

RESCUE PLANNING

Safety Recommendations for Organizational Rescue Teams

By Rick Argudin

PROFESSIONAL FIRST RESPONDERS handle difficult crisis situations each day without allowing emotions or chaotic scenes to cloud their judgment. Decisions made during emergency situations require that skill set, and acquiring it often comes from years of experience and training. Increasing numbers of employees exposed to work at heights are being outfitted with personal fall arrest systems intended to provide protection after a fall but that frequently leave the employee in a vulnerable situation requiring the need for a prompt rescue. This vulnerable situation was outlined by Kolb and Smith (2015), who state, “It was originally believed that the support harnesses the individual wore created a tourniquet effect, compressing the lower extremity circulatory system, particularly the femoral vein, and causing sympathetic stress on circulation from the pain of a constrictive harness” (p. 49).

According to 29 CFR 1926.502(d)(20), “The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.”

KEY TAKEAWAYS

- This article aims to provide an understanding of the basics of proper preplanning techniques.
- It discusses the importance of training and scheduling periodic drills and reviews the value of cooperative efforts to include local responders.
- Organizations that are developing in-house rescue procedures and purchasing the equipment to accomplish that task should consider the basic emergency management rescue team leadership skills laid out in this article that may not have been recognized or considered before taking on this task.

Some organizations develop in-house rescue procedures and purchase the equipment to accomplish that task. This article is intended as a guide to address some of the basic emergency management rescue team leadership skills that may not have been recognized or considered before taking on this task.

Organizational Commitment

Business owners may seek improvements to operate more efficiently and prosperously. However, an efficient company should also be a safe company. Preventing employee injuries can be expressed in economic terms that may be more meaningful to management than humanitarian goals (Asfahl, 2004). Costs of incidents include direct and hidden costs such as time lost by workers not injured; overtime work or other activities necessitated by the incident; decreased output of the injured worker; and new worker learning period (McElroy, 1981).

Globally, governments require organizations to ensure the safety and health of workers by providing places of employment free from recognized hazards. When specifically addressing work at heights, providing workers with a complete personal fall arrest system must include the “prompt rescue of employees in the event of a fall.” Recent advancements in the design of preengineered rescue systems have allowed for nontechnical personnel to deploy and use a system to safely retrieve fallen workers with basic-level rescue training.

In addition to training, planning is key to success or failure. An effective emergency management plan is designed to prepare an organization for any unexpected or disastrous event. As noted by Hagen et al. (2009), “emergency plans involve organizing and training small groups of people to perform special-

ized services, such as evacuation, firefighting, rescue, spill response or first aid.”

Incident Response Planning

Analytics that help direct the focus of future trends are important to the success of organizations. Specialists in that field of study can analyze statistical data, which can serve to lead an organization toward projected goals. The objective is to always be ahead of the curve. A sound safety culture requires the same amount of effort. It may not be possible to create a zero-incident atmosphere, but planning for the response is the best path to recovery after an incident.

Each year, statistics are collected and published that show the number of fatal falls that occur. Nonfatal injuries are also a concern. The U.S. Bureau of Labor Statistics (BLS, 2019) reports that in 2017, 227,760 nonfatal falls, slips and trips occurred. The following year, that same category recorded 240,160 nonfatal falls, slips and trips.

Hazards are assessed and protective measures are used to prevent or mitigate their occurrence. The use of a personal fall arrest system may not prevent the occurrence but can serve to mitigate the consequences. A well-designed and properly performing system will capture the progress of a fall by decreasing the distance of the fall and reducing the forces felt by the worker during the fall event. The worker may be suspended in the air by the fall arrest system, essentially creating a condition known as suspension trauma or orthostatic intolerance.

According to Pasquier et al. (2011), “suspension trauma is the pathophysiologic response of the human body being suspended motionless in a vertical position for an extended period. Symptoms include presyncope and can lead to a loss of consciousness.” During a presentation of case reviews at the Second International Conference of Mountain Rescue Doctors in Innsbruck, the concept of “rescue death” surfaced as a topic for discussion. The aim of the review was to present the most pertinent studies in this area and to synthesize the best scientific data available to improve the identification and treatment of suspension trauma (Pasquier et al., 2011).

