



# The Gas Gauge

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P: 409.723.6507

F: 409.718.3838

E: [lgcncoe@uscg.mil](mailto:lgcncoe@uscg.mil)

W: [uscg.mil/LGCNCOE](http://uscg.mil/LGCNCOE)

USCG LIQUEFIED GAS CARRIER NATIONAL CENTER OF EXPERTISE 2901 TURTLE CREEK DRIVE PORT ARTHUR, TEXAS 77642-8056

## Contents:

<i>Training Tips:</i>	2
<i>Examining an Air Lock</i>	
<i>Guidance Gouge</i>	2
<i>NCOE Spotlight</i>	3
<i>Mr. Aziz Bamik, GTT</i>	
<i>Tech Talk: Gas</i>	4
<i>Detection Sensors</i>	
<i>LGC NCOE Service</i>	4
<i>Center: LGCAP</i>	
<i>How Full is YOUR</i>	4
<i>Tank?</i>	

## Events:

- February 27 - March 3**  
Gas Carrier Inspector Course  
Easton, MD
- February 28 - March 2**  
Chemical Transportation Advisory Committee  
Houston, TX
- March 6-31**  
Liquefied Gas Carrier Accelerated Program (LGCAP)  
Port Arthur, TX
- April 7**  
LNG Bunkering Symposium  
Philadelphia, PA
- April 12**  
USCG Liquefied Gas Carrier Exam Training for Class Surveyors  
Houston, TX
- April 18**  
Quarterly Liquefied Gas Webinar  
Houston, TX
- May 1-5**  
Gas Carrier Inspector Course  
Easton, MD
- May 8 - June 2**  
Liquefied Gas Carrier Accelerated Program (LGCAP)  
Port Arthur, TX
- July 18**  
Quarterly Liquefied Gas Webinar  
Houston, TX
- September 19-21**  
LNG as Fuel Workshop  
Houston, TX

## Liquefied Gas Carrier NCOE Semi-Annual Update

The LGC NCOE has undergone much change since our last newsletter and we are excited to introduce to you some of our new members on the staff and new services we now offer. Meanwhile the industry continues to develop and the USCG liquefied gas community continues to adapt to industry's growth.

The unit is now fully staffed as we welcomed in LT Jessica Galarza, LT Ethan Lewallen, Mr. David McCusker and Mr. Scott Mercurio. While all our new members are hired as senior gas carrier inspectors, each have, a unique specialty to offer the LGC NCOE. LT Galarza is our Liquefied Gas Bunkering Subject Matter Expert

(SME), LT Lewallen is our Liquefied Gas Facilities SME, Mr. McCusker is our Training SME, and Mr. Mercurio is our Liquefied Gas as Fuel SME. If you work in any one of their specialties, we encourage you to reach out to them to discuss any projects or regulatory questions. Their direct contact information is available on the LGC NCOE "About Us" page.



In addition to these new members, we have taken on several new services to help train the USCG liquefied gas community and assist the industry with any regulatory challenges. Of note, we have now held two Liquefied Gas Senior Executive Forums, an event where 300 attendees from the government and industry come together to discuss the state of the industry in its many forms from large and small scale liquefied gas projects as well as using liquefied gas as a maritime fuel. Both events were held in cooperation with the Society of International Gas Tanker and Terminal Operators (SIGTTO) and the Society of Gas for Marine Fuel (SGMF). In addition we have initiated an annual Liquefied Gas as a Marine Fuel training for USCG inspectors and began a Liquefied Gas Carrier Accelerated Program (LGCAP) where we host upwards of 6 apprentice marine inspectors for 4 weeks and expose them to an intense classroom and on-the-job-training schedule to ensure a thorough yet expedited qualification process, particularly for ports that need inspectors but don't

have the throughput of vessel arrivals to get sufficient experience. Finally we have just purchased a new liquefied gas carrier and liquefied gas bunkering simulator and look forward to employing it throughout various in-house training programs including LGCAP and take it on the road as exportable training for field units around the country.

