CDI Best Practice:

The use of Portable Electronic Equipment on Board Tankers

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1. Introduction

1. Modern technology in developing portable electronic devices is evolving at an increasing rate. With this increasing evolution of such equipment, regulations and normal operating practices are not always able to keep up with their swift development. The introduction and rapid use of this new equipment in our personal and working lives is more often than not ahead of the regulations controlling its use. Historically, electronic, equipment tended to be large and bulky, so it was much more obvious when electronic equipment was taken on board vessels or into operating areas of facilities and berths. With todays enhanced technology these portable electronic devices are much smaller and more commonplace, to the point that personnel may not realise that the device could pose a threat if worn or carried in hazardous area.

2. In addition, items such as drones, or Augmented Reality Glasses (ARG) are now becoming more commonplace, with novel ideas being proposed, particularly regarding the use of drones to improve operational activities (i.e. delivery of paperwork or parts rather than the more traditional use of a supply boat, and even in the use of cargo tank inspections). However, these new portable electronic devices could pose a risk, e.g. The landing of a drone on a vessel with flammable cargo onboard or in other hazardous areas if the device is not correctly certified for use in that area.

2. Aims/ Objectives

This document aims to set out best practices when using portable electronic devices on tankers.

3. Scope

1. To ensure that the carriage and use of portable electronic equipment should be in accordance with recognised standards at all times.

2. To ensure that portable electronic equipment carried or used on tankers or at facilities is operated in a safe and effective manner, at all times.

3. To ensure a risk assessment includes identifying the hazardous certification of the equipment to be used, as well as ensuring the equipment's certification matches the area it is intended to be used in.

4. To raise awareness with ships crews working onboard tankers or at facilities regarding the classification of hazardous areas in relation to the portable electronic equipment to be used, including its carriage and operation and in what areas and when, such equipment may and may not be used.

5. To ensure the "risk assessment before use", addresses any potential gaps between the current regulations in place and the modernity of the portable electronic device that is to be used.

6. To ensure that only portable electronic equipment certified for use in a hazardous area is used.

7. This document does not override any restrictions, limitations regarding the use of portable electronic equipment as required by national or local regulations, nor those specified by the competent authorities, certification entities or classification organizations or a company's Standard Operating Procedures (SOP) or Safety Management System (SMS).

4. Electronic Equipment (list)

Examples of relevant portable electronic equipment includes, but is not limited to:

- Cellular or other types of portable phones
- Bluetooth equipment (i.e. portable microphones, headphones, etc.)
- Radios and walkie-talkies
- Watches and fitness devices
- Remotely-operated equipment and their control devices (i.e. drones, toys, crane or loading arm controls, robots, etc.)
- Security equipment (metal detector wands)
- Laptops and electronic tablets
- Flashlights/torches
- Hearing aids and other medical devices
- Battery packs
- Electronic cigarettes and lighters
- Cameras and associated equipment (including Virtual Reality/Augmented Reality glasses)
- Gas detection equipment, multi-detection meters
- Digital Thermometers
- Thermal imaging cameras (e.g. Infrared temperature devices) and electrical detection meters/equipment
- Portable meters all types (e.g. for radiations, noise, thickness, ambient conditions etc.)
- Hand tools (powered and battery-operated).

Note: More guidance on Portable Electronic products and the requirements for suitability assessment and classification in hazardous locations can be found in the American National Standards Institute (ANSI)/ISA 12.12.03 Standard for Portable Electronic Products Suitable for Use in Class I and II, Division 2, Class I Zone 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations

5. Devices Energised by "Primary (not re-chargeable) Button Cells"

Some devices, energised by primary (not rechargeable) Button Cell devices, which are not certified for hazardous areas, but have shown to not produce an incendive spark. Reference should be made to the **"Energy Institute" paper** ***"Investigation of the Possible ignition risks arising from the presence of button cell energised devices in potentially explosive atmospheres associated with transport fuels ISBN 978 0 85293 686 3"*** *and "**American National Standards Institute (ANSI)/ISA 12.12.03**"*

6. Regulations

1. The likelihood of a potentially flammable atmosphere depends on the release mechanism of a flammable vapour e.g. a leaking flange or a lifting relief valve and the rate at which the release substance is diluted by natural or artificial ventilation. It is normal to classify areas where explosive atmospheres may occur into zones. SOLAS part D and the IBC code 2020 Chapter 10, makes reference to IEC 60092-502 for Hazardous area classification which describes three Zones as follows:

