



## Marine Safety Information Bulletin

08-20

June 23, 2020

### Electrical Hazards at Waterfront Facilities

Recent inspections at facilities have uncovered numerous electrical hazards which pose a threat to life and property. This MSIB aims to help facilities identify and correct electrical deficiencies.

Title 33 Code of Regulation Parts 154 and 127 incorporate the National Fire Protection Association (NFPA) 70, National Electrical Code, 1993 Edition, for electrical installations within the Coast Guard's jurisdiction.

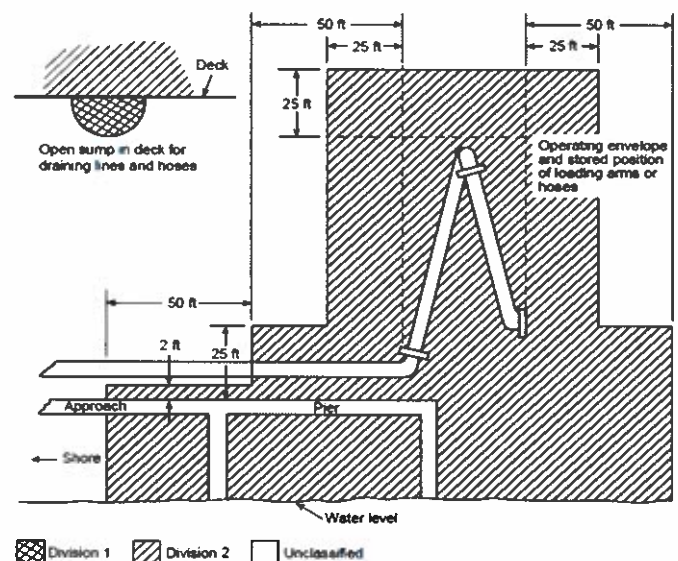
NFPA 70 Article 500 categorizes hazardous zones based on the properties of flammable vapors, liquids, gases, or combustible dusts or fibers that could be present and the likelihood that a flammable or combustible concentration is present.

Most Class I locations within the Coast Guard's jurisdiction are categorized as Class I, Division 2. Class I, Division 1 locations are mostly limited to open sumps in the deck for draining lines and hoses per NFPA 70 Article 515.

Generally, electrical equipment within the Class I hazardous zone must be intrinsically safe or explosion proof. There are other methods that can be used to meet Class I standards, including but not limited to oil immersion, hermetic seals, or inert gas purging and pressurizing. The most common electrical deficiencies Facility Inspectors identify pertain to intrinsically safe and explosion proof equipment due to lack of maintenance, especially conduit and exposed wiring.

Conduit is used for electrical runs through hazardous zones. When inspecting conduit, ensure that the joint connections are wrench-tight and employ at least five

threads, tapered to 3/4" National Pipe Thread (NPT) per inch to maintain integrity of the conduit. Explosion proof connections are required in each conduit run up to 10 feet from the hazardous zone in accordance with NFPA 70 Article 501.



- Division 1
  Division 2
  Unclassified
- Note 1: The "source of vapor" shall be the operating envelope and stored position of the outboard flange connection of the loading arm (or hose).
- Note 2: The berth area adjacent to tanker and barge cargo tanks is to be Division 2 to the following extent:
- 25 ft (7.6 m) horizontally in all directions on the pier side from that portion of the hull containing cargo tanks
  - From the water level to 25 ft (7.6 m) above the cargo tanks at their highest position
- Note 3: Additional locations may have to be classified as required by the presence of other sources of flammable liquids on the berth, or by Coast Guard or other regulations.
- For SI units: 1 ft = 0.3048 m

Figure 515-2.\* Marine Terminal Handling Flammable Liquids.

Source: NFPA 70

Cables installed for flexibility of an electrical installation must be adequately supported and no longer than three feet. Cable penetrations must minimize the passage of vapors into the electrical enclosure. Typical penetration seals utilize a solidifying gel which must be no less than 5/8" thick. Enclosed gasketed wire ways should be inspected to ensure the gaskets maintain a gas-tight seal.

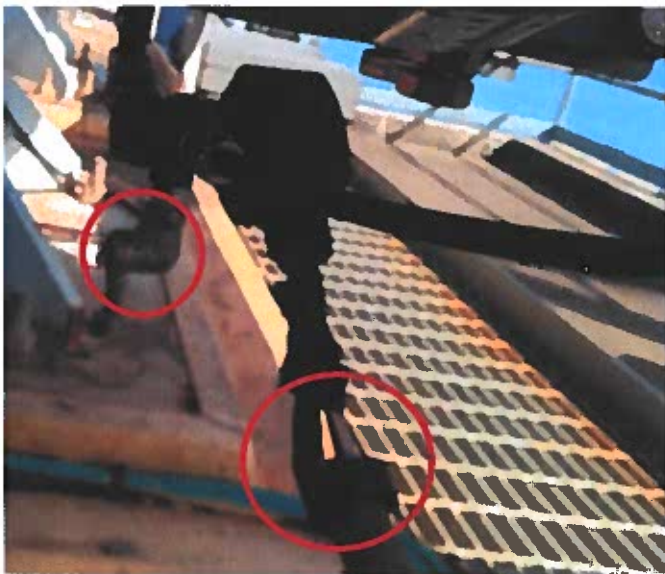


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Above: Improper wiring support and a leaking transducer.

Drainage openings in conduit are permitted, except that they must maintain the explosion proof integrity of the system. Drainage openings should be

exercised periodically to prevent the buildup of condensed moisture. Tapered threaded pipe plugs can be installed and temporarily removed to permit drainage of atmospheric condensation in conduit as long as it's promptly returned before starting transfer operations.



Above: A broken marine electrical plug, and electrical runs not maintained in accordance with NFPA 70.

**If you have any questions please call the MSU Port Arthur Facility Division at (409) 719-5039.**

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