Yocco Firefighter Drag Rescue Device

By Frank Ricci and Anthony Avillo

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The day will start like any other--plans for the weekend or that family vacation on your mind. Than, in a tenth of a second, you are responding to a working fire. Are you prepared for what you may be called on to do? The time to find out if you are proficient for the task at hand has long past. In researching this article, we were surprised to find that many departments that have drag rescue devices (DRD) have never trained with them. In addition, we found that some of those who were "wear testing" new turnouts for their department did not have any formal training in the use of the DRD and, in one case, the harness was not even positioned properly in the coat.

The purpose of this article is to provide information on a device that is relatively new to most of the fire service. As such, it is incumbent on the fire service to research, play with, try to break, and generally understand the capabilities and limitations of all new equipment. A word of caution: Repeated training can damage the moisture barrier in your coat. Many departments use condemned SCBA bottles for RIT drags. Having a dedicated coat that can be used strictly for training is a good option.

To this end and (hopefully) to enlighten and benefit the entire fire service, we offer the following insight into the positives, negatives, and use of the Yocco Drag Rescue Device.

The Device And How It Works

Imagine a device that allows firefighters to quickly remove a downed firefighter by simply dragging a loop of webbing that is already part of the turnout coat ensemble. No longer do we have to try to put a sling link or other type of harness on a firefighter in a zero-visibility condition. No longer do we have to attempt to manipulate a waist strap on an SCBA harness to form a utility loop in deteriorating conditions for a horizontal drag. The DRD--what a concept!

NFPA 1971 outlines the guidelines that all new turnout coats must meet to be compliant. The DRD meets this compliance. To do so, the DRD must pass all of the standard tests for flame and heat resistance as outlined in NFPA 1971. In addition, there are design requirements such as labeling as well as seam strength and deployment testing specific to the DRD harness.

The DRD is simple to set up and simple to deploy. It is generally located just beneath the collar on the back of new turnout coats. The harness operates by forming loops that cinch themselves beneath the armpits. The device is a continuous loop not unlike a rescue sling. It is positioned on the exterior of coat between the outer shell and the thermal barrier system. The device basically sits wrapped under the wearer's arms between the moisture barrier and the turnout coat shell. When deployed, the top loop is released by pulling up on a Velcro® tab on the collar and pulling the top of the device loop upward and outward, taking the slack out of the harness and tightening it around the wearer's armpits, making it ideal for dragging (photo 1).

(1). The DRD deployed. (Photo by Jim Ricci courtesy of Globe.) Click to enlarge

We did encounter some firefighter-caused limitations with deployment. Firefighters are trained to carry the weight of their SCBA on their hips; this allows easy access to the DRD. If the firefighter is carrying the weight of the pack on his shoulders, it is harder to deploy. Some models of SCBA completely cover the DRD even when worn correctly (photos 2, 3).

(2) The DRD is covered by straps and hoses with some models of SCBA. (Photo by Jim Ricci courtesy of Globe.) Click to enlarge

(3) When SCBA is worn properly, the DRD is easier to deploy. (Photo by Jim Ricci courtesy of Globe.) Click to enlarge

The device comes with a user information guide, outlining the manufacturer's recommendations for the device. We highly recommend that the wearer read and become familiar with harness layout, setup, and deployment. After each deployment, the handle (pulling loop) must be reset on the back of the coat in accordance with the user guide instructions. It also should be periodically checked to ensure it is properly installed and is not damaged in any way.

According to the user information guide, the purpose of the DRD is to aid firefighters with the rescue of an incapacitated firefighter by dragging him along a horizontal plane.

The device is intended to assist in pulling or dragging an incapacitated firefighter and is not designed or tested for use in vertical rescue operations. The guide further states that the product is only for structural or proximity firefighting. The DRD is not an escape harness for lifting or lowering a person on a lifeline.

