Third fire type
is a marina fire...


…that starts in a single vessel…


…is not
discovered in a
timely manner…


…and 55% are electrical.
According to Boat U.S.

The Three Types of Fire Losses

- Gasoline vapor events at the fuel dock or during careless maintenance activities.
- Fires underway, usually undetected engine room fires.
- Marina fires that start on a single boat and burn beyond the confines of the boat before the fire can be controlled.


Fire
Protection
Defined

What is Fire Protection?

What is Fire Protection?

Prevention

What is Fire Protection?

Prevention

Egress

What is Fire Protection?

Prevention
Egress
Detection

What is Fire Protection?

Prevention

Egress

Detection

Suppression


Fire Protection:
Prevention

Fire Prevention

Standards organizations (ABYC and NFPA) write adequate standards but most are **only recommendations and are not as effective** in the boating industry.

The **CFRs** for pleasure boats are law but are minimal, **not up to date, and not actively managed** by the Coast Guard.

Fire Prevention

Builders and Service Organizations:

Should increase the emphasis on employee training.

Pay closer attention to the ABYC Standards.

Fire Prevention

Consumers: don't always maintain good house-keeping in the cabin and engine room…

…work on equipment that they are not properly trained to install or maintain.

…and don't follow proper, safe fueling procedures.

Fire Prevention

Consumers: use unattended candles or non marine heaters.

…and don't always pay attention to the condition of propulsion and electrical equipment.

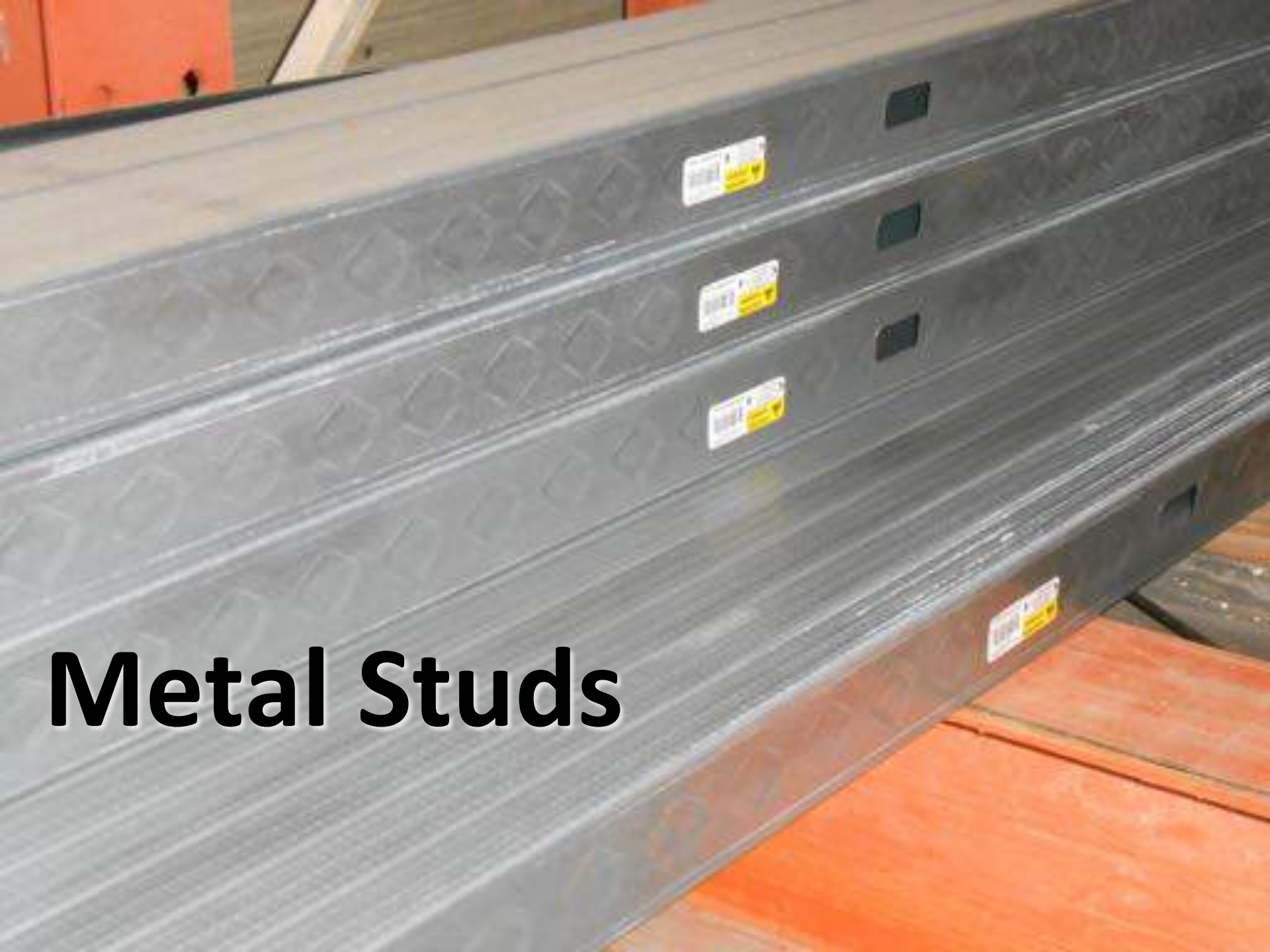
…live a board boats are more frequently involved in a fire.