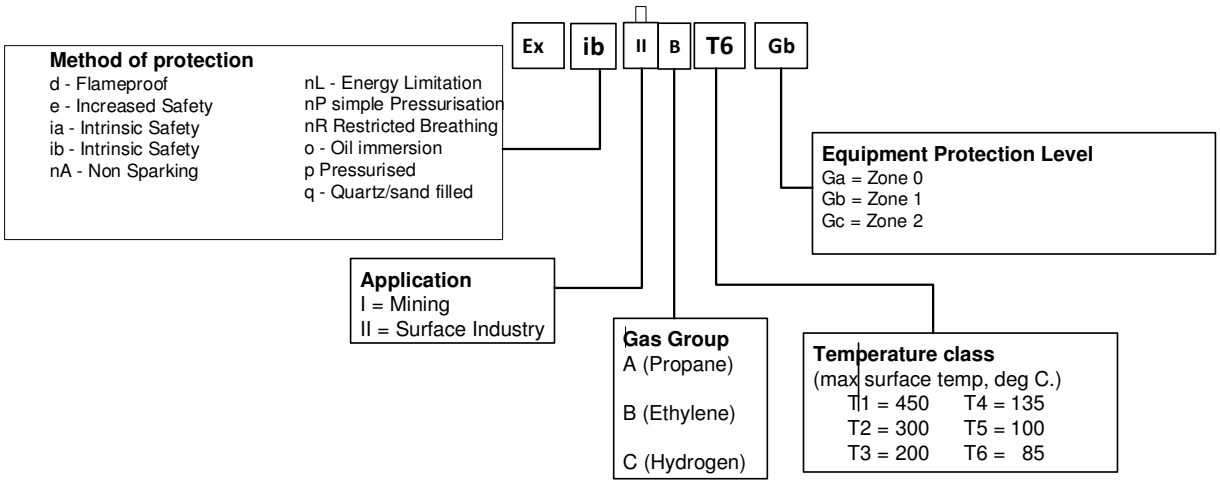
Zone 0	An area in which an explosive mixture is present continually or for long periods. e.g. cofferdam with cargo pipe flanges.
Zone 1	An area in which an explosive mixture is likely to occur in normal operation e.g. hold space containing independent cargo tank, cargo pump room, areas on deck within 3m of a manifold valve or pipe flange.
Zone 2	An area in which an explosive mixture is not likely to occur in normal operation and if it occurs, it will be infrequently and will exist only for a short time. e.g. area on open cargo deck.

2. Electrical and Electronic equipment can be manufactured so that it does not present a risk of ignition by using a range of recognised techniques and standards. For example, hazardous area certified safe equipment is manufactured so that even under faulty conditions it will not create sufficient energy to ignite a flammable atmosphere. Explosion proof equipment is manufactured so that it will contain an ignition of gas and sufficiently cool any escaping gas so that the ignition does not spread outside the equipment. It should be noted that different techniques are permitted in different zones.

3. Equipment constructed for use in hazardous areas is tested and certified against standards to ensure that it is safe and the equipment is identified marked in accordance with these standards.

4. The equipment marking also contains information of the suitability of the equipment for the chemicals that might form the flammable atmosphere, in the form of a temperature class, based on the ignition temperature and a gas group based on properties including flame temperature, minimum ignition energy, upper and lower explosive limits, and molecular weight.

An Example of IEC marking is shown below



7. Best Practices

1. Portable electronic equipment that is properly certified can be used on tankers and at facilities, if it meets or exceeds the requirements of the area classification where it will be used.

2. The equipment should be properly marked on the case and/or device and the certification (and its scope of use) verified prior to its use in the classified area. Paying attention to any conditions of use for example an "EX" marking on the equipment indicates that there is essential information for installation, use or maintenance contained on the certificate.

3. The ultimate responsibility for the safety of the vessel lies with the Master, as well as ensuring awareness and compliance by the vessels crew. However, visitors to the vessel also bring a risk of portable electronic devices as well as others operating remote equipment (i.e. a drone), who may not be fully aware of the risks posed, or specific requirements for their use on a vessel carrying hazardous cargoes. It's therefore imperative, that awareness is brought to any visitor's attention at the point of boarding the vessel and compliance with best practices is assured. Same may be done as part of a contractor safety induction, as per operator's procedures.

4. Where the use of a particular portable electronic equipment is not approved under existing regulations, policies or procedures, its use should be prohibited.

5. Portable electronic equipment that is not Hazardous Area Certified should not be used on board a tanker unless a formal risk assessment is undertaken and after the satisfactory completion of a hot work permit. However, additional precautions should be in place to address any unintended or unexpected situations (i.e. a drone losing control or flying into an area not intended). Reference ISGOTT 6 edition for hot work procedures.