A complete, comprehensive analysis of hazards should review both preincident and postincident conditions to create the best plan of action. Procedures for emergency responses must be documented in operational incident response plans (NFPA, 2017). Once the importance of planning is recognized, the next step is to ensure the organization’s preparedness for any unforeseen incidents.

Operational Equipment

Postfall incidents require a basic understanding of the resulting consequences. Personal fall arrest systems are designed to capture employees who are subjected to a fall; that is the primary intent of the safety device. Any rescue attempts must not degrade nor reduce the importance of victim safety or rescuer safety. The manufacturer’s design requirements should never be compromised or altered during the rescue process. A large majority of preengineered rescue devices are similarly designed to comply with the same requirements. Many preengi-

neered rescue equipment manufacturers are also fall arrest system manufacturers and understand the importance of performance compliance standards. When organizations are tasked with choosing the equipment that they will incorporate into their incident response planning, the simplicity and compliance with performance testing standards should be of primary importance. Part of a comprehensive incident response planning initiative is the feasibility analysis of the equipment and a procurement confirmation. The organization’s goal of its rescue initiative should be to keep the process simple and safe.

The earliest forms of mountaineering date back to the 1300s and 1400s when Charles VIII of France ordered his chamberlain and military engineer Antoine De Ville to scale the inaccessible Mont Aiguille (History Cooperative, 2019). At that time, techniques for lowering and raising were initially considered a specialized and technical skill set, requiring advanced knowledge of knots and mechanical advantage designs. This still holds true today, as most technical rescue teams require extensive training and practice for those skills to remain active in their memories and available at any time. However, not many organizations can set aside employees to be dedicated to this level of training and readiness. Demand for simplicity has created a rescue equipment industry dedicated to nontechnical or preengineered systems, with specific testing and performance standards. NFPA 1983, Life Safety Rope and Equipment for Emergency Services, is one such standard that can serve as a reference in the purchase specifications as minimum requirements. Several manufacturers refer to this standard for specifications on the minimum design, performance, testing and certification requirements.

Preengineered nontechnical rescue systems are designed for simplicity of use and options for various fall scenarios. Some of the latest rescue devices are designed for a self-rescue of a fallen worker. Devices can now be attached directly to any existing harness and allow for a fallen worker to deploy a release mechanism that automatically lowers the worker to the ground at a controlled rate of speed. Other designs combine options for both emergency evacuation and assisted rescue with lifting capabilities. Manufacturers have now substituted the previous rope-and-pulley hauling systems with compact, easy-to-operate and ergonomically designed rescue wheels that provide a better controlled grip for easy lifting or lowering. Several state-of-the-art, fully automatic controlled descent devices can be used for rescue and evacuation from heights more than 575 ft for two users totaling 620 lb. During assisted rescue scenarios, a fallen worker can be attached to the device, raised to a point that allows the fall arrest device to be removed, then lowered to the ground safely.

The substitution of the rescuer or team having to design the system allows them to focus on the rescue response itself and any possible safeguards. Ultimately, any choice of equipment will be based on a thorough review of the potential location of the rescue, conditions and possible limitations for use.

Rescue systems must be readily available, in operational condition and assessable to trained individuals



Training related to rescue scenarios is performance based and geared toward developing a confidence level in the user's abilities. True-to-life examples of rescue scenarios are used to engage the student in a "real-time" execution of various crisis situations.

in the event of an emergency incident. A recommended option that can assist with accomplishing these criteria is using a comprehensive inspection and readiness evaluation process.

Training

No amount of planning or equipment purchases can substitute the importance of a comprehensive and engaged training program. More and more studies support the conclusion that companies investing in training produce improved financial results in terms of higher net sales, gross profits per employee, stock growth and ratio of market to book value (Blanchard & Thacker, 2010).

Training related to rescue scenarios is performance based and geared toward developing a confidence level in the user's abilities. True-to-life examples of rescue scenarios are used to engage the student in a "real-time" execution of various crisis situations. Repetition and periodic drills help to keep team members sharp and can also serve to predict potential obstacles that may occur and must be corrected.

