

Chapter 29

STATIC ELECTRICITY

This Chapter describes hazards associated with the generation of static electricity.

The risks presented by static electricity discharges occur where a flammable atmosphere is likely to be present.

29.1 Electrostatics

As is the case with many other hydrocarbon liquids, a static electrical charge can be built up within a liquefied gas as it is being pumped. It has been found that the charge will increase as pumping velocity rises. This phenomenon occurs due to charge separation between layers within the fluid. The charge is then retained for some time within the liquid mass by its non-conducting property. The danger of such charges is that they can attain sufficient potential to create incendive sparks and, particularly in cargo tanks, electrical arcing is possible. It is, therefore, vital that the handling of gas cargoes only takes place in spaces having atmospheres outside the flammable range. On gas carriers, such atmospheres are always maintained in the over-rich condition.

Problems with static electricity can also arise within vapour flows but only when the gas is contaminated with debris, dust particles or when a condensed mist is present. In such cases it is the debris (or the mist which forms as it exits to atmosphere) which attains a static charge. Vapours which can attain a static charge in this way include carbon dioxide (as a fire extinguishing agent) and steam.

Liquid hydrocarbons which are most prone to static build-up are called static accumulators.

Reference should also be made to the guidance given in Chapter 3 'Static Electricity'.

