



The Gas Gauge

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Events:

Flag and Classification Society Virtual Workshop March, 2021

Gas Carrier Inspector Course 2021:
 Aug 23 - Aug 27
 Aug 30 - SEP 03

LGCAP 2021:

1st Convening
 Feb 01 - Feb 26

2nd Convening
 Apr 05 - Apr 30

3rd Convening
 Jun 01 - Jun 25

Liquefied Gas Carrier NCOE Annual Update

by Detachment Chief LCDR Eric Hanson



LGC NCOE & Sec Hou/Gal assist CG families following Hurricane Laura's landfall.

It is my pleasure to be reaching out to all of you on behalf of the Liquefied Gas Carrier National Center of Expertise (LGC NCOE) as a member of the same team but in a different capacity in this year's Newsletter. We said goodbye to all of our other active duty personnel this summer who have all helped to continue the forward momentum of service to an ever changing liquefied gas landscape and demand for Coast Guard services. It is also nice to see that all of our LGC NCOE alumni have landed in positions that still serve the gas carrier community in their various new roles in and outside of the Coast Guard. Since our last newsletter we have welcomed almost a whole new team to the unit who have hit the ground running on a rigorous training schedule despite the worldwide pandemic which has effected how all of us have had to navigate over these last several months, so most importantly I hope this finds you all well. It is an exciting time for this industry. As I write this, one of our new inspectors is out at VT Halter Marine who has been contracted by Q-LNG to deliver America's first offshore LNG Articulated Tug and Barge as part of the next chapter underway in the developing LNG supply chain for vessels utilizing natural gas as a fuel in the US.

I am always amazed by not only the safety record of this industry but the industry's pride in maintaining that record throughout the challenges that are presented along the way. This past year the Coast Guard worked hard to update and promulgate the Foreign Gas Carrier TTP mentioned in our "Gas Gouge" section. We have placed an emphasis on gas detection and electrical systems based on a historical analysis of deficiencies found on gas carriers. Most recently we have called that out in USCG Marine Safety Alert 05-20, 02-20, and Sector Houston-Galveston issued MSIB 02-2019 that include these areas of emphasis. I'd like to call owners and operators attention to this and challenge the industry to continue to ensure these systems are in order. The LGC NCOE would love to be able to report both of these areas off the top 5 list in future editions.



Over the last three years I have born witness to the amazing partnerships within this community that have assisted our unit to continue to serve all our customers both



LGC NCOE Annual Update (continued)

inside and outside the Coast Guard. Most recently, Gaztransport & Technigaz (GTT), ABS Group, OCS Group have all aided in training programs for Coast Guard personnel throughout the country. Two of our newest members are alumni of the Coast Guard's Industry Training Programs where organizations such as Cheniere, Cameron LNG, Excelerate, Shell, Harvey Gulf and others have opened their doors to enable Coast Guard personnel to gain an appreciation for the operations they regulate. This has enabled a more informed CG and a cohesive safety partnership which in turn enables a return on investment for the entire industry.



The LGC NCOE continues to remain open to assist field units in need of augmentation and we are not aware of any instances where the Coast Guard has not continued to meet our mandate and facilitate industry demand examination needs despite the most annual examination load recorded in the last 30 years. If your unit or the port you are operating in is having issues, please let me know. Our month long Liquefied Gas Carrier Accelerated Program continues to target and assist CG units in their need to qualify foreign gas carrier examiners but are limited in gas carrier volumes in their own ports. This program only occurs with the assistance from our teammates out of Sector Houston-Galveston and MSU Port Arthur and the dedication of our staff. We completed the 1st phase of our YouTube Lecture Series to complement a blended training system and are working on more integrated and virtual solutions for the program for sessions and use in the future. Our intention is to pick back up our LGCAP sessions in the winter, spring, and summer in the upcoming year to continue to meet demand.

