

Beyond Regulatory Requirement

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It is said that Shipping is an overregulated industry. It is also known to be reactive and very slow in its approach in developing and/ or amending requirements. All the great conventions that regulate this industry, viz. SOLAS, MARPOL, STCW and MLC are outcomes of repeated catastrophic incidents and had to go through IMO's long process of adoption before coming into effect. Nevertheless, IMO conventions remain the sole regulatory obligation globally, with the exception of a handful of regions under certain Administrations and Regulatory Bodies, e.g. USCG, AMSA and EU (former EC), where some stringent requirements on top of IMO conventions are enforced. Outside the circle of these authorities and regulatory bodies there are a number of organizations working towards HSSE (Health Safety, Security and Environment) improvement of the Maritime Industry as a whole. OCIMF (Oil Company's International Marine Forum) and CDI (Chemical Distribution Institute) are among the most active of these which are referred to in this article. Having significant risk and title issue as key stakeholders, the Oil Majors are highly concerned on HSSE practices on board their chartered tonnage. With the advance of globalization, ever increasing media coverage and social awareness, consequences of incidents involving harm to the environment are grave. They may even threaten the existence of those responsible. Therefore, HSSE initiatives on top and ahead of IMO requirements are often taken through OCIMF and CDI. Unlike other non-regulatory bodies, being the most potential charterers, Oil Majors are in an advantageous position to leverage their expectations. Three such expectations are discussed in this article.



SOLAS Secondary Venting:

SOLAS II-2/ 11.6.3.2 requires a secondary means of venting of cargo tanks to allow full flow relief of vapour, air or inert gas mixtures to prevent over-pressure or under-pressure in the event of failure of the primary venting arrangements. Administrations often accept the provision of two full flow PV valves fitted on a tank in a 'Y' shape, with a common deck penetration within the scope of this requirement. However, this is clearly not a 'best practice' and such an arrangement in absence of any additional tank pressure sensing system is considered as a High Risk finding by most Oil Majors.

SOLAS also allows remote pressure monitoring system for the cargo tanks as an alternate means of the Secondary Venting requirements. Such a pressure monitoring system is required to be provided with an alarm facility which is activated by detection of over-pressure or under-pressure conditions within the tank. SOLAS is, however, silent as to the setting range of such alarm systems under various possible tank conditions. It needs to be emphasized that the above is regarding cargo tank remote pressure sensing systems and not about pressure sensing systems for the VECS (Vapour Emission Control System) which primarily comes under the regime of MARPOL. OCIMF, in its SIRE VIQ.6/ 8.33 (P) and 8.59 (C), recommends specific setting of high and low alarms for inerted and non-inerted cargo tanks. The VIQ also provides separate guidelines for the alarm setting of pressure monitoring systems for the VECS in line with CFR 46 39.20-13. It shall be noted that, on the contrary to the VIQ recommendation, some in the industry expect the alarm of pressure systems for cargo tanks with VECS to be set as the same as the setting for the pressure alarms for the VECS. Prudent ship managers should provide explicit guidelines in their SMS. Requirements of various settings of tank pressure alarms for different tank conditions are better described in tabular format than in narrative.

Blending of LPG cargoes during sea passage

With effect from 01 Jan 2014, IMO prohibited blending of bulk liquid cargoes during voyage through the adoption of MSC.325(90) in SOLAS VI/5-2. Recently a question was raised if this prohibition would also apply to co-mingling operations of LPG cargoes. Giving reference to wordings used in the 'application' of this new clause, Class NK and DNV-GL have clearly stated that this would not apply to gas tankers. Interestingly, the Class interpretation was also supported by IMO and Singapore Flag Administration. Thus LPG blending operations on board during voyage was allowed to be continued. In the meantime, there has been a submission to next IMO MSC (93) meeting in May 2014 requesting clarification on a number of questions associated with SOLAS VI/5-2. The submission is dated 25 Mar 2014 and has been made jointly by Liberia, Marshall Islands, Norway, Panama, ICS, BIMCO and INTERTANKO. It has been proposed that, subject to the concurrence by MEPC 67, appropriate guidance is developed to clarify the application of SOLAS VI/5-2 to ensure uniform application, including its application to the carriage of gases.