Non Combustible Furnishings and Construction

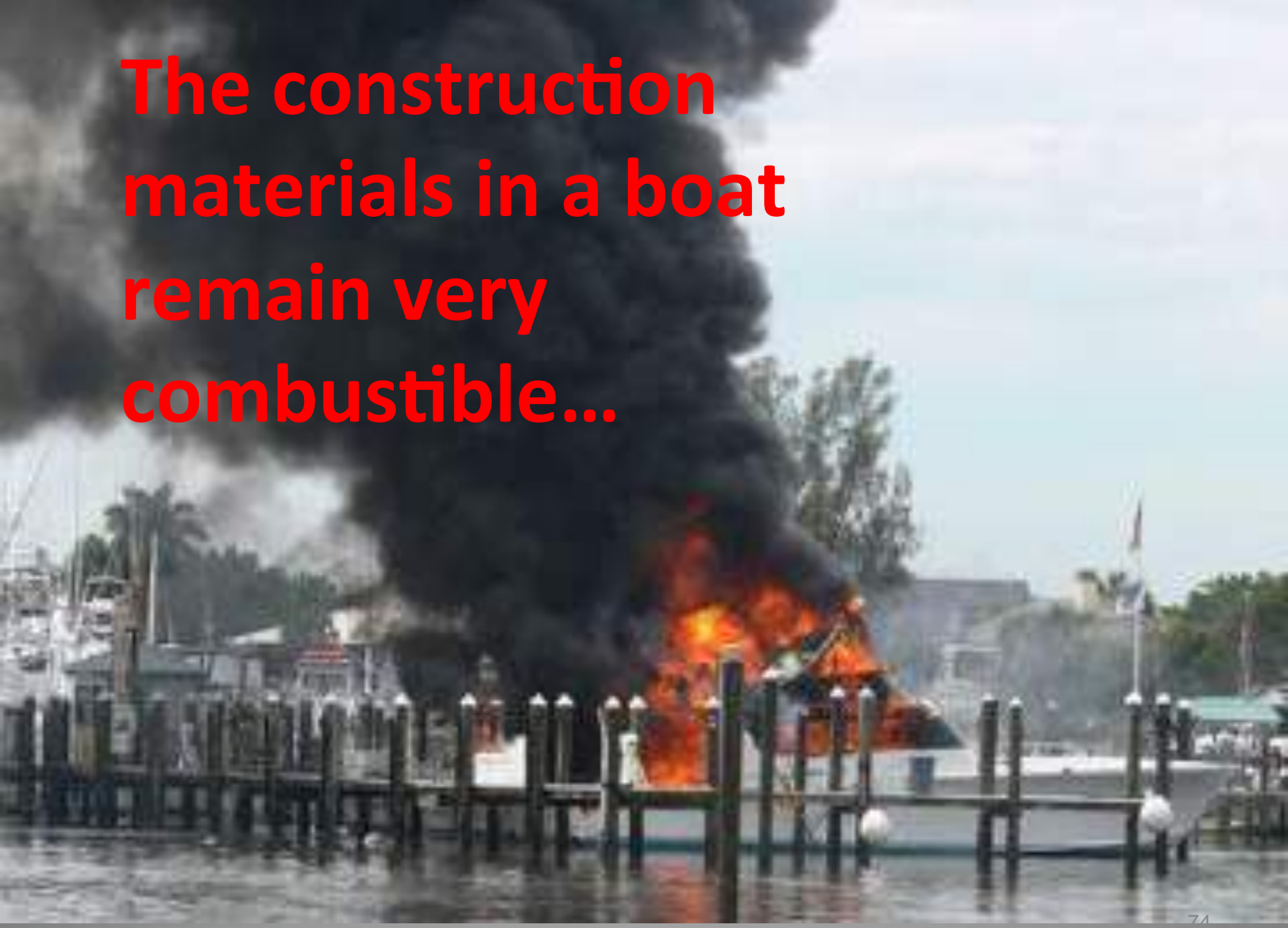
Landside building codes have reduced and restricted the use of combustible furniture and construction materials.

Buildings are classed based on the combustibility of the construction.


Brand
Gypsum Panel
Tapered Edge
FIRECODE® CORE
Type X
15.9mm x 1.22m x 2.44m
Fire
Rated
Drywall



Metal Studs


The construction materials in a boat remain very combustible…


…and we can not
easily reduce
the combustible
nature of a boat.


A boat fire is a
very aggressive fire.


Fire Protection:
Egress

Egress

There are two egress concerns for the occupants of a boat:

Having to leave the boat and enter the water when away from the dock…

and

Exiting from cabin spaces during a fire.