This past December, the Coast Guard was afforded the unique opportunity to collaborate with the Society of International Gas Tanker and Terminal Operators

(SIGTTO) once again during their Annual Pan American Regional Forum which also was expanded to include a Coast Guard Liquefied Gas Shipping and Terminals Forum and was hosted by SIGTTO in cooperation with Lloyd's Register and the LGC NCOE. This event and others have been important endeavors for government and industry stakeholders being able to engage with each other, form relationships, and work on mutual goals. In light of the pandemic, unfortunately we will not be holding this event this year. Although, I'm an old soul and value that face to face connection, the LGC NCOE has continued to engage with industry in this new virtual world and its value is growing on me. If anyone would like to schedule a meeting anytime virtually or otherwise please send us a request through the general LGC NCOE email address.



In this upcoming year our goal is to maintain and improve upon our mandated functions in the liquefied gas carrier community while concentrating on assisting other Coast Guard entities at CGHQ, the CS NCOE, and various OCMI's who have responsibilities for carrying out oversight of various vessel platforms that are operating on natural gas as fuel. Our office is engaged with units like Sector Jacksonville who is at the forefront of these operations to ensure our expertise gained from gas carriers can be brought to assist in furthering policy and workforce development tools for the field.





Guidance Gouge:

It has been two years since the last Guidance Gouge appeared in the Gas Gauge. With the publication of the new Coast Guard’s Foreign Gas Carrier Examiner (FGCE) Tactics, Techniques, and Procedures (TTP), we take the opportunity to inform readers of regulatory resources available to them and updates concerning liquefied natural gas in the maritime industry.

IGC Code 2016 edition came into effect. For detailed differences between the 2016 edition and 93 edition, please check our TTP.

Procedures for Port State Control and SOLAS both came out with 2020 editions. Significant changes include damage stability requirements, fire safety measures, life-saving appliances maintenance, radio communication verbiage, and for passenger ships — improved survivability, emergency information, and damage control drills.

The Society of International Gas Tanker and Terminal Operators (SIGTTO) has released multiple publications since our last update.



“Guidelines for Alleviation of Excessive Surge Pressures on ESD for Liquefied Gas Transfer Systems” provides practical advice on surge hazards and risk management. It also outlines the principal design and operational recommendations for cargo transfer systems.

“Recommendations for Gas Carrier Manifold” provides recommendations on the layout, strength and fittings for gas carrier manifolds. *“Recommendations for Relief Valves on Gas Carriers”* is the third edition of SIGTTO’s guidance on relief valves.

Bureau of Safety and Environmental Enforcement (BSEE) has recently released their Safety Alert No. 395



on *“Electrical Equipment in Hazardous Locations Increase Risk of Fire”*. This outlined the findings of offshore inspectors on improper and poorly maintained electrical equipment in hazardous locations.

Resurfaced into the spotlight—*ISO 21013-1:2008 Cryogenic vessels – Pressure-relief accessories for cryogenic service – Part 1: Reclosable pressure-relief valves* which



specifies the requirements for the design, manufacture and testing of pressure relief valves for cryogenic service, i.e. PRVs onboard LNG carriers.

Internally, we had two safety alerts and two MSIBs published. *USCG MSA 02-20 Subject: Fix Gas Detec-*

tion continues as a trending Gas Carrier deficiency, USCG MSA 05-20 Subject: Electrical Issues Spark Major Concern—Addressing Hazardous Area Electrical Installations Knowledge Gaps, and Sector Houston-Galveston’s MSIB 02-19 Port State Control Common Deficiency Areas on Liquefied Gas Carriers, and MSIB 08-20 outlining discrepancies involving the carriage of chemical and liquefied gas cargoes requiring protection by additives and, or inhibition.

