HARDLINE COMMUNICATION EQUIPMENT FOR CONFINED SPACE RESCUE

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1.0 OVERVIEW

Before safe and reliable voice communication systems were available rescue teams relied on shouting, tapping and rope tugging to send messages back and forth. Anyone who has ever tried to shout through a face mask or decipher how many "tugs" ?, from the end of a 100' rope that goes around a corner or two, will tell you it is almost impossible. Yet for many teams this is the primary method of Communication for "regulatory compliance". While the "OATH" rope tug communication method may meet regulatory requirements it should be put back into the context for which it was intended, "When you can't speak and be understood", not as a primary method of communication. In this day and age, when the technology and the equipment for safe and reliable Confined Space voice communication is commercially available, it is a needless risk to send someone into a space without the ability to simply ask for help.

A correctly selected and implemented method of continuous voice communication system can save a considerable amount of time during a Confined Space Rescue Operation. Instantaneous communication between the rescuers and rescue personnel on the outside of a Confined Space can dramatically improve the entire rescue operation. Rescuers inside a space can immediately call for equipment needed to extricate a victim or for additional support. They can also relay medical information or direct line hauling operations to make the operation procede much more smoothly. Reliable communication between the attendant and rescue entrants has a calming effect on rescuers and reduces the likelihood of accidents caused by misunderstandings, confusion or panic.

Communication between team members is primarily for the safety of the rescuers. However, other advantages to a correctly deployed communication system include; higher levels of "perceived" safety, better training, a reduction in the stress experienced by rescuers due to claustrophobia or panic, a more efficient use of manpower, and faster rescues. Another characteristic of voice communication that is commonly overlooked is the ability of rescuers to communicate with a victim or assess their condition prior to actual rescuer entry into a Confined Space.

This report describes the major benefits of a properly selected and deployed hardline communication system for Confined Space Rescue. Also included are considerations and points for discussion regarding the Selection (Appendix C), Deployment (Appendix D), and Integration (Appendix E).
Confined Space rescuers already know the drawbacks, pitfalls and quite frankly the danger of <u>not</u> having reliable voice communication during a Confined Space Rescue. All that is left is to develop procedures and practices for its integration and to recognize Hardline Communication Equipment as a valuable rescue tool that will increase safety, save time and more importantly save lives.

2.0 PRACTICAL APPLICATIONS

Communication equipment, while usually the last piece of Confined Space equipment to be considered, i.e. (after PPE, Breathing Apparatus, Gas Detection, Retrieval and Ventilation equipment) is the one piece of equipment that ties the whole rescue operation together and allows a rescue team to work as a cohesive unit. Following are some examples of how communication equipment can be applied to maximize the use of common Confined Space equipment.

Communication and Retrieval Equipment

The developments in the area of retrieval equipment over the last few years have been remarkable. The advances in the Types, Styles, Designs and Inner Workings of this equipment have literally exploded since the Confined Space and Fall Protection Regulations were enacted. Tripods, Hoists and Winches can be seen on any street and in almost every type of plant. The irony is that the best retrieval device in the world is useless until the attendant recognizes there is a problem or the entrant tells the attendant to get him/her out ...NOW!. Communication equipment can save valuable time and mean the difference between retrieving or recovering a worker from a Confined Space.

In Confined Space Rescue, manual haul systems are the preferred retrieval method. The most common problems in rope rescue involve line tending and hauling. The ability of entrants to easily communicate their needs regarding the paying out, taking up or stopping of the rope system is a great advantage. It will make any rescue operation proceed more smoothly.

Communication and Gas Detection

Gas detection equipment is used in all Confined Space operations. Recent advances have increased reliability and decreased the size of many gas detection devices. Confined Space entries are now routinely conducted with small gas monitors. These can be carried by entrants and sample gases in which they are actually working. This type of gas monitoring compliments monitoring at the point of entry. For this type of program to work properly and keep permit documentation current the attendant should get periodic readings from the entrant monitor and note them on the permit. If an entrant monitor sounds an alarm. Entrant(s) must immediately notify the attendant of the change in atmosphere.

If Gas monitoring is done only at the entrance to a space, the need for communication is even greater. If an atmospheric alarm sounds and the entrant is working in High Noise and/or out of sight, the attendant must have a means to inform the entrant of the hazard and tell him to evacuate the space immediately.