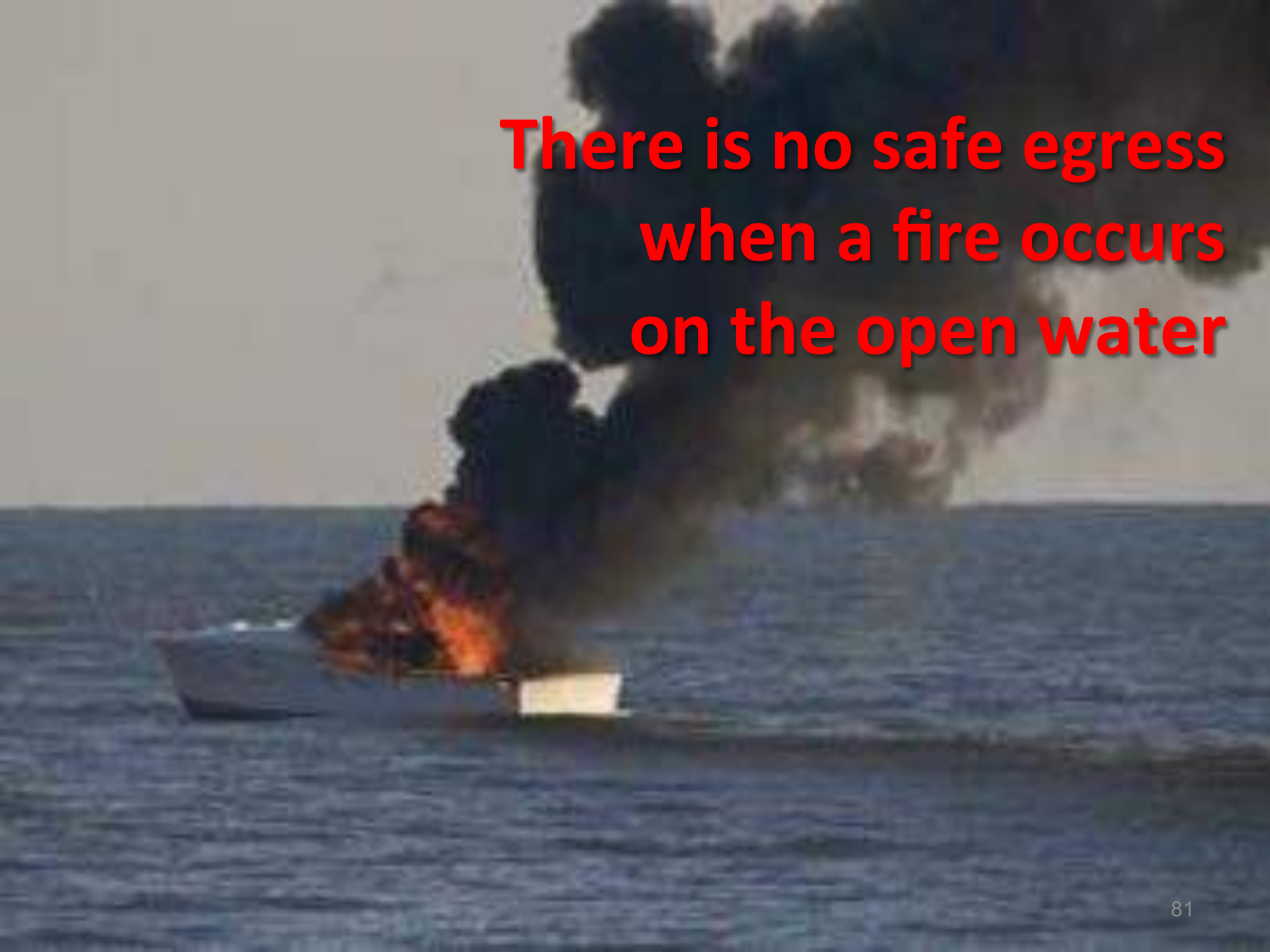
Egress – No where to Run…

Egress

A fire underway…

Many times these fires burn undetected for some time in the engine room or another unoccupied space…

…and escape into the water must take place in a short time after the fire is discovered…


There is no safe egress
when a fire occurs
on the open water

Egress

Another concern is limited or no egress from some staterooms aboard the boat.

Hatches, small portholes, and no second way out create limitations affecting safe egress from a boat.

This hatch meets the ABYC / NFPA egress requirements...

…but it
can not be
reached
with out
something
to
stand on.

Egress

Double Fatal Fire
Bellingham, WA

"…indication of a kayak stored on top of the escape hatch prevented the victim's escape from the vessel…"

$5,000,000 Vessel

$0 Smoke Detection


Fire Protection:
Detection

Detection

The most significant
Fire Protection
development
in the
20th Century

Detection

The most significant
Fire Protection
shortcoming
in the 21st century
marine industry!

According to the NFPA:

Smoke alarms are effective in two ways:

“…by providing a mechanism for setting in motion the early extinguishing of fire by the occupants or others…

…and alerting people to the presence of unwanted fire thus permitting their timely escape…”

Detection

Fire Cause vs. Fire Damage

The greatest ***damages and losses*** from most fires are directly related to the amount of ***time*** that lapses between the ignition and suppression.