FORCECOM and the LGC NCOE teamed up with several units to include Sector Boston, Sector Houston-Galveston and the Training Support Specialist from the Traveling Inspection staff to update the TTP. The objective was to update the original version of the FGCE TTP to account for the newest gas carrier regulations and policies. Marine inspectors from around the country utilized their collective experiences to update several sections of the previous FGCE TTP which incorporated new references, images, diagrams, and tables and expanded upon systems such as electrical and gas detection which have historically been in the top 5 deficiencies found on gas carriers.

One of the essential purposes of the Coast Guard’s marine safety program is to ensure the safe operation of vessels and the contributors hope that this new FGCE TTP edition can aid the Coast Guard as well as the marine industry to identify and eliminate unsafe conditions and continually improve upon the safety record this industry has established.

The most current FGCE TTP, policy letter, field notices regarding gas carriers can be found on the [LGC NCOE website](#).



NCOE Community Spotlight: Mr. Aaron Harcourt Marine Superintendent of BW Group and BW Fleet Management

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 and secure. In this edition we shine the light on Mr. Aaron Harcourt, Marine Superintendent of BW Group and BW Fleet Management.

One of the Capstone programs run and managed by the LGC NCOE, is the in-house On-The-Job training platform known throughout the Coast Guard Marine Safety community as The Liquefied Gas Carrier Accelerated Training Program (LGCAP). This program was designed to bring onboard six Coast Guard members from around the country for four weeks, where they receive specialized and advanced gas carrier training on both LNG and LPG vessels. Once complete, these members return back to their unit with the knowledge, experience and competency needed to immediately enter the field to conduct foreign gas carrier examinations. However, a program like LGCAP is only successful because of the gas carriers and crews that are made available to the Coast Guard for training during examinations. In comes the true industry partnership, the LGC NCOE has with Mr. Harcourt and BW Group. Mr. Harcourt worked with BW Group to create a training agreement between the LGC NCOE and gas carriers that are visiting Ports throughout the Sector Houston/Galveston zone to include the Ports of Port Arthur, Lake Charles, Houston and Texas City

during LGCAP sessions. During Certificate of Compliance (COC) examinations, Mr. Harcourt has gone out of his way to offer availabilities to provide unique training opportunities for the CG trainees that do not interfere with cargo operations or result in any type of vessel delays. When no COCs are available, Mr. Harcourt provides the LGC NCOE locations of gas carriers that will be in port and available for focused system-based training while they conduct routine cargo operations.

In addition to being a critical component of the LGCAPs success, Mr. Harcourt worked with BW Group to establish a Coast Guard ship rider program agreement, where Coast Guard marine inspectors have the opportunity to sail and train onboard any of their LNG or LPG carrier fleet. This ship rider program not only affords CG trainees the opportunity to work alongside the vessels crewmembers during cargo operations, but it also helps the LGC NCOE achieve critical milestones, like completing the LGC NCOE Job Aid 11-2018 Ship-to-Ship (STS) LNG Bunkering Job Aid and the 2020 re-write of the Foreign Gas Carrier Tactics Techniques and Procedures (FGC TTP).

In 2018, Mr. Harcourt joined BW Group after serving just over 20 years in the US Coast Guard where he retired as a Chief, Marine Science Technician. As the Marine Superintendent, his professional role with BW is to support all vessels throughout the US and the Caribbean on day to day maritime functions in close coop-



“His dedication to fostering positive relationships between the Coast Guard and BW Group has played a key role in the success of the LGC NCOE and the safe transfer of liquefied gas throughout the US.”

**– LCDR Eric Hanson,
Detachment Chief LGC
NCOE**

eration with the both BW Group's Marine and Commercial teams in Oslo and Singapore. As a prior Coast Guard marine inspector, he plays a critical role for BW assisting in all USCG COC examinations as well as other external inspections and audits.



