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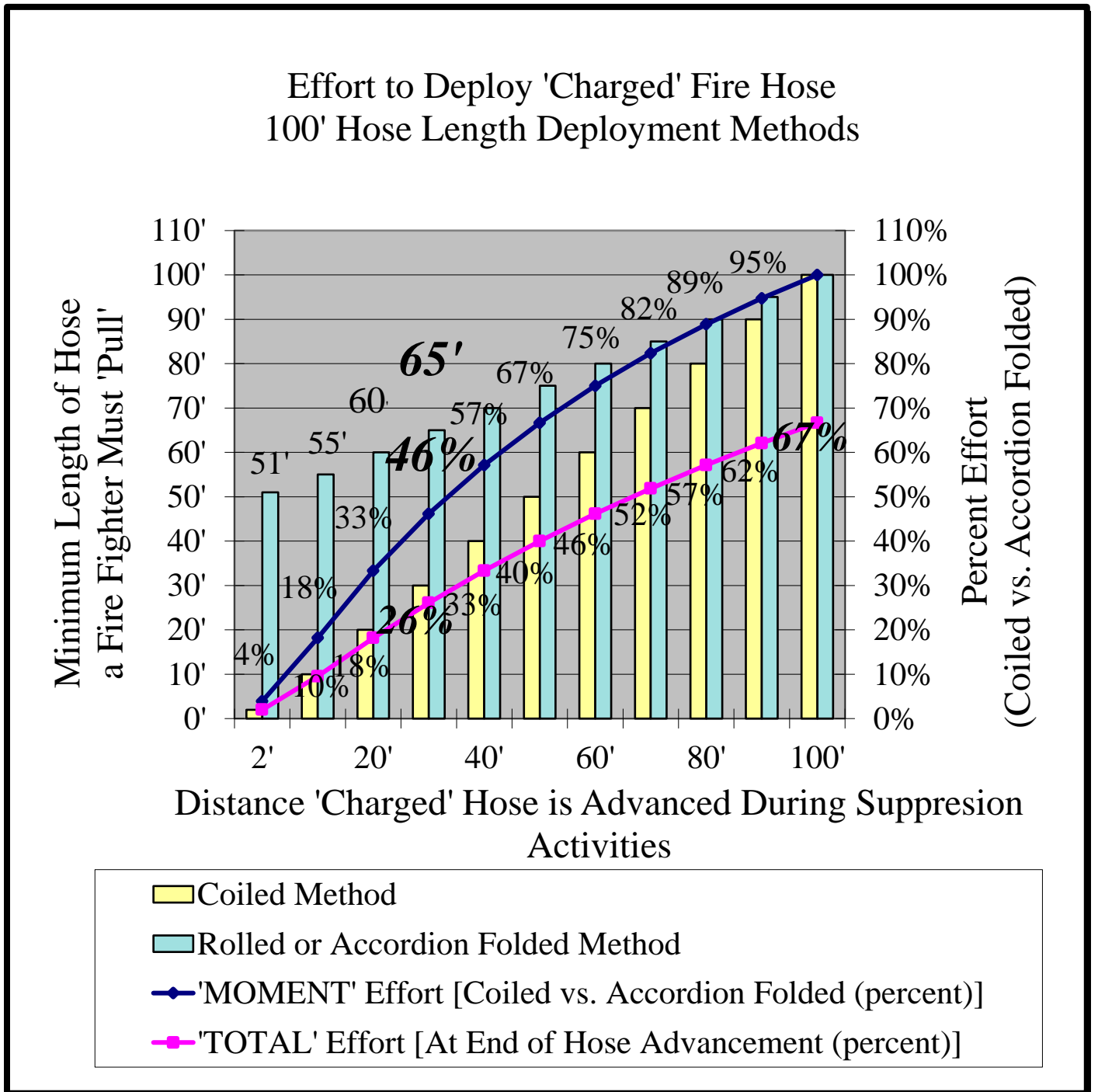
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Effort to Deploy Fire Hose