Detection is key to reducing this gap.

Detection

Today, **everywhere** you sleep there is a smoke alarm required and provided – except in a pleasure boat!

Smoke alarms are accepted, available, proven, inexpensive and should be standard equipment on boats.

Detection

The RV Industry - **NFPA 1192**

"Smoke Alarms. At least one integral battery-operated smoke alarm shall be installed in each fifth-wheel trailer, travel trailer, truck camper or motor home."

The **RV industry** has required and installed smoke alarms **since 1982!**

Detection

The **NFPA 302** Watercraft Standard

"Smoke Detection. All vessels 26ft or more in length with accommodation spaces intended for sleeping shall be equipped with a single station smoke alarm…"

Detection

The **Coast Guard 46 CFR Part 181.4** for Small Inspected Vessels**.**

"Each overnight accommodation space on a vessel with overnight accommodations for passengers must be fitted with an independent modular smoke detecting and alarm unit in compliance with §181.450."

Detection

ISO 9094 – Small Craft Fire Protection

"A means to alert craft occupants to the outbreak of fire is required for craft with more than one habitable space. Shower and toilet compartments are not to be included as an additional habitable space. The device shall be installed according to the device manufacturer's instructions…"

Detection

The **Coast Guard 46 CFR** uninspected commercial vessels require early warning detection for engine spaces

and crew quarters.

"**Commercial Towing Vessels"** (46 CFR 27)

and

"**Commercial Fishing Vessels"** (46 CFR 28)

Detection – CFR 33

The US Coast Guard rules (CFRs)
for pleasure boats
do not have a
smoke alarm requirement
and likely never will…

Detection - ABYC

The ABYC, the industry's primary standards writer, does not require or recognize smoke alarms.

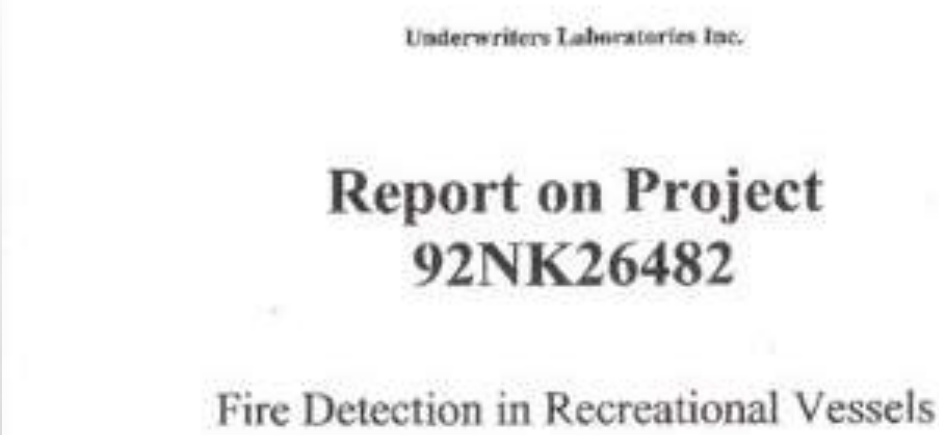
Proposals have not been approved.

An ABYC Technical Information Report may be offered in 2017.

A Missed Opportunity:

Mid-Nineties USCG, ABYC, UL Study

Funded by a USCG Grant



Underwriters Laboratories Inc.

Report on Project 92NK26482

Fire Detection in Recreational Vessels

Detection - A Missed Opportunity

UL Report on Project #92NK26482:

"…the test results seem to indicate that production of special, marine only smoke alarms

may not be necessary."

"…the results showed present (1993) smoke detector technology to be capable of meeting these (marine) requirements.

"…manufacturers may not need to produce special marine use smoke detector models."

Detection - A Missed Opportunity

An industry position was never taken by any of the three organizations – USCG, UL or the ABYC.

An USCG advisory was never offered to the boating industry or the boating public.

A UL Marine Listing for UL217 Smoke Alarms was not developed.

An ABYC Standard or Tech Bulletin was never developed.


Fire Protection:
Suppression

Suppression

Portable Fire Extinguishers

Fixed Fire Extinguishing Equipment

Pre-Engineered Systems

Engineered Systems

CFR - Coast Guard - Requirements are inadequate!

Only two – 2 pound B extinguishers are required for a 65 foot boat with a fixed engine room system.

Portable Fire Extinguishers

A type extinguishers are intended for wood, paper, plastic, cloth, etc. are not required by USCG.

B type extinguishers are intended for flammable and combustible liquids are required by the USCG.

C type extinguishers are intended for electrical fires but are not required by the USCG.

Portable Fire Extinguishers

Coast Guard requires **B** type extinguishers – (for combustible or flammable liquids).

Boat US tells us that 55% of all boat fires are electrical (which require a **C** type extinguisher).

Portable Fire Extinguishers

A type extinguishers – for ordinary combustibles: wood, paper, plastic, cloth, etc.

A - **Not required by the Coast Guard at all**.

