



# Marine Field Service Newsletter

National Fire Protection Association  
1 Batterymarch Park, Quincy, MA 02169  
Website: [www.nfpa.org](http://www.nfpa.org), Email: [marine@nfpa.org](mailto:marine@nfpa.org), Tel.: 617-984-7418,

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*Stay up-to-date on NFPA Codes and Standards with our "Doc Info Pages".*

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## Importance of Checking the Pump Room before Entry

Ever wonder why the atmosphere of a cargo pump room should be tested before entry? This near-miss illustrates why.

Recently a NFPA Certificated Marine Chemist was called offshore to perform an inspection and survey of a cargo pump room of a 14 year-old, 887 feet long, 80,000 ton tank ship prior to a U. S. Coast Guard tank vessel examination. The Chemist and the ship's pump man each checked the pump room with their portable atmospheric test meters from the starboard-side upper level before descending. Atmospheric readings were 20.9% oxygen, 0% LEL and 0.0 ppm H<sub>2</sub>S. The starboard ventilation unit was operating as the two entered the pump room.

As the Marine Chemist was inspecting the lower bilge area on the port side of the pump room his instruments began registering flammable gas

Please see *Pump Room Near Miss* on page 2

## New Way to Stay Up on NFPA Codes & Standards – Doc Info Pages

The NFPA has a new way for you to stay up to date on our Codes and Standards. The Document Information (Doc Info) Pages were developed from suggestions by our technical committees and display specific information in an easily accessible location from the NFPA website.

Just follow these easy steps:

1. Open NFPA web-page ([www.nfpa.org](http://www.nfpa.org))
2. Enter the Document Number (for instance 306 for NFPA 306) in the red search box (upper right side of the page) and key "Enter".
3. On the Search Results page for "Document Number" page click the top option
4. You will then be on the Doc Info page for the Document Number you selected.

Please see *Doc-Info Pages* on page 3

### *Pump Room Near Miss from page 1*

readings. Upon further investigation the Chemist determined that the source of the gas was a 55-gallon drum that had a 1-1/2" hose stuck into a hole in the top of the drum. The hose was connected to the vent line from the vacuum plant collecting tank.

Atmospheric reading in the immediate proximity of the drum was 46% LEL. NFPA 306, Standard for the Control of Gas Hazards on Marine Vessels requires flammable gas concentrations to be less than 10% LEL for safe entry. The Chemist and pump man immediately vacated the pump room.

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*"Combustible gas concentration in the lower pump room was 46% of the lower explosive limit (LEL)."*

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The second ventilator for the pump room was started and the pump room was allowed to ventilate for approximately 1 hour. Upon re-testing the Marine Chemist found acceptable atmospheric test results: 20.9% oxygen, 0% LEL, 0ppm CO, 0ppm H<sub>2</sub>S and 0ppm THC or benzene. A two-inch vent line flange on the top of the vacuum plant collection tank was blanked to prevent any additional vapors from entering the pump room.

A Marine Chemist Certificate was prepared for the USCG inspectors and the Marine Chemist accompanied the USCG inspectors into the pump room who conducted their inspection safely without incident.

The vent system for the vacuum plant collection tank was permanently routed out of the pump room to the main deck of the vessel and the vent line was fitted with the proper vapor control/safety device(s) in accordance with USCG regulations.

This incident clearly demonstrates the necessity of checking the pump room's atmosphere prior to and during entry for inspection, maintenance and operation activities.

*NFPA Certificated Marine Chemist Chris Scott, CMC 621, contributed to this article.*

## Fire Hazard in the Ship's Laundry Room



During a routine inspection of dryers in a ship's laundry room a large amount of lint was discovered inside one of the dryers. Further investigation revealed the dryer vent pipe had become disconnected on the inside of the machine as shown in the photograph. Excessive lint accumulation is also noticeable.

Please see *Dryer Fire Safety* on page 4

*Disconnected vent pipe & lint accumulation inside dryer.  
Photo provided by J. Doran, NSC Marine Section WTG.*

## Newest Marine Chemist Certificated

The newest Certificated Marine Chemist was approved by the Marine Chemist Qualification Board at its 16 February 2011 in Gulfport, MS. Jason Taylor was certified as NFPA Marine Chemist Number 714.

Mr. Taylor works in Beaumont, TX with Marine Chemists, Inc. of Texas with Ken Mercer, CMC 577 and Michael Schmitt, CMC 711.



*Marine Chemist Jason Taylor, CMC 714*

*Doc-Info Pages* from page 1

The Doc-Info Pages are divided into three main tabbed sections:

- **Document Information tab** contains information about the current edition of the document as well as historical/archived revision information for past editions.
- **Next Edition tab** contains meeting information (notices, agendas, and minutes), Report on Proposals (ROP) and Report on Comments (ROC), and any additional committee information.
- **Technical Committee tab** contains information such as committee name, committee scope, staff liaison, and the committee application form. The committee-only information on this tab includes a committee list with private contact information along with the committee's current and previous edition documents in PDF format.