Communication and Breathing Apparatus

Breathing Apparatus is common to Confined Space work and Confined Space Rescue. The trend in apparatus for Confined Space use is toward the Supplied Air Respirators (SAR). This equipment has the advantage of being able to provide rescuers with a virtually unlimited supply of air. In addition to the physical and weight advantages (i.e. No air tank to carry).

Communication can provide a valuable link where SAR is concerned. If there is a problem with the supplied air system and an alarm sounds, the attendant can notify the entrant(s) immediately so they can switch over to their emergency air supply. If the problem is only momentary, communication can be used to co-ordinate between the use of emergency air and the normal air supply.

Communication and Ventilation Equipment

Ventilation equipment is used widely for Confined Space work. If there is a problem with the air flow or an airborne hazard (like carbon monoxide from vehicle exhaust), is introduced into a space, the attendant must inform the entrant(s) without delay.

3.0 HUMAN FACTORS

Entering a Confined Space can subject personnel to feelings of claustrophobia or panic. We tend to forget that the space they enter is harsh and unfriendly and was designed by engineers for a specific task, not for human occupancy. Therefore, rescuers cannot rely on the surroundings for their psychological well being and must depend on what can be taken into the space with them.

The well being of rescue entrants determines how well they will function at any given moment. The study of ergonomics basically tells us that the better people feel, the better they perform their job. In an actual rescue situation adrenaline and emotions can create a very stressful atmosphere. Personnel working outside their own comfort zone are considerably more prone to errors through poor decision making and bad judgement due to stress. Rescuers, no matter how experienced, are still human beings and while an error due to stress outside a space may be easily corrected, the same error made inside a space could be their last.

The human voice has been proven to have a calming effect on people in isolation. Therefore, reliable, continuous voice communication can help to provide Confined Space entrants with the level of comfort needed to relieve the fears of entry, maintain an acceptable comfort zone for the duration of the rescue operation, and help to keep feelings of claustrophobia and panic in check. Industrial workers who routinely utilize a voice communication system for Confined Space work confirm this. They report feeling safer, more at ease, and less stressful. They also say that, as a result, they work better, are more efficient, and are much happier in their work. As an added benefit, safety attendants also report favourably on being able to communicate with entrants. Their job is less boring and they feel more useful by being able to monitor entrants at all times. Close team work between entrants and their safety attendant is possible with little or no effort.

4.0 REGULATORY COMPLIANCE AND COMMUNICATION EQUIPMENT

Reference Appendix A - Excerpts from 29CFR 1910.146

While the regulation does not specifically say that you **must** have a powered communication system, it is virtually impossible to fully comply without one. The following looks at the duties of those involved in any Confined Space operation in the context of an actual Confined Space environment.

Under "Duties of the authorized entrants" the entrant must be able to alert the Attendant, give updates on status and listen for evacuation orders. This may not seem difficult, but when the entrant is 100' inside a pipe that has horizontal and vertical changes in direction as well as high ambient noise, the ability to communicate becomes considerably more difficult. Add to this the scenario that the entrant is wearing breathing apparatus and hearing protection, the communication problem becomes even more challenging.

If we now look at the "Duties of attendants", the Attendant must communicate evacuation alerts, monitor entrant status, monitor activities both **inside** and **outside** the space, and monitor the entrants for any behavioral effects of gases, vapours, chemicals, etc. In addition, to being on the lookout for any situations outside the space that could endanger the entrants. Not an easy task when the people you are looking after are 100' away and you cannot break the plane of the opening.

The most interesting communication requirement in the regulation lies in the ability of the attendant to monitor the entrant(s) for any symptoms of exposure or behavioral effects of hazard exposures. To do this requires a communication system that is capable of **continuous** communication (like a party line) and hands-free operation. **This allows the attendant to monitor the entrant(s) continuously for any slurring of speech, out of character responses, or irregular breathing patterns.**

5.0 COMMUNICATION EQUIPMENT AND INTRINSIC SAFE APPROVALS

Reference Appendix B - Intrinsic Safe Approval Levels

The level of Intrinsic Safe Approval is of utmost importance when choosing **any** electrically powered equipment used in Confined Space Rescue. Rescuers do not have the luxury of knowing what environment they will be called upon to enter next. For Safety, OSHA compliance, and liability concerns, equipment used must be certified by a Nationally Recognized Test Laboratory (NRTL). For rescue use, electrical equipment should be approved to the highest level possible so that the equipment can be safely used in the widest variety of rescue locations, environments, and conditions.