'Bundle' (Coiled) vs. Folded/'Double-Donut' Rolled 'Moment' and 'Total' Energy Expended/Required



The question is, ***“How much energy is truly required (and sacrificed) to effectively spray the wet stuff on the red stuff, even at the risk of sacrificing our SAFETY, especially when every second counts?”***

This graph aims to mathematically prove the advantages of utilizing the Laws of Physics that apply to any typical garden hose replaced ‘coiled’ at its water supply (faucet) as it relates to every fire hose fully charged under all conditions. The bars and lines described below represent ALL fire hoses, comparing the ***'Moment'*** energy (the strength it takes to move the nozzle only inches) versus the ***'Total'*** energy to deploy a fire hose upon either of two (2) primary methods.

The two (2) basic configurations include the traditional and most popular ‘Minute-Man’ or ‘triple-fold’ flat load FOLDED or ‘double-donut’ roll vs. the coiled configuration; in the same manner, we return every garden hose to its original state. Unfortunately, the ‘Minute-Man’ creates many pre-engineered water-restrictive kinks that every firefighter must first unfold in a small area. In contrast, the triple fold requires unobstructed linear space at one-third of its length. The double-donut requires a firefighter to secure one-half its length of linear distance before deployment, and each, before the first drop of water, will charge the nozzle.

The issue that plagues firefighters every day to improve is stifled upon 150 years of PROUD ‘Tradition’ at the COST OF PROGRESSION upon the attitude ***“If it worked yesterday, it will work tomorrow! You have enough to worry about today!”*** The message is clear: Every ‘good’ (subordinate) firefighter will go with the flow and never rock the boat of stability of daily routine. We have enough confusion and struggle to keep up with the hundreds of hours of other training required annually. And besides, rookies are constantly reminded that they are not high-ranking officers and will learn over time. Newbies are reminded continuously, just as I was, to learn and master, as instructed, all ‘traditional’ methods and never look outside the box. Especially after a century of deploying pre-connects, ***“DO NOT TOUCH THE FOLDED (pre-engineered KINKED) HOSE!”***

And because the hierarchy demands no ruffled feathers at the top SHALL be tolerated, good luck articulating any contribution of any innovation downloaded from our universe, just as I demonstrated and videotaped my first version in 1987! So, for example, please enjoy my online YouTube video at <http://HoseRoller.net>, yet my TRADITIONALIST fire chief at the time reminded me, ***“We can’t do that. It ain’t in the IFSTA Essentials training manual!”*** Yet, my REMAIN SILENT or be REPRIMANDED ‘self-talk’ argument was, ***“Well, neither are our (newer) fire apparatus. So should we trade those back in upon the same premise!?!”***

It wasn’t until after I filed my first patent in 1998, upon 21 claims never declared in human history, that I again VHS videotaped in 1999, recorded to a DVD in 2004, and finally uploaded online on YouTube in 2006. Now after over 150,000 international hits to date, amongst three (3) separate versions, the Texas A & M University Fire School Dean of students contacted me in early 2007 requesting my copyright release to teach ALL STUDENTS attending internationally to declare:

“You, sir, are the first firefighter in the last 110 years amongst millions like ourselves from all five (5) continents on the globe to DO what we never thought was possible, let alone VIDEO DEMONSTRATED!”

Why? Because it is merely human to avoid change at all costs upon our commitment to an all-EASIER daily routine. The same **DANGER** to sticking with **Plan “A”** long after the dynamics of an incident have altered that our crews can be at imminent risk of injury and death. Any significant change to the ‘normal’ routine, especially practiced repeatedly for hundreds of hours annually, is difficult at best. We live in a box where geography determines methodology and how we are left alone to BELIEVE what is best, especially after over a century of ‘Tradition.’

