

Questions from the LNG Forum

1. Will the working group reference other transportation methods for guidance? For example, rules for LNG trucks which have been operating for an extended period of time?

The Coast Guard is using a number of resources to help establish national policies for using LNG as fuel. Although, we are primarily focused on guidance related to marine vessels and facilities published or being developed through IMO and ISO, we recognize the value and have reviewed other standards and guides such as those provided for LNG trucks and rail cars.

2. WRT, the Waterway Suitability Assessment - exclusion areas in urban marine environment as it pertains to vessel to vessel bunkering?

WSAs are only associated with regulations for waterfront facilities handling LNG. Tank vessels intending to transfer LNG from vessel to vessel at a port location are not required to conduct a WSA. However, the Coast Guard encourages owners and operators of vessels intending to conduct LNG bunkering operations to work with the Captain of the Port and other stakeholders to conduct some form of risk and safety assessment for their specific operation. This appears to be a common element associated with successful operation of LNG fueled vessels in Norway. Such an assessment could be used, in part, to help the Coast Guard determine what size exclusion zone (safety/security zone) (if any) may be required based on the specific particulars of the vessels involved. The Coast Guard is also looking into the possibility of having an LNG study done, similar to the 2004 and 2008 studies that Sandia did, which will help determine the potential impacts from spills and resulting fires associated with different types of bunkering operations.

3. What should industry anticipate the exclusionary zone requirements will be driving bunkering? This issue has significant implications on the operational viability of LNG in our port.

The Coast Guard encourages owners and operators of vessels intending to conduct LNG bunkering operations to conduct a risk and safety assessment for their intended operation. Such an assessment, if done, could be used to help the Coast Guard determine what size exclusion zone (safety/security zone) (if any) may be required for a particular operation. The Coast Guard is also looking into the possibility of having an LNG study done, similar to the 2004 and 2008 studies that Sandia did, which will help determine the potential impacts from spills and resulting fires associated with different types of bunkering operations.

4. Various differences between IACS members (DNV & ABS)?, specifically, how this is relates to LNG tank storage location.

Regardless of Class Rules, a vessel looking for US flag should be guided by Policy Letter 01-12 as a starting point. Tank storage location not covered by the policy (i.e. below accommodation spaces) is subject to Coast Guard Headquarters review. Such location may be accepted based on results of risk assessment but may require additional safety measures tailored to the specific vessel design.

5. What is the USCG's view on LNG bunkering operations with passengers onboard/boarding?

Since the practice of conducting passenger loading operations while LNG bunkering operations are taking place is not currently practiced, the U.S. Coast Guard's current position is that it should not be done. Understanding this is a growing concern for ship owners and operators desiring to use LNG as fuel, the International community is looking into this closely and considering ways that may help make the practice more acceptable. We intend to keep a close watch on developments associated with this item.

6. Consistency of regulatory interpretation and enforcement throughout various COTP zone?

Coast Guard Headquarters is working to publish guidance and develop LNG bunkering regulations to help provide consistency throughout the various COTP zones. Additionally, Coast Guard Headquarters encourages Coast Guard units working on proposed LNG bunkering projects to coordinate with CGHQ to help ensure programmatic standardization is achieved to the maximum extent practicable given the unique circumstances that may apply to any given proposal.

7. LNG and the Alternate Compliance Program (ACP)?

Vessel designs incorporating LNG-fueled systems may not preclude enrollment of the vessel in ACP, however, those aspects of the vessel design related to the LNG-fuel system will not be considered under the program, and will require full Coast Guard review, approval and inspection.

8. USCG Working Group Policy Letter. I heard USCG, Jacksonville, New York, Puget Sound. I did not hear anything about industry representation on this working group! Any industry representation? Can we be involved?

Industry is not represented on the working group per se. However, Coast Guard personnel on the WG are engaged with industry representatives at various levels. Accordingly, we believe the interests of industry are well represented. The policy letters that are being developed are based on existing USCG regulations and

guidance published and/or being developed by IMO, ISO, and the Swedish Marine Technology Forum.