Rescuers will not usually enter a space unless the atmosphere is at or below, 10% of the flammable materials Lower Explosive Limit (LEL). However, atmospheres in Confined Spaces are subject to rapid changes and what might have been acceptable upon entry may change dramatically in a very short period of time. Teams must prepare for the worst possible case and have equipment that they can rely on when things go sour.

Approval Levels cause a lot of misunderstandings. It is common for people to assume that equipment rated Class I, Division 1 or simply "Intrinsically Safe" can be used anywhere. This is **not** the case. For example, you should **never** use equipment that is **only** approved for a Class I (Flammable Vapours) environment in either a Class II (Combustible Dust) or Class III (Ignitable Fibres) environment. Doing it could be the last mistake you ever make....

THE HIGHEST LEVEL OF INTRINSIC APPROVAL AVAILABLE FOR CONFINED SPACE COMMUNICATION EQUIPMENT IS;

CLASS I,II,III, DIVISION 1 & 2, GROUPS A,B,C,D,E,F,G.

WARNING

The term "Intrinsic Safe" is becoming more and more a generic term and some organizations advertise their equipment as "designed to Intrinsic Standards" or "meets Intrinsic Safe Requirements" or simply "Intrinsically Safe". Using non-approved equipment or equipment that is not correctly approved for use in a specific hazardous environment could cause an explosion or accident, wounding or killing workers or rescuers. Check equipment approvals so that you are aware of the areas in which you can or can not deploy your equipment.

All Intrinsically Safe Approved equipment carry label(s) that list the name of the Nationally Recognized Test Laboratory (NRTL) and the Class, Division * and Group approval levels. If the label carries only the name of the test laboratory and a File/Approval number, you can contact the NRTL and they will send you a copy of the actual approval or give you the levels of approval for your equipment.

* Division marking is optional for all equipment except Division 2, in which case the division marking is required

European and Canadian Intrinsically Safe Approvals

Equipment certified Intrinsically Safe by Test Laboratories in Europe and other parts of the world are not accepted for use in the U.S.A. unless they carry a separate U.S. approval. The exception to this is equipment approved by the Canadian Standards Association (CSA). The approved equipment must actually have "NRTL" on the printed label (below to CSA logo). This denotes that the equipment has been tested following UL and ANSI test methods and is recognized by OSHA as safe for use in the U.S.A.

6.0CONCLUSION

At the heart of any successful rescue operation is good communication. Much has been written on the topic of effective incident communication as it relates to a major fire or disaster. The necessity for effective communication is not limited to major incidents alone. Confined Space Rescue, by its very nature presents "real" physical barriers to communication that must be overcome. Hardline communication has proven itself as the technology of choice among experienced Confined Space Rescuers. Readily available hardline equipment can meet all of the requirements regarding intrinsic safe approvals, regulatory compliance and the safety and well being of Confined Space Rescuers.

Hardline communication equipment should be recognized as a valuable rescue tool and accepted as the standard method of communication in confined space. A Hardline Communication System ties an entire rescue operation together and could mean the difference between the success or failure of a Confined Space Rescue.

APPENDIX A

REGULATION EXCERPTS

Follows are excerpts from 29CFR 1910.146 dealing with communication in Confined Space ;

1(d) Permit-required confined space program. Under the permit-required confined space program required by paragraph (c)(4) of this section, the employer shall;

(4) Provide the following equipment (specified in paragraphs (d)(4)(i) through (d)(4)(ix) of this section) at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly;

****
4(d)4(iii) Communications equipment necessary for compliance with paragraphs (h)(3) and (i)(5) of this section.

****

(h) Duties of authorized entrants.

****
(3) Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by paragraph (i)(6) of this section;

(4) Alert the attendant whenever:
(i) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
(ii) The entrant detects a prohibited condition;

(i) Duties of attendants
****

(2) Is aware of possible behavioral effects of hazard exposures in authorized entrants.