From a work force development perspective the LGC NCOE has developed many tools to help marine inspectors inspect liquefied gas operations, and industry representatives prepare for USCG inspections. About a year ago, we kicked off an internal LNG as fuel committee and worked to produce inspection job aids for both vessel and bunkering operations.

After a year of work this group has produced and we have shared through LGC NCOE field notices, a [LNG fueled vessel systems checklist](#), a [shore to ship LNG bunkering checklist](#), and a list of [recommendations for bunkering newly constructed LNG fueled vessels](#). The committee continues to work to develop further LNG as Fuel tools and training needs. In addition, we are extremely proud to have completed the 225 page [Foreign Gas Carrier Examiner Tactics Techniques and Procedures](#), an in-depth but easy to read guide detailing how a foreign gas inspection should be carried out. This and all the documents mentioned above, and more are all now accessible for download on our newly updated website, come check us out!

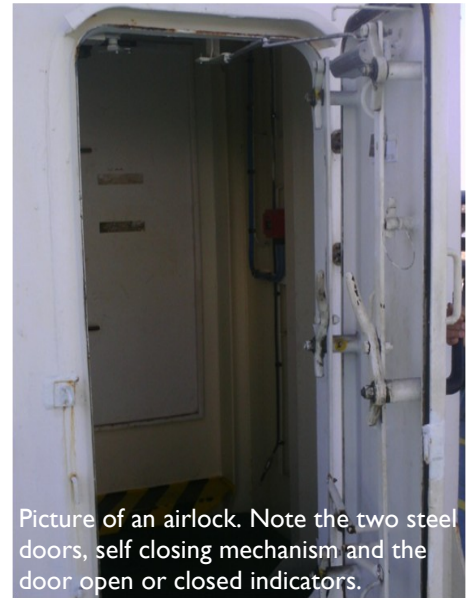
We continue to augment field units that need qualified gas inspectors, provide technical support to both USCG and industry, train the future gas carrier inspectors with our gas carrier course, and engage with industry to remain current on new projects and future challenges. On that note, if anyone would like to schedule a meeting anytime here in Port Arthur or in Houston during our monthly industry day visits; please send us a request through the general [LGC NCOE email address](mailto:lgcncoe@uscg.mil). We look forward to hearing from you.



## Training Tips: Examining an Air Lock

Air locks are required on entrances leading from a gas dangerous zone into a gas safe space in accordance with IGC & GC 3.6. On gas carriers they are most frequently used in the entrance to the Cargo Machinery Motor Room. Airlocks are designed to prevent the loss of overpressure in the cargo machinery motor room or other gas safe spaces when personnel access the space from a gas dangerous zone. Electrical equipment that is not a certified safe type and is in a space protected by an air lock, is de-energized upon loss of

overpressure in the space. Air locks are fitted with gas detection within the space and positive ventilation rated at eight changes per hour. When conducting an examination of an air lock, special consideration should be paid to the following: Make sure air lock doors are self-closing. Verify the proper operation of the audible and visual alarm system indicating that more than one door is not in the closed position. In addition, the examiner must verify that no hold backs on any of the air lock doors are in place.



Picture of an airlock. Note the two steel doors, self closing mechanism and the door open or closed indicators.

## Guidance Gouge

*Significant liquefied gas guidance updates:*

Interest in the subject of LNG for fuel and new construction gas carriers has continued to gain momentum at what seems an expedient rate. As a result, several U.S and international publications, including Coast Guard Policy Letters have been published since the last edition of The Gas Gauge. For convenience, the LGC NCOE has consolidated the following non-inclusive list of recent reference material.

