



Standard Guide for Selection of Hardline Communication Systems for Confined-Space Rescue¹

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1. Scope

1.1 This guide covers recommended criteria for the selection of hardwire communication systems for use in permit-required confined-space rescue operations.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

F 1490 Terminology Relating to Search and Rescue²

2.2 Federal Standards:

29 Code of Federal Regulations 1910.146 Permit Required Confined Spaces³

29 Code of Federal Regulations 1910.7 Definition and Requirements for a National Recognized Testing Laboratory³

2.3 National Code:

National Electrical Code (NEC)/NFPA 70⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *confined space rescue*—rescue operations within spaces that meet the definition of “permit-required confined space” in Fed. Std. 29 CFR 1910.146.

3.1.2 *hardline communication system*—any communication system where all users are connected to the system by a hardline or wire.

4. Significance and Use

4.1 Because of the many unique requirements of permit-required confined space rescue operations and the specific

construction and composition of some confined spaces, hardline communications systems may be the only type that will meet the requirements for working within these spaces. Some of these requirements are set forth in Federal Regulation and some by safe operating procedures developed for working in confined spaces by industry.

4.2 This guide is not meant to preclude the use of other types of communication systems in confined-space rescue.

5. System Requirements

5.1 *System Safety*—The system must be safe for use in the atmosphere, or potential atmosphere, within the space.⁵

5.2 The system must have continuous, hands-free voice communications capability.⁶

5.3 The system must be dedicated and private so operations cannot be interfered with by outsiders not involved with the rescue.

5.4 The system shall not affect the readings of other safety equipment (that is, gas detectors).

5.5 Systems that are battery powered must have a low-battery warning or a backup power source that provides a minimum of 30 min before communications are lost.

5.6 The system must accommodate a minimum of three users.⁷

5.7 The system should allow for communication between all entrants as well as with the attendant.⁸

5.8 The system must work in conjunction with the personal protective equipment (PPE) necessary to work in the environment within the space.⁹

5.9 The system must be impervious to the chemicals within the space.

6. Keywords

6.1 confined space; hardline

¹ This guide is under the jurisdiction of ASTM Committee F32 on Search and Rescue and is the direct responsibility of Subcommittee F32.01 on Equipment, Testing, and Maintenance.

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² *Annual Book of ASTM Standards*, Vol 13.02.

³ Available from Department of Labor, Occupational Safety and Health Administration, Office of Information and Consumer Affairs, Room N3647, 200 Constitution Ave., NW, Washington, DC 20210.

⁴ Available from the National Fire Protection Association (NFPA), Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

⁵ See Annex A1.

⁶ See X1.1.

⁷ See X1.2.

⁸ See X1.3.

⁹ See X1.4.