9. As a Port (Tacoma) we are concerned about potential new restrictions imposed by a new (or incoming) COTP – on waterway traffic and fueling operations. Solution provided: An operating agreement between USCG, Port and LNG facility.

In developing policy, CGHQ is endeavoring to ensure standardization of procedures is achieved to the maximum extent practicable. For this reason, various units throughout the Coast Guard are participating in the drafting and review of policy documents which will address vessel bunkering, personnel training and facility operations. From a national perspective, we do not intend on mandating that operating agreements be made between the USCG, Port, and LNG facilities. The local COTP may establish such agreements if they believe it would be beneficial. (Sector Puget Sound to consider FORAC)

10. What companies/supplier are the USCG or Washington State Department of Transportation looking to use for LNG tanks?

This information is not currently available.

11. Given that most ships can carry LNG as cargo “on deck” without any additional approvals, why is a fuel tank on board looked at so differently? In this I am referring to the tank itself as the piping and such adds to the risk which is a different question.

Risks associated with a tank as part of a fuel system are different than a storage tank with its contents effectively isolated from other vessel systems. Additional considerations for a fuel tank include: tank connections and fittings, attachment of tank to the vessel, location of tank (i.e. below deck), sloshing & free surface effect of liquid at various fill levels in the tank.

12. Will the USCG apply the WSA logic to LNG operations regardless of the situation? The NVIC was prepared for LNG bulk loading terminals but it seems that a number of other projects are seeing the application of this logic.

The Coast Guard understands that the WSA outlined in NVIC 01-2011 was not written for smaller scaled LNG bunkering operations and is considering alternatives to the WSA. In any event, a facility and/or vessel owner operator should undertake a safety and security assessment based on specific operations. This will be more specifically described in future policy letters and/or regulations.

13. Does the carriage of LNG containers onboard a vessel (correctly stowed) require any further USCG approval?

Containers carrying LNG, loaded onto a vessel for use as fuel, would need to undergo plan review and approval as part of the vessel's fuel system. Tank

design, location where stowed, and means of securing the tanks, among other things will be considered. Generally, such tanks would need to meet DOT tank design requirements found in 49 CFR Part 173 and other requirements outlined in Title 49, Parts 171-179, for the carriage of compressed or liquefied gases. In developing a Code for Gas Fueled Ships, IMO is discussing LNG containers used as fuel and may incorporate certain requirements related to their use on board ships.

14. Does the temporary storage and loading of LNG containers on a properly approved marine terminal require any further approval or authorization?

If the temporary storage and loading is for use as a ships fuel, nothing other than the plan review and approval previously discussed is needed. If loaded as freight carried as cargo, the requirements of 33 CFR Part 126 would be applicable.

15. As a parallel, I see the carriage of LNG containers and the carriage for fueling and transfer of LNG product similar to the USCG's past oversight of carrying petroleum containers and then a person wanting to transfer the product from the container to a shoreside facility. All of a sudden the marine transfer regulations come into play.

No action – considered a comment rather than a question.

16. Does the USCG intend to place safety/security zones around all LNG laden vessels? How about vessels using LNG as fuel? This includes those smaller ships which would be used for bunkering purposes? As this fuel gains momentum, there is likely to be many vessels carrying either bulk or containerized products for lightering fuel to ships. This may become a waterway issue for the remaining users.

Given the wide spectrum of proposed LNG fuel operations, it is premature for the USCG to speculate what security risk mitigation measures will be required of LNG-fueled vessels and LNG bunkering vessels. The USCG envisions that the required measures would be commensurate with the risk associated with the specific proposed operation. To assist the USCG with the evaluation of security risks, we will look to the marine industry to provide information that demonstrates the resiliency of their vessels, facilities, and operations to maritime attacks.