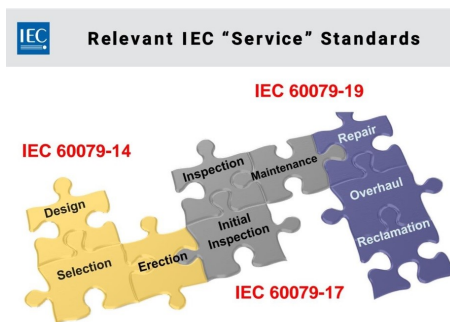
Training Tips: Hazardous Area Electrical Installation Maintenance and Documentation

Today's training tip focuses on the requirements surrounding vessel's hazardous area electrical installation and maintenance. In the 1993 IGC Code 10.1.2, it directs electrical requirement to follow IEC 60092-502 Electrical Installation in Ships—Tankers. And within the IEC 60092-502, it directs you again to:

1. IEC 60092-502 /7.1.1: compliance with 60079-14 Installation
2. IEC 60092-502 /9.1: compliance with 60079-17 Maintenance and Inspection
3. IEC 60092-502 /9.4.2: compliance with 60079-19 Maintenance and Repair
4. IEC 60092-502 /4.1.1.2 hazardous areas defined under IEC 60079-10

Hazardous Area Drawing: 60079-10 /6.2 requires area classification documents should include plans and evaluations, as appropriate, which show both the type and extent of zones, ignition temperature, temperature class and gas group. The hazardous area classification drawing is important because it provides hazardous area layout of the hazard area zones.

Training: IEC 60092-502/9.5.1 specifies that inspection and maintenance of installations shall be carried out only by experienced personnel whose training has included instruction on the various types of protection of apparatus and installation practices to be found on the vessel. IEC 60079-14 echoes the requirement, and in IEC 60079-17/4.2 it states that the evidence of the relevant experience and training claimed shall be available. This clause requires that



training documents for electricians carrying out maintenance on all equipment in hazardous area be made available for inspection. Therefore in addition to regular STCW requirements, any crew member that will conduct maintenance/repair on electrical installation in hazardous areas shall have their training documentation and evidence of refresher training made available for inspection.

Inspection: IEC 60079-17/ regulation 4 also requires the vessel to keep copies of initial and periodic inspection records. Periodic inspection intervals shall not exceed three years. Evidence of electrical installation maintenance records shall also be made available during an inspection.

Dossier: IEC 60079-14/4.2 requires a verification dossier to be prepared for every installation. This is the most important document for those involved with management of hazardous area electrical installations.

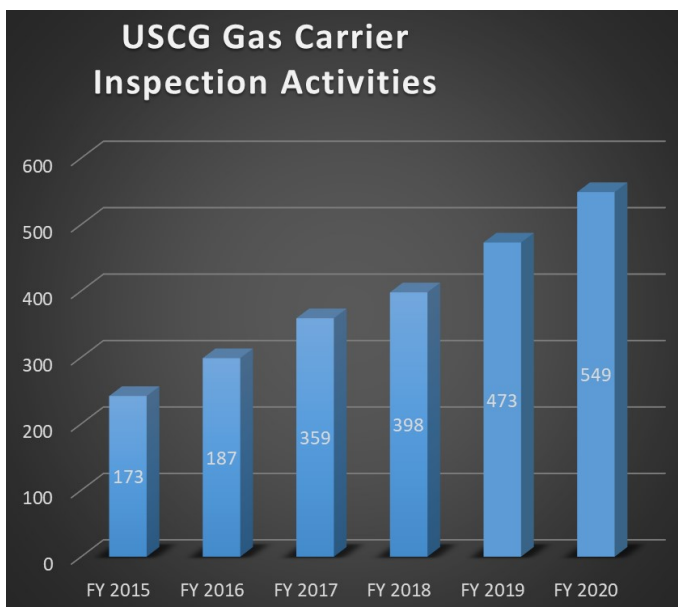
Safety Alerts: Both the USCG and BSEE have issued a Safety Alerts this year echoing same concerns with hazardous area electrical installations.