A - Is **required in all accommodation space in the NFPA 302** Watercraft Standard

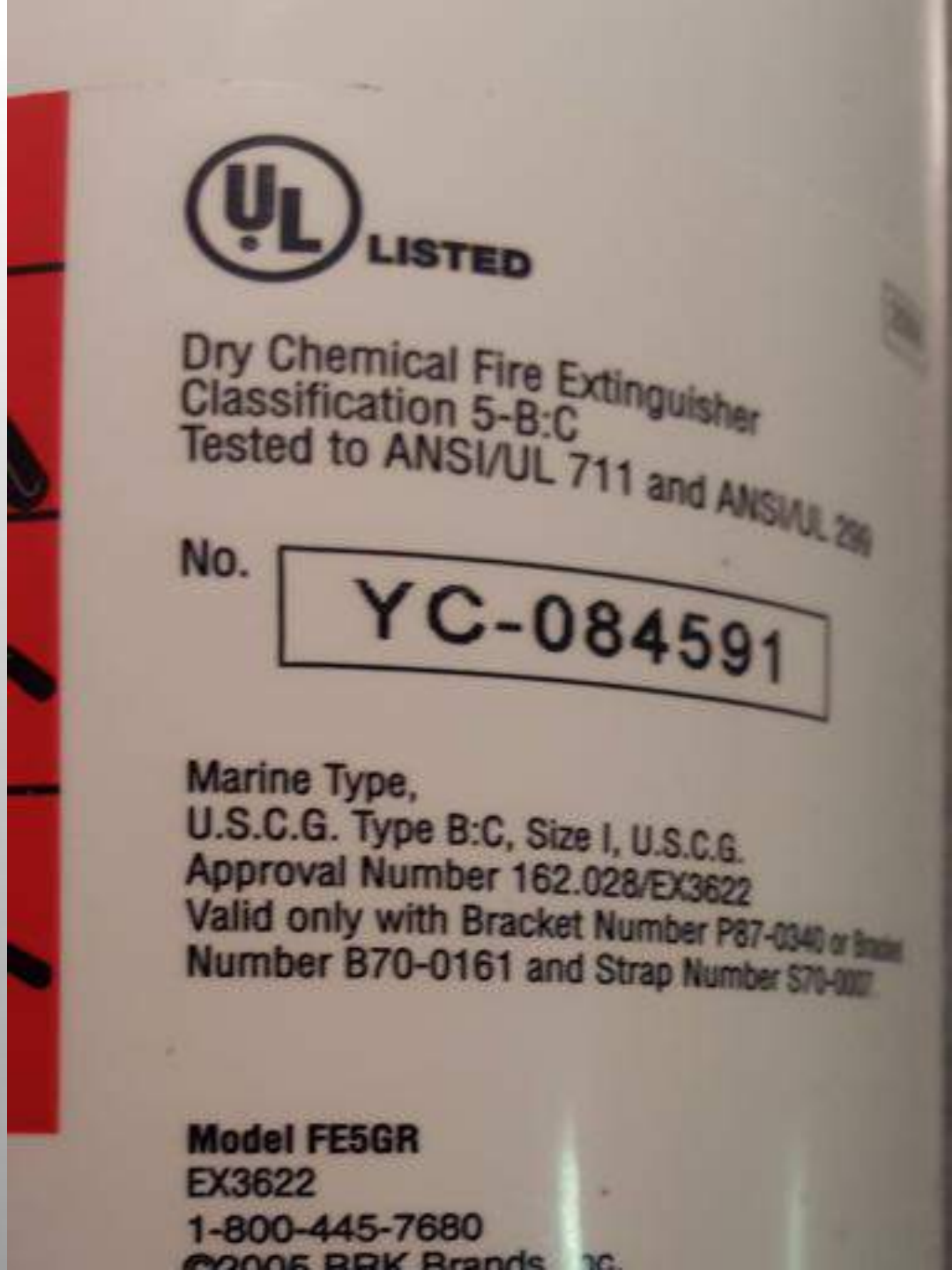
Portable Fire Extinguishers

USCG

vs

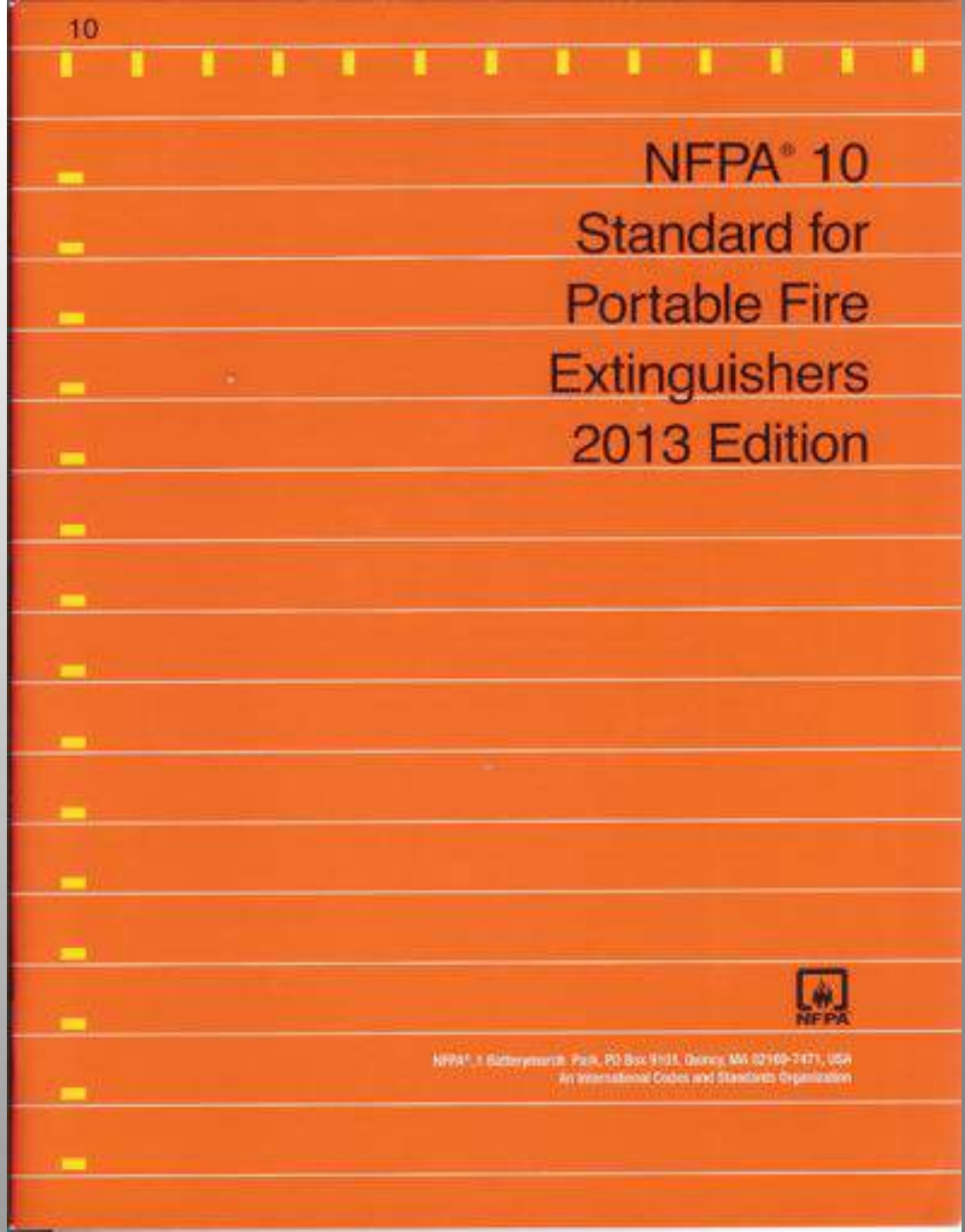
UL and

NFPA 10



NFPA 10 Portable Fire Extinguishers

Next edition 2017



Portable Fire Extinguishers

Rechargeable (Reusable) Fire Extinguisher:
A fire extinguisher capable of undergoing complete maintenance, including internal inspection of the pressure vessel, replacement of all substandard parts and seals, and hydrostatic testing.

Portable Fire Extinguishers

Non-rechargeable (Not reuseable or Non-Serviceable) Fire Extinguisher:
A fire extinguisher that is intended to be used one time and not capable of or intended to be recharged and returned to service. (12 years) Manufacturer date stamped on bottom of cylinder.

Current NFPA 10 **Proposal** for 6 years.

Portable Fire Extinguishers

Extinguisher Inspection: A quick check that a fire extinguisher is in its designated place, that it has not been actuated or tampered with, and that there is no obvious physical damage or condition to prevent its operation.

Performed monthly by the owner or his agent.

Portable Fire Extinguishers

Extinguisher Maintenance: A thorough examination of the fire extinguisher that is intended to give maximum assurance that a fire extinguisher will operate effectively and safely and to determine if physical damage or condition will prevent its operation, if any repair or replacement is necessary, and if hydrostatic testing or internal maintenance is required.

Performed annually by a certified technician.

Portable Fire Extinguishers

Hydrostatic Testing:
Pressure testing of the **rechargeable** fire extinguisher to verify its strength against unwanted rupture.

May be required every 5 to 12 years depending on the extinguishing agent and/or cylinder construction material.

Hydrostatic test date stamped on cylinder.

Portable Fire Extinguishers

Vessels should have an adequate
Type – A B C,
Capacity – size
Number of extinguishers.

Should be readily accessible
and in marked compartments.

Fixed Fire Extinguishers

Fixed Fire Extinguishers

Pre-engineered systems typically consist of:

Single Pressure Cylinder

A single detection point, conventional fire suppressing sprinkler type head.

Halogenated or Clean Agent Suppressant


Fixed Engine Room
Fire Extinguishers…


…don’t always work!