The Office of Operating and Environmental Standards released [CG-OES Policy Letter No. 01-15 & 02-15](#) in February 2015. Both policy letters provide industry and COTPs/OCMIs a well laid out avenue for regulatory compliance and where deemed necessary, provides acceptable alternative suggestions. OES Policy Letter No. 01-15 focuses on LNG fuel transfer operations and training of personnel on LNG fueled vessels, while 02-15 focuses on wa-

terfront facilities conducting LNG transfers.

The Office of Design & Engineering Standards released [CG-ENG Policy Letter No. 02-15](#) in April 2015. This policy letter provides guidance for the design aspects of barges built to carry LNG. The policy letter also provides an avenue for OCMIs to address the gap in existing regulations. Current regulations for barges are covered in Subchapter D. However, these regulations are silent on details for cryogenic suitability. 46 CFR 154 does address cryogenic suitability but is applicable to only to self-propelled vessels. This policy letter identifies certain sections of Part 154 that could be used when determining design suitability for non self-propelled barges.

The 4th Edition of SIGTTO's premier document "Liquefied Gas Handling Principles: On ships and in Terminals" was released in October 2016. This version incorporates extensive updates and a wide range of new material to reflect the many changes and technology advances that have taken places in the gas in-

dustry over the last several years. This new publication serves to ships' officers and terminal staff who are responsible for cargo handling operations. Also released in 2016, SIGTTO's "Use of Support Vessels in the Emergency Response and Protection of Liquefied Gas Carriers and Terminals" which provides emergency response principles for offshore terminals involved in liquefied gas operations. Both are available for purchasing where maritime publications are sold.

International Organization of Standardization (ISO) released the [Technical Specification ISO/TS 18683](#), Guidelines for systems and installations for supply of LNG as fuel. This publication provides guidance for the planning and design elements involved with an LNG bunkering evolution.

The LGC NCOE maintains a library of reference materials available to USCG members. Most of these resources can be checked out and borrowed. Where possible, an electronic copy is available for download from the LGCNCOE website. For further information please contact [LT Ethan Lewallen](#).



## NCOE Community Spotlight: Mr. Aziz Bamik, General Manager, GTT North America

Each edition we spotlight one member of the Coast Guard's Liquefied Gas community that has gone above and beyond to help keep the liquefied gas industry safe, secure, and clean. In this edition we shine the light on Mr. Aziz Bamik, General Manager, GTT North America...

As all Coast Guard Marine Inspectors know, a positive and interactive relationship with industry partners is vital to help promote safe and secure maritime transportation and commerce. Mr. Aziz Bamik, General Manager of GTT North America, has provided unparalleled support of national significance for the Coast Guard as a leading advocate for the safe, clean and viable transportation and use of liquefied gas within the maritime industry. Mr. Bamik's knowledge and expertise has been critical for safe design and operations of novel maritime gas projects, he has trained countless Coast Guard personnel to better understand this new and dynamic cargo and fuel, and has supported the development of regulations, standards, and policies.

As a true industry partner and friend of the Coast Guard, Mr. Bamik's was a critical asset in ensuring the safety of the first U.S. Liquefied Natural Gas (LNG) bunker barge, the CLEAN JACKSONVILLE, always supporting the Coast Guard to identify regulatory equivalencies that upheld or exceeded existing safety standards. He promoted a gold standard with the engineering design, operational planning, and mariner qualification.

Mr. Bamik remained a consistent

supporter of internal Coast Guard training needs, reaching hundreds of Marine Inspectors preparing for pending liquefied gas operations in ports throughout the country. He partnered with the Liquefied Gas Carrier National Center of Expertise (LGC NCOE) to trained over 80 Coast Guard attendees at the LGCNCOE's annual Gas as Fuel Workshops; initiated a day long liquefied gas technical training seminar for 100 Coast Guard engineers, developed a national training webinar on LNG containment systems with over 300 Coast Guard members in attendance; and supported the LGC NCOE's annual Liquefied Gas Senior Executive Forums, presenting to over 100 government officials and 200 industry representatives on various containment systems used in liquefied gas operations and proper boil off gas management.