Similarly, the declaration radios for any subordinate wildland fireline crew members were considered an absolute waste of money. Too much radio chatter and way TOO EXPENSIVE by those in charge who never had a radio when they were rookies. And then reality hit with our first big fire year in California in 1987.

And all those incidents before and since we lost nineteen (19) souls in the Yamill Hill incident in Arizona in 2013, the term ‘***change***’ has a different ring. Yeah, the LAST BELL! The same incident that inspired the passing of the **Wildland Fire Management Technology Act of 2018**, that our elected congress has answered the call to attempt to meet the ‘**Holy Grail**’ requirements of wildland fire SAFETY. The very Congressional Act that I, upon special invitation only, was requested to provide input regarding these criteria recognized as one of the top firefighters in 2020. Billy Freeman, Assistant Director of FirstNet.gov, invited me to join Kim Zagaris, California OES Fire Chief and founder/author of FireScope, and a Fire Chief Officer responsible for forty-two East Coast fire departments.

Similarly, my phone apps and slide-rule require 100% ***REAL-TIME*** verification of a firefighter’s location during a wildland hoselay evolution; this gentleman invented technology (upon five (5) GPS satellites) to determine a distress signal on the sixth floor of a high-rise vs. the seventh. Our duty was to reflect on the past tragedies we have faced with every increasing fire behavior year, determine where we are currently, and brainstorm and consider the options available today for tomorrow. The focus was to inquire about what we can accomplish to prevent history from repeating itself well into the ominous future that lies before us.

My <https://HydraulicsApp.com> and the world's first-ever <http://HydraulicsSlideRule.com> (the only mechanical calculator invented on planet Earth in the past forty years) provide immediate **REAL-TIME** Engine Pressure (EP) results in mere seconds! Hence my special invitation to be included in the Wildland Urban Interface Roundtable discussion because my equipment requires every driver/operator to adhere to NFPA 1002 as it applies to NFPA 1051 upon the requirements of NFPA 1041. How? Because my system requires direct communication with each crew member on the fireline to determine every **REAL-TIME** calculated Engine Pressure (EP) on any wildland hoselay pumping operation to meet and exceed every LAW REQUIRED DISCLOSURE of a firefighter's:

- **Location** – To determine the number of (20'/40') elevation contour lines on a 2-D digital or hard-copy map to more accurately estimate the HEAD pressure element.
- **Situation Status** – All updates to ensure the ability to request additional resources to improve firefighter SAFETY are never compromised.
- **SOS Emergency Call button** - Regardless of a firefighter's ability to verbalize the need for **HELP!**

However, the issue was that these congressional mandates, though drawn in 2018 and passed into law in February 2019, were REQUIRED to have equipment already purchased, operational, and distributed to be in hand and fully implemented nationwide by February 16, 2020, especially for the upcoming active fire season.

Yet again, here we were in total non-compliance. I hate to consider the TRADITIONALISTS' ringtone may have affected the wait for the 'chosen' contractor(s) to position themselves to make \$MILLIONS. That non-action to distribute countless units created another nine (9) months delay and continued extreme risk to firefighter safety upon directly violating this Congressional Act.

Sorry, but money is a mere tool. A tool to accomplish the things we dream to (hopefully) make a difference for others as we earn the revenue to support ourselves and our families. Yes, the more we secure, the more powerful we may feel. But to be almost a year over schedule at the SACRIFICE TO FIREFIGHTER SAFETY for the entire 2020 fire season remains unacceptable in my book! So my portion of the discussion, I never ceased my argument to get off our *ssess and purchase and

distribute the SAME SUPERIOR TECHNOLOGY our military has used for the SAFETY of its ground troops for decades! Indeed, how much simpler can it be!?!

Please review my contribution(s) to the world to increase firefighter safety and efficiency, especially as we face our future upon the effects of evidenced climate change to cause fire activity never witnessed in human history.