You can set up an alert so when a public item is posted on a page, a notification is automatically sent to your email address.

## Coast Guard Safety Alerts on Fixed CO2 Extinguishing Systems

On 21 December 2010 the US Coast Guard issued two safety alerts concerning the failure of a fixed carbon dioxide (CO2) extinguishing system on a relatively new vessel.

A machinery space fire was effectively responded to and extinguished by the ship's crew using portable extinguishing equipment. However before the fire was declared completely extinguished and approximately five hours after the fire started the vessel's master decided to release CO2 from the ship's fixed extinguishing system. The system failed to operate as designed. Subsequently crewmembers were unable to activate it manually and CO2 was never directed into the machinery space.

During its investigation of the fire the Coast Guard discovered several issues that may have

negatively affected the crew's ability to fight the fire and contributed to the CO2 fixed extinguishing system failure.

US Coast Guard's Marine Safety Alerts 10(a)-10, *Wrong Directions a Recipe for Failure*; and 10(b)-10, *Simple Failures Render CO2 System Inoperative*, are attached to this newsletter.

(See pages 5 through 8)

*The NFPA Marine Field Service wishes to thank Mr. Kenneth W. Olsen, US Coast Guard Headquarters Office of Investigations and Analysis, Washington, DC for permission to publish these important safety alerts.*

*Dryer Fire Safety* from page 2

According to NFPA's March 2009 report, "Home Fires Involving Clothes Dryers and Washing Machines" , by John R. Hall, Jr., dryers and washing machines were involved in one out of every 23 home structure fires reported to U.S. fire departments in 2003-2006. The leading cause of home dryer fires is the result of failure to clean them. NFPA has dryer fire safety tips at:

<http://www.nfpa.org/assets/files//PDF/Research/DryerWasherSafetyTips.pdf>

Dryer Fire Safety Tips

- Do not use the dryer without a lint filter.
- Make sure you clean the lint filter before or after each load of laundry. Remove lint that has collected around the drum.
- Rigid or flexible metal venting material should be used to sustain proper air flow and drying time.
- Make sure the air exhaust vent pipe is not restricted
- At least once a year, or more often if you notice that it is taking longer than normal for your clothes to dry, clean lint out of the vent pipe or have a dryer lint removal service do it for you.
- Keep dryers in good working order.
- Follow the manufacturer's operating instructions and don't overload your dryer.
- Dryers should be properly grounded.
- Keep the area around your dryer clear of things that can burn, like boxes, cleaning supplies and clothing, etc.
- Clothes that have come in contact with flammable substances, like gasoline, paint thinner, or similar solvents should be laid outside to dry, then can be washed and dried as usual.

*NFPA Marine Field Service thanks John Doran of the National Safety Council's Marine Section, Waterborne Transport Group for contributions to this article.*

## NFPA Maritime Confined Space Safe Practices Seminar on May 10-12, 2011

The NFPA is holding an open-registration maritime confined space safe practices seminar at NFPA Headquarters, Quincy MA on May 10-12, 2011.

Registration forms are available by contacting the NFPA Marine Field Service at telephone: 617-984-7418 or email: [marine@nfpa.org](mailto:marine@nfpa.org).

Cost of the three-day training program is \$450.00 per person and includes continental breakfast and lunch.

Participants receive 2.0 Continuing Education Units (CEUs).

Space is limited so please reserve your seat today.

### National Fire Protection Association

Marine Field Service  
1 Batterymarch Park  
Quincy, MA 02169 USA

Phone:  
617-984-7418

Fax:  
617-984-7110

E-mail:  
[marine@nfpa.org](mailto:marine@nfpa.org)




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*NFPA's mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education.*

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December 21, 2010  
Washington, DC

Alert 10(a) -10

### WRONG DIRECTIONS: A RECIPE FOR FAILURE

Safety Alert 1 of 2

This safety alert addresses critical concerns uncovered during an ongoing marine casualty investigation and should be of vital interest to Ship Builders, Classification Societies, Owner / Operators and others involved with vessel operations.

A machinery space fire onboard a relatively new vessel was effectively responded to and extinguished by the vessel's quick response team firefighters using portable extinguishing equipment. However, before it was declared completely extinguished and approximately five hours after the fire started, the master of the vessel made the decision to release CO<sub>2</sub> from the vessel's fixed firefighting system. It failed to operate as designed. Subsequently, crewmembers were unable to activate it manually and CO<sub>2</sub> was never directed into the machinery space.

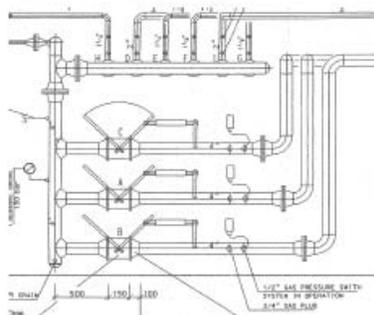
While the casualty investigation remains ongoing, the following issues were discovered that could have negatively affected the crew's emergency response and may have contributed to the CO<sub>2</sub> system failure.