***“Aziz’ experience and cooperative nature have been pivotal in developing collaborative synergy throughout the liquefied gas community”***

Further showcasing his dedication to the Coast Guard's learning and understanding of LNG Gas Carrier's containment systems, he worked to allow GTT to gift the Coast Guard two full scale models of GTT's Mark III and No. 96 containment systems for future Coast Guard training and wrote a 2 page Coast Guard's Proceedings article titled “LNG Cargo Containment Systems are designed for safety”. In addition, Mr. Bamik has supported his staff's involvement



in the Coast Guard's Chemical Tanker Advisory Committee to create the Coast Guard's first LNG barge design standards, provided personal technical assistance to the Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) in their updates to the LNG facility regulations, and participated in international safety focused industry standards organizations such as the Society of International Gas Tanker and Terminal Operators (SIGTTO), Society for Gas as a Marine Fuel (SGMF), DNV-GL's Fuel Advisory Council, and National Fire Protection Association (NFPA).

Mr. Bamik was recently recognized by Rear Adm. Paul Thomas, Assistant Commandant for Prevention Policy with a Coast Guard Meritorious Public Service Award. “As the liquefied gas industry grows we look to industry leadership to move this growth in the right direction,” Thomas said. “Aziz’ experience and cooperative nature have been pivotal in developing collaborative synergy throughout the liquefied gas community. His actions throughout this time period are more than deserving of one of the Coast Guard's highest public service award.”



# The Gas Gauge

## Tech Talk: Catalytic vs. Infrared Gas Detection Sensors

The two most common gas detectors used on a Liquefied Gas Carrier are infrared and catalytic sensors. But, what's the difference between these two types of detectors?

*Catalytic Detector:* When gas oxidizes it produces heat, and the sensor converts the temperature change via a circuit to a sensor signal that is proportional to the gas concentration. The sensor components consist of a pair of heating coils embedded in a catalyst. The reaction takes place on the surface of the catalyst, with combustible gases reacting exothermically with oxygen in the air to raise its temperature. This results in

a change of resistance and subsequently triggers the gas detector.

*Infrared Detector:* This method is based upon the absorption of infrared radiation at specific wavelengths as it passes through a volume of gas. Typically two infrared light sources and an infrared light detector measures the intensity of two different wavelengths, one at the absorption wavelength and one outside the absorption wavelength. If a gas intervenes between the source and the detector, the level of radiation falling on the detector is reduced and triggers the gas detector.



Catalytic Sensor



Infrared Sensor

## Service Center: Liquefied Gas Accelerated Program (LGCAP)

The LGC NCOE has developed an accelerated foreign gas carrier examiner training program called the LGCAP. This program is designed to bring 6 members to the LGC NCOE for 3-4 weeks to receive specialized, targeted classroom training and OJT. Members will work with National Verifying Officers to gain knowledge and experience on LPG and LNG vessels. They will also have an opportunity to complete the indoctrination portion of the PQS at a liquefied gas facility. The expectation is that most members should be able to complete 100% of their FGCE PQS by the end of the 3rd week. The 4th week will be reserved for those members that have successfully completed their PQS and would like to complete a check ride and certification board before returning to their unit. This will be prearranged with the unit and LGC NCOE. Please visit the LGC NCOE website for more details.

## How Full is YOUR Tank?

This is our chance to test your knowledge of the Liquefied Gas Industry. First person to correctly submit all the questions below will receive a LGC NCOE Challenge Coin! Send your answers to the general [LGC NCOE email address](#) with the subject line "Gas Gauge; How Full is YOUR Tank". After the first person has correctly answered all the question, including references, we will post the winner and the answers on the [LGC NCOE website](#).

Are YOU ready for the challenge?



1. Where are liquefied gas bunkering stations required to be located?
2. How are connections and piping for a bunkering station required to be positioned/arranged?
3. Are there any special considerations required for CNG bunkering stations?