Testing The Device

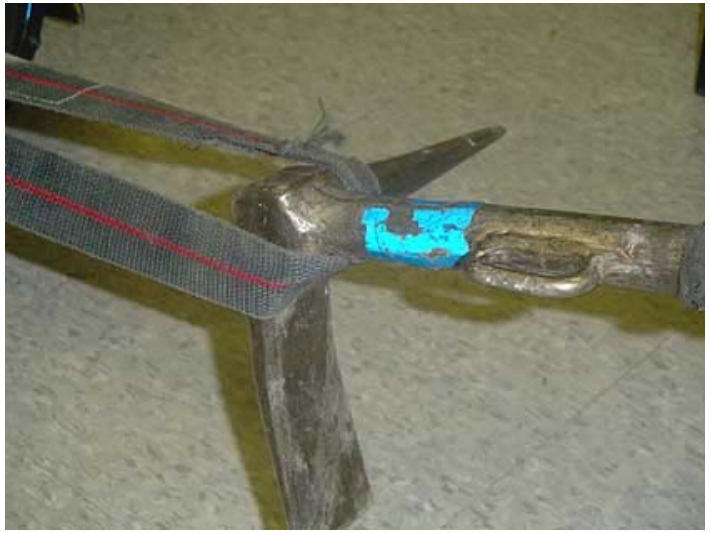
User guide notwithstanding, we set out to do what firefighters typically do: see what the hubbub was about. We wanted to find out the device's capabilities and limitations. We employed the help of members of the Tech Rescue Task Force from North Hudson Regional (NJ) Fire and Rescue as well as departments from Naugatuck, Middletown, and New Haven (CT). We put the device through the paces and found out plenty.

First and foremost, once the downed firefighter is located, his position should be communicated to command and a team member should assess his air supply. If it is your partner that goes down, transmit the Mayday and follow your department's SOPs for rapid intervention and firefighter rescue. We found that the handle or pull loop, once slack is pulled out of it, is plenty big enough for two firefighters to get a grip on it simultaneously. We also found that if the firefighter being rescued does not have his turnout coat closed all the way or the SCBA waist strap is not in place, the unsecured areas start to separate and the coat begins to ride up.

The first myth we sought to dispel was that the device should not be used for a vertical pull. We set up a 4:1 system and connected the device loop handle to the system. As we began to gently haul the victim, it became apparent he was in extreme discomfort to say the least. The issue was that his weight (all of it) was being transferred to the area under the armpits. We abandoned the vertical movement and advise it should NOT be attempted.

We then concentrated on the horizontal pull. We brainstormed several different ways to use the harness, mostly using different tools that the firefighters in the immediate area of the incapacitated firefighter would have available. The following section and accompanying photos show these procedures. The explanation is brief; the pictures are worth a thousand words.

- **Using a Halligan Tool--One-Firefighter Rescue** (photo 4).
  In this drag, the firefighter takes the adz end of the halligan and places it through the loop handle adz end up. The weight of the incapacitated firefighter on the ground and the angle of the pull keep the tool in place.



(4) As long as tension is kept in the pull, the angle between the firefighter holding the halligan and the DRD on the victim should keep the tool in place. (Photo by Anthony Avillo.) *Click to enlarge*

- **Using the Halligan Tool--Two-Firefighter Rescue** (photos 5, 6).
  This rescue can be done by two firefighters working side-by-side. The halligan is placed between the looped handle of the DRD, and both firefighters grab an end to pull the firefighter out of danger. This is superior to two firefighters dragging the incapacitated firefighter side-by-side by hand, as this method allows some room between them so they are not in each other's way as much.

(5) Click to enlarge

(6) The two-firefighter halligan method allows for rapid firefighter rescue. It may not be suited for tight hallways. (Photos by Anthony Avillo.) Click to enlarge

- **Using a Halligan Hook or Pike Pole--One-Firefighter Rescue** (photos 7, 8).
  This is similar to the halligan tool rescue but in this case the firefighter has a halligan hook or a pike pole. The hook end of the tool is placed through the loop and twisted around until the harness binds on the tool. If the harness is not kept taut, the tool falls out and the pulling capability is lost (the same applies when using the

one-firefighter halligan tool rescue as outlined above). We also found that the halligan hook works better than the pike pole.