- Shipyard commissioning test procedures appear to differ from procedures documented in the vessel's Firefighting Instruction Manual (FIM). Commissioning procedures indicate that the discharge line selection to a specific protected zone should be made prior to releasing the gas contrary to the directions in the FIM.
- The FIM refers extensively to a Control Panel (left following image) that differs vastly from the one onboard the vessel (right following image).



- The FIM states that the CO2 Release station is on the Starboard side of the vessel when In fact it is located on the Port side.
- The FIM incorrectly uses the word "Pull" when it should read "Turn" in reference to the operations of valves.
- The FIM contains the following confusing language "Once the fire has been extinguished make sure that the temperature has decreased before investigate the area same time is needed to wait hours."
- The FIM references elements of an Emergency Shut Down (E.S.D.) graphic on numerous occasions. However, the graphic display was not found on the vessel.
- The FIM contains photographs of the internals of the CO2 release stations that appear to differ from actual CO2 release stations onboard the vessel.
- The CO2 release stations installed on the vessel have instructional placards that refer to elements of a completely different control panel then the one used onboard the vessel.

- Shipyard piping schematics and drawings do not appear to match the actual installation. The schematic at the right shows the "A valve" for the Aft Machinery Space in the center position vice the bottom position as it is installed on the vessel.



Because of these and other issues, the United States Coast Guard **strongly recommends** that Vessel Builders / Shipyards, Classification Societies, Insurers, Owners / Operators, System Service Personnel, and others involved with these systems:

- Ensure that all supporting documentation, piping schematics, plans, manuals, component labeling and instructions are consistent with each other and relevant to the systems, equipment, and components installed onboard the vessel.

Developed by the U.S. Coast Guard Headquarter's Office of Investigations and Analysis, Washington, DC. Questions may be addressed to [HQS-PF-flDr-G-PCA@uscg.mil](mailto:HQS-PF-flDr-G-PCA@uscg.mil).

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To subscribe: [kenneth.w.olsen@uscg.mil](mailto:kenneth.w.olsen@uscg.mil)



December 21, 2010  
Washington, DC

Alert 10(b)-10

### SIMPLE FAILURES RENDER CO2 SYSTEM INOPERATIVE

Safety Alert 2 of 2

This safety alert addresses concerns discovered during an ongoing marine casualty investigation and may be of interest to Ship Builders, Classification Societies, Owner / Operators and others involved with vessel operations.

A machinery space fire onboard a relatively new vessel was effectively responded to and extinguished by the vessel's quick response team firefighters using portable extinguishing equipment. However, before it was declared completely extinguished and approximately five hours after the fire started, the master of the vessel made the decision to release CO2 from the vessel's fixed firefighting system. It failed to operate as designed. Subsequently, crewmembers were unable to activate it manually and CO2 was never directed into the machinery space.

The following issues pertaining to the CO2 system were discovered.

- Numerous piping and hose connections leaked extensively. When the system was activated, on scene video taken by the firefighters showed numerous leakages into the CO2 room. Post casualty, while pressure was still on the system, some of these leaks continued even after the connections were tightened. (Photograph at right.)
- The zone valve for the aft machinery space which admits CO2 from the bottle bank manifold to the space failed. Specifically, the ball valve's opening actuating arm fell off the valve when the gas powered piston actuator attempted to move it. The ball valve actuating arm was held in place by a very small machine screw and washer. When firefighters attempted to open the valve manually using the provided hardware it could not be moved. The valve was only able to be moved after the gas pressure was relieved from the inlet side of the valve. (Photograph at right.)



- Actuating arms to five of the six other zone valves were found loose. They were also attached by small machine screws. (Photograph at right.)



- Hemp type pipe sealant was used extensively on pipe threads throughout the system and in some instances seems to have entered the system. (Photograph at right.)



- Certain elements of the distribution manifold contained low points which allowed the accumulation of water within piping that could not be drained. Such a circumstance could cause corrosion that could possibly negatively effect operation of other components. (Photographs at right.)



- The CO2 system's pilot and co-pilot bottles did not appear to operate correctly according to the firefighters involved and thus had to be manually activated using the valve handles located on top of the cylinders. Additionally, during the event, the bank bottles were similarly activated due to the uncertainty of their release. At least one pilot bottle activation hose was reported to have leaked.
- The system had been recently serviced and inspected by an authorized service provider.

Because of these and other issues, the United States Coast Guard **strongly recommends** that Vessel Builders / Shipyards, Classification Societies, Insurers, Owners / Operators, System Service Personnel, and others involved with these systems:

- Carefully and critically review, routinely inspect and maintain, verify and test their Fixed Fire Fighting installations to ensure that they will operate correctly during an emergency.

Developed by the U.S. Coast Guard Headquarter's Office of Investigations and Analysis, Washington, DC. Questions may be addressed to [HQS-PF-fldr-G-PCA@uscg.mil](mailto:HQS-PF-fldr-G-PCA@uscg.mil).