56 Carver – Florida Bay


Captain and mate had to leave
the boat without life jackets

Taken from the civil complaint in another engine room fire…

“…the engines suddenly bogged and smoke began billowing from the engine room. Internal fire suppression systems had failed or were ineffective. Attempts to access the engines were thwarted as the engine room was totally engulfed in flames…”

Fixed Fire Extinguishers

Fixed extinguishing systems

fail to operate due to:

Engine room air turnover rate.

System mounted too close to ventilation.

System mounted too low in the engine room.

System mounted too remote for coverage.

Fixed Fire Extinguishers

NFPA 302 Watercraft

12.1.3.6.2 Fixed fire-extinguishing systems shall be installed as high as practical in the engine space and as far from natural and powered ventilation as possible.

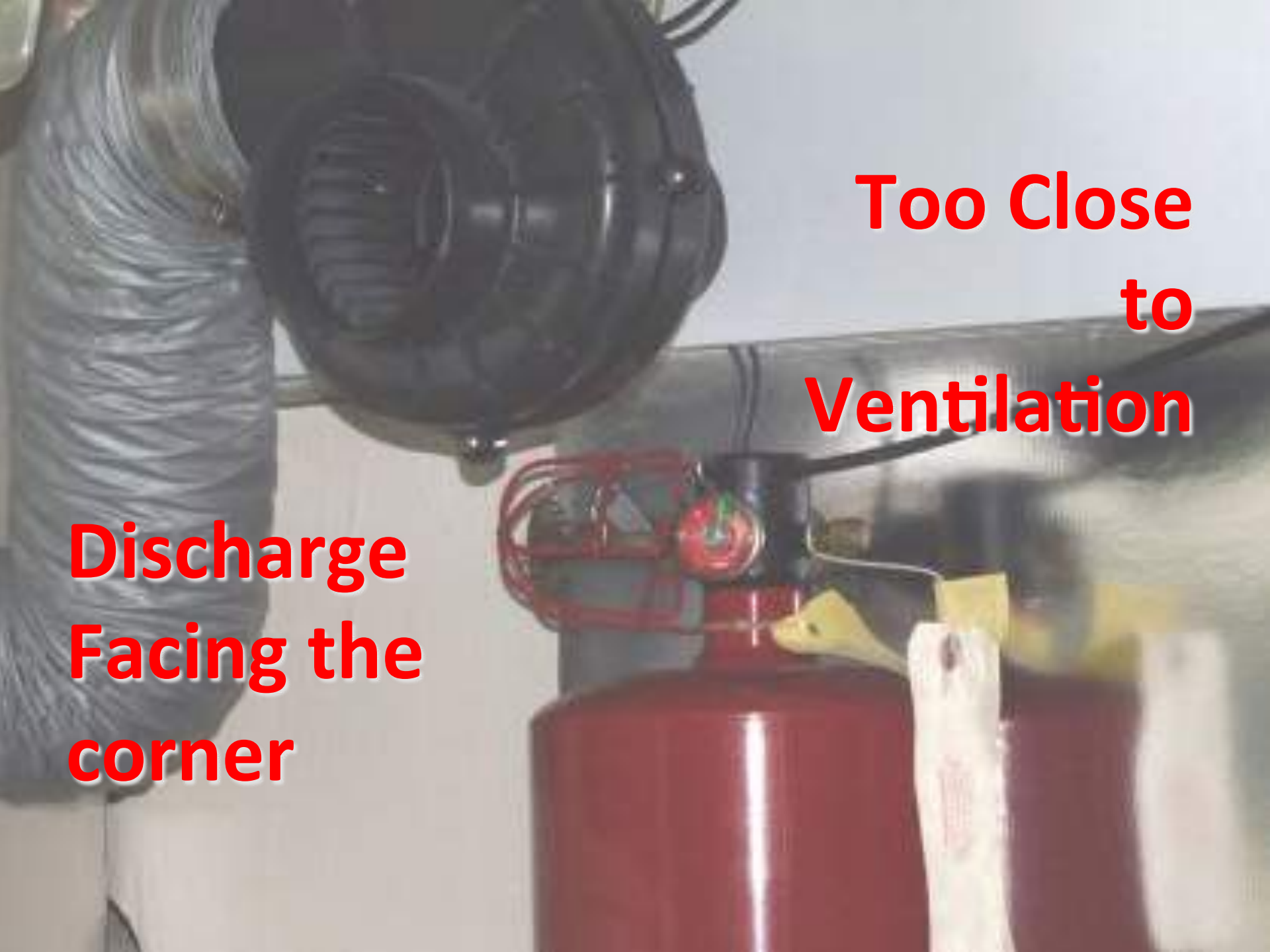

Too close to ventilation…


...both
mechanical
and natural
ventilation.