****

(5) Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space under paragraph (i)(6) of this section;

(6) Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions;

(ii) If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;

(iii) If the attendant detects a situation outside the space that could endanger the authorized entrants;

****

APPENDIX B

INTRINSIC SAFE APPROVAL LEVELS

Below is a condensed version of the National Electrical Code (NEC) classifications for hazardous locations. Also provided is a cross reference between the level of approval and possible rescue sites. The following classifications apply to **ALL** electrically powered equipment used in and/or around Confined Spaces or potentially explosive environments. This includes; Communication Equipment, Lights, Gas Monitors, PASS Devices, Pagers, Pumps, Blowers etc.

National Electrical Code (NEC) classifications for hazardous locations.

Class I Locations in which flammable Gases or vapours are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

Class II Locations that are hazardous because of the presence of Combustible Dust.

Class III Locations that have the presence of easily ignitable fibres or flyings.

Classes are also broken down into Divisions I & II

Div I Locations where the particular hazardous materials are present in the air in potentially flammable concentrations continuously, frequently or intermittently under normal operating conditions.

Div II Locations which might become hazardous in the event of mechanical breakdown, accident failure or the abnormal operation or equipment.

The Classes are further broken down into Groups;

Class I

Group A Acetylene
Group B Butadlene, Hydrogen, Ethylene Oxide, Propylene Oxide
Group C Acetaldehyde, Ethylene, Cyclopropane, Ether Vapours, UDMH, Unsymmetrical
Group D Acetone,Ammonia,Benzene,Butane,Butyl Alcohol,Butyl Acetate,Ethane,Eythl Acetate, Ethylene Dichloride, Gasoline,
Heptane,Hexanes,Isoprene,Methane,Methanol,Ketones,Propanol,Petroleum,Octanes,Pentanes,Propane,Ethanol
Propylene,Styrene,Toluene,Vinyl Acetate,Vinyl Chloride,Xylanes

Class II

Group E Metal Dust includes Aluminium, Commercial Alloys and Magnesium
Group F Carbon Black, Coal, Charcoal, Coke Dust
Group G Flour, Starch, Grain Dust

Class III

No Groups

Examples of Classifications and Corresponding Rescue Sites;

Class I, Div I & II	Petroleum Refineries, Dry Cleaning Plants, Petrochemical Plants, Hospitals, Utilities, Aircraft Hangers, Paint Manufacturers, Dip Tanks Containing Flammable or Combustible Liquids, Spray Finishing Areas
Class II, Div I & II	Grain Elevators,Some Coal Handling or preparation Plants, Flour and Feed Mills, Confectionary Plants, Fireworks manufacturing and storage, Grain Ships, Areas for packaging and handling of pulverized sugar and cocoa, Manufacturing and Storage of Magnesium, Spice grinding Mills,
Class III, Div I & II	Wood Working Plants, Textile Mills, Cotton Gins, Cotton Seed Mills, Flax producing Plants , Knitting Mills, Weaving Mills

NOTE: Individual group classifications also apply to the above and were omitted for brevity. The above is meant as a guideline only, if you have specific sites you wish to catagorize please refer to the " National Electrical Code" or contact your local OSHA Compliance Officer.

APPENDIX C

Selection of Communication equipment

Selection criteria for rescue equipment can be broken down into two separate categories;

a. Selection of the Technology - The ability of the equipment technology to function reliably within the Confined Space environment. Electrically powered communication equipment can be broken down into two basic types of technologies Wireless and Hardline.

b. Selection of Equipment - The ability of the equipment to withstand the rigors of the job and to survive rough handling, exposure to chemicals, immersion in water, etc...

To select any communication technology to a particular application, we must first create a general abstract of the environment in which the equipment must function ;

Confined Space: Small enclosed space with limited access and egress
Subject to rapid atmosphere changes
Possible explosive or poisonous (IDLH) atmosphere
Structural Barriers
High noise - intermittent and constant
Limited Visibility
Vertical / Horizontal changes in direction
Various types of construction - Steel, Concrete, etc.
Chemicals and Moisture in various concentrations

NOTE: The above abstract is meant as an example, to point out some of the aspects that are common in Confined Space Environments. It is included as a point of reference for the following.