17. Given the safety record of LNG carriers over petroleum tankers, would it not seem appropriate to reduce the level of regulatory burden on these vessels? Over the years we have had plenty of liquid petroleum ship explosions (Mega Borg, Sansinena, Chevron Hawaii, Puerto Rican to name a few) but of all the LNG shipping worldwide, not one case. In order for the industry to gain the benefits (cost of terminals and ship modifications) and the environment (to gain the reduction in pollution), the less regulatory hurdles reduces the overall burden and

makes the changeover quicker and less burdensome. Not to dismiss safety but the standards for liquefied gases is already extensive and has established an incredible record.

It is unclear what specific regulations are being referred to as a burden. With respect to Coast Guard and other maritime regulations, we don't consider them to be a burden. We believe the good safety record attained by LNG carriers is in part based on the high standards to which they are designed and operated.

Accordingly, we are drafting our policies and regulations, for vessels using LNG as fuel, on many of the design and operational requirements imposed on LNG carriers bearing in mind that the vessels in question may not be tank vessels and some requirements may not be applicable for smaller LNG operations.

18. Will the USCG publish a listing of present standards they believe applicable to the transport, storage and handling of LNG? There are so many, it would provide most new to this industry a starting point. There are API standards, IMO standards, NFPA standards, OCIMF, SIRE, and federal (FEMA, USCG, PHMSA) standards to name a few. Seems this would put the USCG in the forefront of being helpful to a new bustling industry. It also begins to set some commonality in future standards and standards being viewed between ports.

The Coast Guard does not intend to publish a separate listing of standards believed to be applicable to the transport, storage and handling of LNG. Rather, standards relevant to requirements or recommendations we describe in policy or regulation will be cited. The Coast Guard is also open to considering standards other than those we specifically name, provided they can be shown to provide an equivalent level of safety. We are working with international bodies (IMO and ISO) to help develop international standards that serve to provide a uniform level of standardization both in the US and abroad. Industry should consider requirements which may be applicable through PHMSA's hazardous material safety regulations (LNG facilities and LNG pipeline facilities) and any other Federal, State or Local requirements which may apply.

19. Will the USCG assist in setting some level of common standards between ports. Not only are there federal hurdles, many ports have tariffs and requirements which must be viewed as well. Given the LNG moniker has placed a number of organizations in "not in my port" regardless of the project, a level playing field would assist. I see the USCG as the lead but there are hundreds of ports which could all take differing standards. As the future of LNG ship fueling is dependent upon the infrastructure, having disparate port requirements would not seem attractive.

Outside of the areas where the Coast Guard has regulatory jurisdiction, the Coast Guard has little or no impact on the requirements imposed by other federal agencies. We have; however, communicated to MARAD that it would be beneficial if there were uniform federal requirements governing the siting,

construction, and operation of small LNG bunkering facilities. Unlike large LNG import and export terminals where siting, construction, and operation is uniformly regulated by FERC, the regulation of small LNG bunker facilities will be dependent on the design details of the facility. In some cases it may be DOT/PHMSA and in other cases it may be the state or local government. We would prefer a uniform national approach.

20. Teekay's assertion that the bunker vessel they are considering using to bunker vessels in the PNW does not have to be a Jones Act vessel, if operating in U.S. Waters?? Is this true? And if so, is this true even if a U.S. based company in the PNW can provide the same service with a Jones Act vessel, and a source of LNG supply?

Matters regarding applicability of the Jones Act should be referred to Customs and Border Protection.

Feedback from the LNG Forum

1. Venting of methane (unburned gas). Who (or what) will be responsible for setting regulations for methane venting? EPA? Are there regulations in place now to allow for venting? What is the EPA policy regarding venting?

This question should be answered by Mr. Dan Brown (EPA)

2. If the fuel safety changes for LNG give the same level of safety as oil fuel, then LNG fuelled ships should not have additional damage stability requirements over what would be applied to oil fuel vessels.

The risk profile in terms of consequence may indicate that different or additional damage stability requirements should be applied for LNG fuel over oil fuel.

3. I am the West Coast Distributor for Altronic GTI Bi-Fuel. We would be very interested in being part of the future forum groups.

No action – considered a comment rather than a question.