Too close to
ventilation…


Too close to ventilation…
and installed backwards


Backwards
–
Discharge facing into the corner


Too Close
to
Ventilation
Discharge
Facing the
corner


Too low in the engine room…


Too low…


Too low…
CAT
MARINE POWER

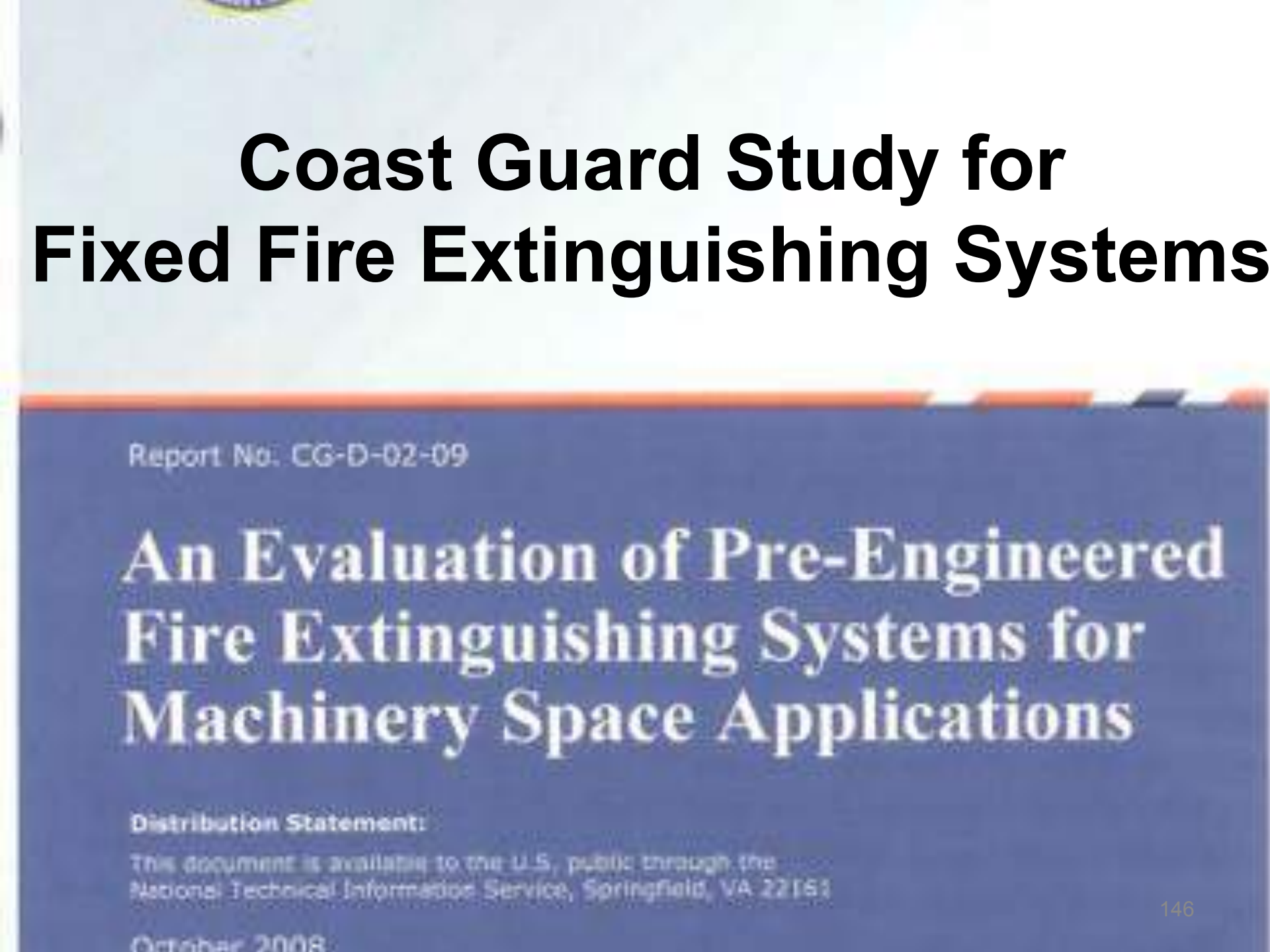

…and way too low!


Too low…
©2012

Too remote for effective coverage

This is a good installation

Coast Guard Study for Fixed Fire Extinguishing Systems



Fixed Extinguisher Questions

Ventilation?

Is the boat equipped with natural ventilation?

Is the boat equipped with mechanical ventilation?

What is the CFM rating of the mechanical ventilation?

Fixed Extinguisher Questions

Horsepower?

CFM and engine room air exchanges?

A 50 foot sport fish with
twin 1360hp engines gets the
same capacity fixed extinguishing system
as a 50 foot trawler with
twin 370hp engines.

Fixed Fire Extinguishers

USCG Proposal - Sec 162.029 - Inspected Vessels

"Systems must be intended for installation in engine compartments where natural ventilation does not exceed one air change per minute.

If mechanical ventilation is provided or if the natural ventilation is expected to be greater, a system tested under the higher air flow conditions must be installed."


What is
Fire
Protection?

Fire Protection Recap

- Fire Prevention

Fire Protection Recap

- Fire Prevention
- Egress

Fire Protection Recap

- Fire Prevention
- Egress
- Detection

Fire Protection Recap

- Fire Prevention
- Egress
- Detection
- Suppression


Questions?

Thank you

Be Safe

John McDevitt
jmcdevittcaptain@aol.com
610-220-5619