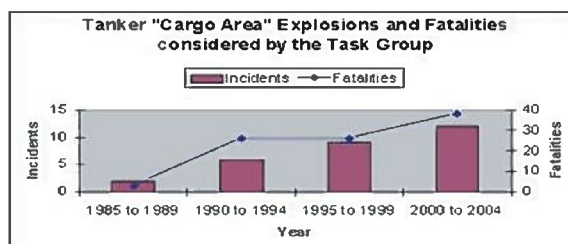
However, in the context of the risks involved in blending of LPG many in the industry have a different view, ref Witherby publication 'Shipping Regulations and Guidance, Issue 9/ Aug-Sep 2012' and SIGTTO circular dated 15 July 2013 on the withdrawal of their alert to the industry on Co-Mingling of LPG. Blending Propane and Butane in liquid form produces a resultant with very different characteristics from the original components and is therefore considered completely within the spirit and requirement of the SOLAS prohibition. A leading Oil Major in particular takes this SOLAS edict as an opportunity to remove a major operational risk instead of arguing around the semantics.

Risks involved in co-mingling of LPG cargoes, including but not limited to over-filling, cargo rollover due to density inversion, loss of stability (due to free surface) and over stressing are well documented. In addition, co-mingling of LPG cargoes in fully refrigerated vessels has potential risk of tank over-pressurization. For instance let's take the co-mingling of Butane and Propane whose typical loading temperatures are different; Butane is $-1^{\circ}\text{C} \sim -5^{\circ}\text{C}$ and Propane is about -42°C . The temperature of the resultant mixture is somewhere between the two, which means that the Propane is raised in temperature above its boiling point. The mixing operation therefore has the potential to create a large amount of "flash gas", which would need to be controlled by the ship's reliquefaction plant, otherwise there could be uncontrolled venting from the cargo tank relief valves. The risks associated with the operation are greatest if carried out at sea, but are still a concern during loading and to a lesser extent on discharge. Co-mingling LPG cargoes on board fully refrigerated vessels is therefore considered an unsafe practice and never recommended.

Gas tanker operators are therefore required to be mindful of the industry expectation in this case which does not go by the regulatory acceptance.

New requirements for Inert Gas

A study of 35 'cargo area explosion' incidents from 1985 to 2004 was released in the 81st session of IMO's Maritime and Safety Committee. The unadjusted trend of the study is as follows:



The IMO Sub-Committee on Fire Protection agreed in principle to amend the existing inert gas requirements under SOLAS II-2/ 4.5.5 by including requirements for inerting of tanks on new tankers carrying low-flash point cargoes. The proposed draft amendments require an inert gas system to be fitted on new oil and chemical tankers of 8,000 DWT and above, transporting low-flash point cargoes (cargoes having a flashpoint less than 60°C). Like all other changes of IMO requirements this is going to take a long time to come into effect. The draft amendments SOLAS II-2 /4.5.5 and II-2/16.3.3 are expected to be adopted at the IMO in May 2014. Besides, these will apply only to new tankers built on or after 01 Jan 2016, a date which is yet to be agreed upon.

Driven by factors such as the high number of industrial fires/explosions, the 2012 CDI recommendation promoting the greater use of Nitrogen, future IMO regulations and the increasing availability of high capacity Nitrogen installations onboard ships, extensive work has been done by a leading Oil Major. Consequently it is eager to step into the changes, at least to some extent, well ahead of IMO deadlines. The expectation is that vessels which are fitted with high capacity inert gas systems (i.e. capable of delivering a capacity equivalent or more than the maximum rate of discharge of cargo to maintain positive inert atmosphere) shall be required to inert tanks that contain flammable cargoes after loading but before discharge.

Yet another safety initiative beyond the regulatory requirement. Meeting regulatory requirements will ensure 'compliance' which shall be taken as the lowest datum. However, adoption of current industry best practices and guidelines on top of the regulatory requirements may only lead towards excellence.

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