(7) Click to enlarge

(8) If only a halligan hook or pike pole is available, make sure the tool twists in the DRD until it binds. Again, it is easiest when slack in the harness is minimized. (Photos by Anthony Avillo.) Click to enlarge

- **The Narrow Hallway Maneuver/Extending the Strap--Two-Firefighter Rescue** (photos 9, 10).
  This is a variation on the two-firefighter drag (using a halligan or hands) where you encounter width limitations such as in a narrow hallway. In this case, you can still use two rescuers. One rescuer grabs the handle loop with his hand while the other uses a sling or a length of rope doubled through the harness handle loop. In this way, one rescuer is in line with and ahead of the other, providing a double pull in a space where one only rescuer could normally negotiate the hallway. Communication is essential for coordination of the pull here so the rescuers don't pull against each other. Without using a mechanical advantage, this provided the best pull power.

(9) Click to enlarge

(10) This staggered firefighter positioning will work best in narrow areas. All firefighters should be carrying either webbing or rope in their turnout gear. (Photos by Anthony Avillo.) Click to enlarge

- **The 2: 1 Mechanical Advantage Drag** (photos 11, 12).
  This drag uses two carabiners and a length of rope. The rescuer can also use a class 2 harness and then only needs one carabiner and a length of rope. With the two-carabiner method, one carabiner is anchored off to a substantial object such as a banister. A figure eight on a bight is secured to the anchor carabiner while the other with the rope running through it is attached to the handle loop of the DRD. This may be a little difficult to set up in obscured visibility conditions, but it is quicker and easier when only one firefighter is initially available for the drag. This configuration also allows the rescuer to control the pull, meaning that he might be able to be in an area of relative safety as long as a straight line of travel is between him and the downed firefighter. This maneuver requires practice.

(11) Click to enlarge

(12) Firefighters should also carry carabiners in their gear, especially those assigned to ladder, squad, or rescue companies. This 2:1 advantage makes the drag half as difficult. (Photos by Anthony Avillo.) Click to enlarge

- **The Anchorless 2:1 Mechanical Advantage Drag** (photos 13, 14).
  This is a variation of the mechanical advantage discussed in the last section. Use this drag when the rescuer does not have a sufficient anchor on which to secure the carabiner. In this case, the rescuer uses his class 2 harness as the anchor tie-off and his body as the anchor. To do this, he needs to find a substantial area in which to brace his legs. The best place to brace his body is in a doorway where he can put one foot on each side of the door frame and pull the victim to him in the same fashion as the 2:1 mechanical advantage in the preceding section. Without a harness or some other device on his turnouts to anchor the rope to, this may not be possible.

(13) Click to enlarge

(14) The ability to improvise has always set the fire service apart from other people on the planet. It is what we do best. (Photos by Anthony Avillo.) Click to enlarge

- **Belt or Harness Drag** (photos 15, 16).
  For a horizontal drag with one firefighter, we found this method to be the most effective and the least labor-intensive. The rescuer will convert his waist strap and send it through the loop of the DRD. He could also accomplish this by hooking into the DRD with the class 2 harness. Once hooked in, he straddles the downed firefighter,

making sure not to dislodge the face mask. Now he can crawl with his tool on all fours and drag the downed firefighter in line between his legs.

(15) Click to enlarge

(16) These photos demonstrate the belt or harness drag. Note your waist strap must go through your legs. (Photos by Jim Duffy courtesy of Globe.) Click to enlarge

- **Stair Drags** (photos 17-21).
  The device is not recommended to move a firefighter up or down stairs. The problem with using it alone is that when the SCBA gets stuck, it is difficult to turn the firefighter's body with the strap. Also the length of the strap that makes it conducive for horizontal drags is a hindrance when pulling up and forces the firefighter on top to pull with his arms instead of lifting with his legs. However, when the downed firefighter's SCBA is converted into a harness and members are trained to pull the DRD

in opposite directions under both shoulder straps, it will provide two short loops to grab, giving the firefighter the leverage and control to manipulate the downed firefighter up the stairs. When trying to go down the stairs, the head is not supported and will tend to hit the stairs unless the strap is used as described above.