The flexibility to adapt, improvise and adjust is another skill developed during rescue training. Recent upgrades to federal regulations focus on the importance of proper training, as stated in 29 CFR 1910.30(a)(2), "the employer must ensure that each employee is trained by a qualified person." Additional information regarding the recent changes can be found in the subsequent OSHA standard interpretation dated Aug. 31, 2017.

According to ANSI/ASSP Z359.2-2017, a comprehensive rescue training course should include instructional guidance, performance assessments, identification of fall hazards and methods of safely releasing rescue subjects from fall arrest systems. Training commensurate to the organization's operational capabilities should be evaluated annually and provide the continuing education necessary to determine whether the current training has prepared the organization to function at the established operational level (NFPA, 2017). Rescuer training should be provided as necessary depending on the situation or at least every 2 years, with rescue drills conducted annually (ANSI/ASSP, 2017).

Mutual Aid

Local emergency responders rely on prefire planning and periodic business inspections not only to ensure compliance with local codes, but also to familiarize themselves with the layout of certain buildings, possible chemicals being stored or any foreseeable hazards they may encounter should they be required to enter during an emergency event. By establishing a working relationship with local municipalities (e.g., fire, emergency medical services), several goals are accomplished: all parties involved have a copy of the plan; direct communication channels are clarified for all parties involved; it eliminates any disruption to the incident command structure. First responders are not only informed of the in-house plan, but they can also be included. They can arrive and take on either a backup position should the rescue team encounter any issues or support the next step in the command structure by providing medical aid.

No matter what the actual roles are, the benefits of coordinated efforts far outweigh not having a preapproved mutual agreement. Where external resources are required to achieve a desired level of operational capability, mutual aid agreements must be developed with other organizations (NFPA, 2017). Organizations must realize that not all municipalities or regions are the same. Geographical handicaps, logistic limitations and budgetary restraints may need to be addressed. While each authority having jurisdiction may employ different requirements, cooperative efforts between industries and local government have mostly been widely accepted.

Rescue Planning

Organizational preparedness for the possibility of a fall event occurring may include the development of a rescue plan. ANSI recommendations for rescue readiness outline that "written rescue procedures shall be available for all instances where authorized persons work at heights. Such procedures shall contain provisions for the prompt rescue (self-rescue/assisted rescue) of any authorized person who falls" (ANSI/ASSP, 2017, 8.3.2). To better assist companies with this task, the author recommends training using a hierarchy approach to rescue, a thought process designed to systematically pro-

vide the planner with safe options based on the postfall environment. This includes:

1. self-rescue,
2. assisted self-rescue lowering system,
3. mechanically aided hauling/rope systems, and
4. mechanically aided aerial lifting equipment.

Rescue Safety

Any event performed at heights should have safety as its primary concern. During a rescue, this can be accomplished by delegating a competent rescuer trained to identify the resources necessary to conduct a safe, effective rescue from heights and verify that those resources are available for a prompt rescue event (ANSI/ASSP, 2017). Safety officers should have a comprehensive knowledge of incident hazards, applicable regulations and standards, the company rescue plan, recognized safety practices and risk management criteria, including what constitutes unacceptable levels of risk (NFPA, 2020). It is the responsibility of the authorized rescuers to perform or assist in workplace rescues, verify that a rescue procedure has been developed, inspect the rescue equipment prior to a rescue event and be trained to recognize local fall hazards that may endanger the rescuer during rescue operations (ANSI/ASSP, 2017). Medical considerations are always part of a complete preincident management plan, and several regulatory requirements reference that safe employee work environments should provide for medical aid (29 CFR 1910.151).

Conclusion

Safety is the process that seeks to continuously provide the occupational workforce with places of employment that are free of recognized hazards. OSH professionals work together by sharing past experiences and their subject matter expertise in ways that assist everyone with the accomplishment of that same unified goal. It is within that same spirit of cooperation that the subject of rescue becomes an area of constant improvement. It is often said that everything in life happens for a reason. Let's take every opportunity that presents itself, good or bad, to prevent the repetition of a past mistake. At times, best practices are unfortunately established and recognized because of postincident investigations.

As we work to complement our current rescue crisis management competencies, remember the value of planning:

- Prepare and inspect all gear;
- Leader/team roles assigned and practiced;
- All hazards identified and controlled; and
- Nothing left to chance. **PSJ**

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