6. Batteries of any electronic equipment should not be replaced in hazardous areas on board tankers.

7. Hazardous Area Certification may include special conditions for use. These should be checked and observed as part of the risk assessment.

8. Portable electronic equipment used on board should be certified in accordance with IEC regulations for the area in which it will be used i.e. Zone 0, Zone 1 or Zone 2. There are different considerations for enclosed and non-enclosed spaces as outlined below:

   a. Enclosed Spaces:
      i. When using non-hazardous area certified safe equipment, a permit to work system should be in place, a hot work permit should be completed and tank entry tests checks and procedures for enclosed space entry should be fully complied with and monitored throughout.

      ii. Particular attention should be paid regarding methods employed in placing the equipment into or removing it from the enclosed space, as that area may include additional risks to the enclosed space.

      iii. Consideration should be given to other supporting equipment that is required to be used with the portable electronic device i.e.
         - The launching and retrieving of the device outside the enclosed space
         - The location of the drone Pilot and the control equipment if using a drone.

iv. If using a drone within the jurisdiction of a port authority the vessel should seek approval to do so from the port authority and the facility.

b. Non-enclosed space:

i. These areas tend to be more difficult to monitor and control by the nature of being in an open area.

ii. Where non-hazardous area certified approved portable electronic equipment should be used on board, it's use should be controlled through the implementation of a hot work permit.

iii. No cargo operations should be permitted, venting, or depressurising systems to eliminate potential sources of flammable conditions.

iv. Continuous use of gas detection at multiple points should be considered in preference to single detectors and periodic sampling.

v. If using a drone within the jurisdiction of a port authority, the vessel should seek approval to do so from the port authority and the facility.

9. The vessels procedures regarding the use of portable electronic equipment onboard should be part of the vessels company operating procedures and Safety Management System including approval of Class or Flag when applicable.

10. Portable electronic equipment that is not required should not be brought into areas where a hazard may exist.

11. Turning portable electronic equipment off may not fully de-energize the equipment. Mobile phones, when powered off, may automatically power up when an alarm is set. The safest option is to avoid bringing the device into an area which is hazardous and/or where the operation of the equipment may be unsafe. Visitors to the Tanker or facility should not use mobile telephones or pagers unless prior permission has been received from the tanker or facility as appropriate (Ref. ISGOTT 6 edition).

8. Specific Safety Requirements for the use of Drones

1. Remotely operated equipment (i.e. drones).

a. Personnel who remotely operate drones or drone equipment should ensure that the area they are operating the drone in or sending the drone too including; launching, fly over areas, landing and recovery areas, are verified to be safe for the use of the equipment prior to its entry into that area.

b. All personnel at risk of contact with or who may be affected by, the remotely-operated equipment (drones), should be informed prior to the equipment being used, including the identification of exclusion areas.

c. If using a drone within the jurisdiction of a port authority the vessel should seek approval to do so from the port authority and the facility and ensure operations comply with any applicable local regulations.

9. Maintenance of equipment

1. All portable electronic equipment should be inspected and maintained as per the manufacturer's recommendations and records.

2. Any damaged portable electronic equipment, including outer cases, should be repaired or replaced as per the manufacturer's recommendations.

10. Restrictions

1. Local guidelines and regulations may limit or prohibit the use of portable electronic equipment in some circumstances.

2. As technology develops and more portable electronic devises are created, new uses will be identified that may or may not have been envisioned by the manufacturer. It is incumbent on the Master to conduct a proper risk assessment in coordination with any 3rd party operator of portable electronic equipment, where appropriate, to ensure that the intended use of the equipment will not pose a risk. When possible, procedures should be developed to document the proper use of the equipment.

11. Training and familiarity

1. The vessel operator should have policies and procedures in place, covering the training and use of portable electronic equipment. Existing procedures should cover the common types of this equipment that may be found or carried onboard. Other types of equipment should be addressed through the use of a risk assessment.

2. Personnel who may carry or operate portable electronic equipment should be identified and be fully aware of the procedures, policies and hazards regarding the carriage and use of that equipment on board the vessel.

3. Personnel operating portable electronic equipment should be aware of emergency procedures to be used in case of a problem with the device or if conditions change, making it unsafe to continue the use of the equipment and stop work authorities.

12. Disclaimer

1. The information, specifications, procedures, methods and recommendations herein are presented in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. No representation, guarantee or warranty is made as to the accuracy, reliability or completeness of said information, specifications, procedures, methods and recommendations or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe patents of others or give desired results. Readers are cautioned to satisfy themselves as to the suitability of said information, specifications, procedures, methods and recommendations for the purposes intended prior to use.