(17) When the SCBA gets stuck and you try to dislodge the SCBA, the DRD strap turns on itself instead of freeing the firefighter. (Photos by Jim Duffy courtesy of Globe.)
Click to enlarge

(18) One side of the DRD is pulled under the SCBA strap. Click to enlarge

(19) Both straps are pulled under the shoulder straps, producing two separate, short loops. Click to enlarge

(20) After the SCBA waist strap is converted, the shorter loops allow for a safe, efficient, and effective pull up the stairs. Click to enlarge

(21) If DRD is not split through the straps, it will be too long, allowing the victim's head to hit the stairs. Click to enlarge

These are just a few of the ways to use the DRD more efficiently in the rescue of an incapacitated firefighter. This is by no means the only way to accomplish this objective. One of the most valuable attributes that firefighters have is the ability to modify and adapt to overcome and make the job more efficient. That is part of who we are.

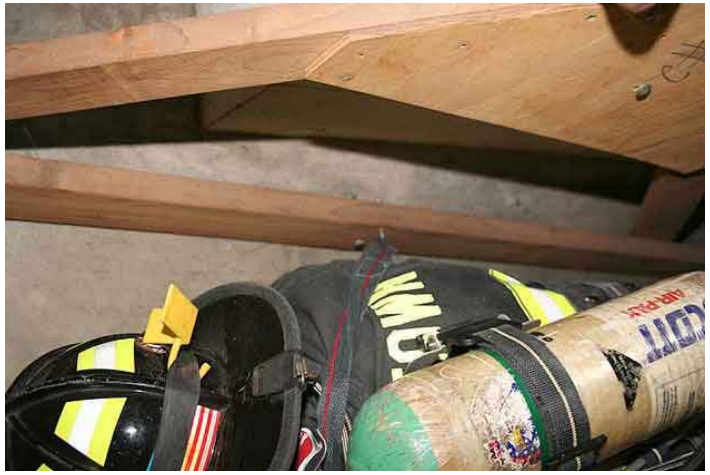
An old chief once said that you must adapt to be effective, you must invent to overcome, and you must create to compensate. Remember, the time to find out if something works should not be at 3:00 a.m. when the building is on fire.

Additional Tips

A few other points are worth mentioning here as well.

1.If you find yourself in the situation where you have to be the rescuer, ensure you do the following:
-- Shut off the victim's pass device and assess his air supply.
-- Sound a Mayday. Get Command's attention in regard to your predicament.
-- Don't wait to sound the Mayday. Every second delayed is two seconds (at least) that someone is not coming to help you.
-- Call for help. It is better than doing this alone.
-- Monitor your air supply. Don't become a victim yourself!

2. Know your gear and check it. Make sure the loops of the harness are securely positioned in both sleeves and secured properly by the Velcro® strap at the back of the collar. Check it regularly. This is imperative. In a recent safety and survival class, the strap deployed and got caught, trapping the firefighter as he tried to breach through a wall. One department would deploy the strap and hang it up to see how the firefighter would react. This practice was stopped after one set of gear was damaged and an injured shoulder (photo 22).



(22) If your strap gets caught, back up and create slack, then use the swim technique to clear the entanglement. If you cannot clear it on the first shot, communicate with your partner and consider giving a Mayday. (Photo by Jim Duffy courtesy of Globe.) *Click to enlarge*

Overall, we found that the DRD allows rapid removal of a downed firefighter in less time with less effort. Like any tool, you must practice these skills or you will not be successful when you need them the most.

Finally, if your company or department comes up with something that works that we haven't mentioned, it is worth posting on the Fire Engineering Training Community so the fire service can benefit from the information and experience of others. You can post it on the main page, on Anthony Avillo's Fireground Strategies group or on Frank Ricci's Tactical Building Blocks group. All information is welcome, especially as we get acquainted with new equipment.

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