Selection of Technology

Rather than go into a long and detailed description of the technical inner workings of the equipment technologies involved, the following is a summary of comments and considerations by Confined Space Rescue Professionals involved in the evaluation and selection of Confined Space Rescue communication equipment.

Wireless

The advantages of a wireless system are obvious, no hardline, unlimited number of users, freedom of movement, and the ability to utilize existing radio equipment. The disadvantages of a radio system used specifically in Confined Space Rescue may not be so obvious. The following are comments from rescuers who have experimented with common radio systems for Confined Space Rescue use;

- Subject to deadspots and intermittent communication
- Not hands-free, requires push to talk
- VOX accessories require fine adjustment and can lock the system open in high noise areas
- Radio Frequency Interference can affect the readings of other safety equipment (i.e. gas detectors)
- Continuous monitoring of all entrants by the attendant is practically impossible
- Electrical interference and static in the transmission due to generators, welders, power lines, etc.
- Garbled messages which need repeating particularly when using face masks
- Non-private network communications can be monitored and interrupted by outside sources
- Open to lockout by users on the same frequency
- Portable Radios used inside Confined Spaces are subject to considerable damage and high repair costs
- Intrinsic safe radios typically have a limited level of approval

This report recognizes that radio types, styles and manufacturers are varied and that more elaborate radio systems can overcome some of the difficulties listed above. However, this report has been confined to common portable simplex radio equipment widely used by the fire service.

Hardline

The obvious disadvantage to any wired communication system is the hardline itself. Operations that require users to be free to roam or that are carried out in open or spread out areas would never use a hardline system over a wireless one. In Confined Space operations the tables are turned. Hardline systems can provide rescuers with the high level of reliability they need to carry out a rescue operation safely and quickly. The following are comments from rescuers utilizing hardline communication systems designed for use in Confined Space;

- Clarity of communication
- Hands-free is a common feature in hardline systems.
- Continuous communication and entrant monitoring.
- Communication is not affected by electrical interference if hardline is properly shielded.
- Dedicated and private communication system for the entry team.
- Outsiders cannot listen in or interfere with team communication.
- The hardline can be joined with a breathing airline to create a single umbilical.
- The number of core personnel involved in a Confined Space Rescue operation is finite.
- Maintenance and Repair costs are typically low.
- High Level Intrinsic Approved equipment is available.

Communication Rope

Communication equipment designed for dive or high angle rescue is sometimes used for Confined Space applications. The equipment uses communication wires embedded into a kernmantel rope. Following are considerations regarding this type of equipment;

- The life of a rope is limited and replacement costs are ongoing.
- Life Safety rope that has been "Shock loaded" should be removed from service immediately thereby losing communication as well.
- Interior wires cannot be inspected for wear or damage.
- Rope is very difficult to clean.
- Diving equipment does not typically require Intrinsic Safe Approval - Check Approval Level.
- Ask for written certificate of compliance with NFPA Rope Standard from the equipment manufacturer.

Selection of Equipment

Equipment must be designed and built in such a way as to survive the environment that it will be used in on a regular basis. Teams must feel confident that the equipment they are using will work under worst case scenarios. Following is a sample list of questions that, when answered, will give rescuers a good idea of what to expect from a prospective piece of equipment;

- Is the equipment subject to deadspots or interference? How is it shielded?
- Is it a private communication system? Can communication be interrupted?
- Is voice communication continuous?
- What is the level of Intrinsic Safety?
- Is the equipment built to a quality standard? What standard ?
- What type of warranty does it come with?
- What materials are used in the construction of the equipment?
- What is the chemical resistance of the equipment?
- Is the equipment waterproof? Immersion Proof?
- What is the power source? Batteries (type)? Other?
- What is the Battery life? Is there a Low Battery warning?
- Can it be used in while wearing Breathing Apparatus?
- Are System Components and accessories interchangeable?
- How quickly can the equipment be deployed?
- How easy is it to use? How much training is required?
- How many people can be on the communication system at once?
- Can the equipment accommodate communication with the victim prior to entry?
- What kind of accessories are available for the equipment?

APPENDIX D

Deployment of Communication Equipment

The Deployment of a Communication System can vary from one rescue team to another. This is dependent on the number of people, operational procedures, policies, and the rescue deployment strategies. Communication strategies for Confined Space Rescue usually combine two communication technologies to get the job done... i.e. Hardline equipment used inside the space and radio equipment on the outside of a space.