[USCG Safety Alert: 05-20](#)

[BSEE Safety Alert No: 395](#)

Lastly, the Top 5 common deficiencies are consistent with years past. MSIB 02-19 Sector Houston-Galveston Port State Control Common Deficiency Areas on Liquefied Gas Carriers

1. Deck Water Spray System
2. Fixed Gas Detection
3. Electrical Equipment in Hazardous Areas
4. Cargo Tank Safety Relief Valves
5. Significant Errors on Certificates of Fitness (COF)



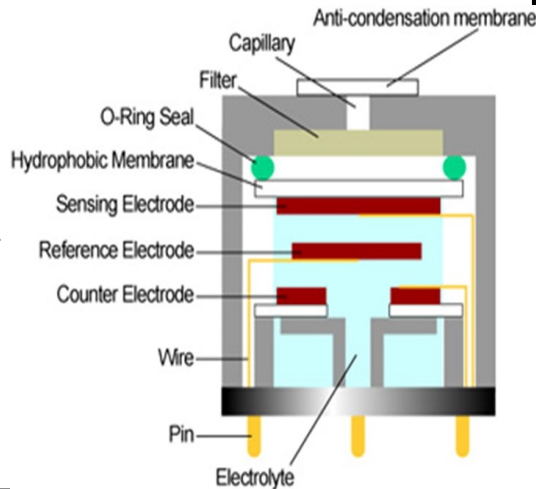


Tech Talk: Electrochemical Sensor

In previous newsletter Tech Talks, we talked about infrared and catalytic gas sensors that are commonly found in a liquefied gas carrier's fixed gas detection system. However, there is one additional type of gas sensor that can be found on gas carriers, the Electrochemical sensor.

gas reaches the sensing electrode, an electrochemical reaction occurs. This reaction is either an oxidation or a reduction, depending on the type of gas the sensor is designed to test for. The electrochemical reaction creates an electric current proportional to the concentration of gas within the sensor. It then scales the electrical output accordingly with the calibration to give a reading in PPM (parts per million) to give a percentage of the volume of gas.

Although they are designed for multiple purposes, electrochemical gas sensors are commonly the gas sensor of choice on liquefied gas carriers carrying toxic cargoes, like anhydrous ammonia. To put things simply, this sensor works by a type of chemical reaction called gas diffusion. The gas sample finds its way into the sensor through the membrane on top of the sensor housing. Once the



Service Center: Liquefied Gas Carrier Accelerated Program.

The Liquefied Gas Carrier National Center of Expertise has hosted the [Liquefied Gas Carrier Accelerated Program \(LGCAP\)](#) since 2016. LGCAP is designed to bring 4-6 members at a time to the LGC NCOE for 3-4 weeks to receive specialized, targeted classroom training but, more importantly, OJT. Members work with National Verifying Officers to gain knowledge and experience on both LPG and LNG vessels. They also have an opportunity to complete the industry indoctrination portion of the PQS at a liquefied gas facility. The expectation for members coming in with experience is that most members should be able to complete 100% of their FGCE PQS by the end of the 3rd week. The 4th week is reserved for those members that have completed their PQS and would like to complete a check ride and certification board before returning to their unit.

For those who don't have the opportunity to attend LGCAP, or for those who would like to refresh their knowledge, we have [LGC TV](#). Here we provide you a front row seat in our virtual classroom as one of our instructors walks you through gas carrier inspection requirements as found in our [TTP](#).

How Full is YOUR Tank?

This is our chance to test your knowledge of the Liquefied Gas Industry. First person to correctly answer the following questions will receive a LGC NCOE recognition certificate! 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. Is the electrical equipment in the picture acceptable for application in a gas-dangerous zone 2?

2. Does the marking plate denote the equipment is intrinsically safe?

Bonus question: For ships built after Jan 1st 2007, does IGC Code 10.1.4 apply? If so, which amendments have been made to this regulation for vessels constructed after Jan 1st 2007?