The following relates directly to the use of a hardline communication system for Confined Space Rescue.

Positions and Tasks

It is important to have some common terms of reference regarding the structure of a Confined Space Rescue Team and the tasks assigned to team members involved.

NOTE: Team member positions listed below have been simplified for brevity and are included to help illustrate the following diagrams on Communication System deployment. The author recognizes that in most cases the following tasks will be joined together in various combinations. For example, it is not uncommon for a "Team Leader" to carry out additional tasks listed under the "Safety Attendant" and "Line Tender".

Team Leader:

Co-ordinates the entire rescue, is the focal point of communication, instructions and information. Respond to requests for equipment, relays medical information, etc.

Safety Attendants:

Responsible for the ensuring the safety of the entrants while they are in the Confined Space. Monitors for any symptoms of exposure to hazards and ensures that there are no threats to the entrants in or around the entrance to the space. Also manages lines and co-ordinates equipment to be sent into the space to assist in the rescue.

Primary Entrant(s):

The first one(s) into the space. Responsible for initial contact, assessment and safe removal of the victim from the Confined Space. Must be able to easily communicate with other team members from inside the Confined Space to relay instructions and information. (A minimum of one entrant on a two-person entry team should have voice communication available to them.)

Secondary Entrant(s):

Stand By Rescuer(s), must be able to carry out the tasks of the primary entrants (See Above). Should be able to monitor communications of the primary entry team during stand-by mode. If called upon to enter the space the secondary team should be able to communicate and be monitored by the Attendant. (A minimum of one secondary entrant on a two-person entry team should have voice communication available to them.)

Line Tender/Line Hauler:

Tasked with managing lines and ropes and equipment going into the Confined Space and assisting with the rescue operation. On a communication system the line tender monitors the entry team and relays instructions as they relate to the paying out or taking up of rope, air hose etc.

Air Supply Officer:

Communicates issues regarding the Fresh Air Supply (if applicable) for the entrants. More often this information is relayed through the team leader or safety attendant.

APPENDIX E

Integration of a Communication System

When a Confined Space Rescue Team introduces a voice communication system, members must design and integrate their own communication policies and protocols that will compliment their existing rescue methods. As with any major addition of equipment, team members must become familiar with it and include it in simulations and training programs.

Due to the variety of rescue training scenarios and the diversity of Rescue Team deployments, there are no hard and fast procedures for the introduction of a communication system by Rescue Teams. To illustrate some of the key elements involved in successfully integrating a communication system into a Rescue Team, the following job description for a Communications officer has been created. You may or may not feel the necessity to establish such a position, but the roles and responsibilities are such that they must be addressed to maximize the Rescue Teams effectiveness.

COMMUNICATIONS OFFICER

Description
Member of a Rescue Team responsible for the integration of communications equipment into the teams procedures and protocols while maintaining safety, efficiency and teamwork. Also, responsible for the care, maintenance, deployment of rescue communication equipment

Suggested Roles & Responsibilities

- Arranging with the supplier to provide equipment training and/or rescue training materials
- Studying product literature and becoming familiar with all of the accessories and possible equipment configurations of a communications system.
- Responsible for the testing and general up keep of the equipment, i.e. changing batteries, replacement/repair of lost and damaged equipment.
- Packing the system to ensure quick deployment.
- Training all team members in proper deployment and operation of the Communications System. This includes but is not limited to;
    a. Initiating and maintaining contact with the victim (if possible) upon arrival at the scene and communicating any pertinent information medical or otherwise to the Team Leader.
    b. Assessment of the rescue situation and determination of the most efficient equipment configuration for the rescue at hand.
    c. Outfitting the entrant(s) with the proper communication accessory and ensuring it is worn in a correct manner to ensure optimum performance, and safety
    d. Final functional test before the entrant(s) are approved for entry
    e. Monitoring the entrant(s) while the rescue is in progress and communicating the needs of the entrant(s) to the Team Leader (if not already on the system)
- Determine rules of conduct and develop Standard Operating Procedures to be employed by the Rescue Team as it relates to communication .
- Implement an alternative method of communication, agreed to and understood, by all team members. To be used should a failure occur.
- Keep up to date with the latest application methods and procedures developed during on going training programs.

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