Now for the chart details above, please carefully identify each component of this graph. The **BLUE BAR** graph illustrates the typical 50' 'tail' of a hose dragged behind a firefighter when advancing/pulling a 150' 'pre-connect' or 'Live-Line.' It also represents folded hose or the minimum of 50' behind a 100' 'Double-Donut' roll of hose that is (stupidly) unrolled, in reverse, back down the hill just traversed. This graph does NOT express the incredible amount of added necessary energy to drag the water weight of an inch and a half line UPHILL! Only the slope angle and trigonometric equations can determine this WASTE OF ENERGY EXERTED!

The **YELLOW BAR** illustrates the 'tail' of hose dragged behind a firefighter when advancing each foot of 100' of hose from a 'high-rise' or wildland ('Cleveland'/Gnass/'HOFF') 'Bundle.' The firefighter must only pull a portion of the last 100' length of hose of any (correctly) prepared coil configuration pre-connect from any starting point in the deployment phase. Every hose bundle can be dropped on the ground and FULLY CHARGED with zero water-restrictive kinks in seconds to ensure 100% nozzle flow when proper Engine Pressure (EP) is established!

Note: The energy wasted upon being required to pull a fully charged hose and resulting water weight BACK UP THE HILL from an area already traversed and accomplished is 100% eliminated! These simple laws of physics do NOT require a firefighter to unnecessarily exert this expected incredible amount of energy to achieve the same task a second time! Every firefighter can achieve SAFE, effortless hose deployment EVERY TIME!

Note the effortless deployment process I demonstrate in scene #1: AFTER walking around a parked car and then walking through into one (1) bay door to exit a second/adjacent garage/bay door, I would never have gotten this far with a triple fold configuration. The beginning of the video illustrates a knotted, folded nightmare in an open lot. I demonstrate how a hose line wrapped around the solid post between each bay door is FULLY charged... with NO KINKS... and then

deployed to its full length in less than 40 seconds. Unheard of! I never pulled any more charged hose than I ever needed, and only from the moment of pressurization up to its entire length, as only ONE (1) firefighter can accomplish this with zero assistance in record time with 100% nozzle flow at every point of the evolution.

Any other hose-load configuration (Flat-Load, Triple-Fold, modified Minute-Man) with any tail whatsoever would immediately cease all forward progression at the parked vehicle's first right-angle turn at the left rear tire. I demonstrate an EFFORTLESS deployment that simulates advancing up to the point of entry into a burning building and near effortless advancement of the fully charged line inside. Full nozzle pressure protection at every step to a fire victim creates an excellent indicator for emergency egress (following the hose back to SAFETY) by the shortest distance from the danger zone back to my apparatus (during Rescue Ops!)

In other words, a hose 'bundle' can be advanced DRY with NO effort to a point where water is required to be protected from and suppress the fire. As long as the hose is coiled to its 'Minimum Critical Inside Diameter,' all kinks are prevented. It is then fully pressurized when the pump panel valve is activated in mere seconds.

The **BLUE LINE** graph illustrates the amount of **MOMENT EFFORT** given as a percentage in effort/energy to advance/pull any hose at any point in the deployment process given at a specific distance when comparing the 'Bundle' method vs. that of a folded/rolled method. The **BOLD** example upon advancing **30'** of 'COILED' hose [**YELLOW BARS** in a triangular illustration] is **46%** of the effort to pull the same charged hose. Still, because it is folded or rolled to always have at least a 50' tail, it is compared to the 65' length of folded/rolled hose [**BLUE BAR**] upon the nozzle advanced to that **30' foot** distance from the point at which the driver/operator first charged the hose.

The **MAGENTA LINE** graph illustrates, as a percentage also, the comparison of the '**TOTAL**' EFFORT OF THESE COMPARED HOSE ADVANCE evolutions of the Coiled 'Bundle' Method vs. that of the folded/rolled method from the point of commencement. The coiled method at **2' feet** is **4%** of the moment effort; at **10' feet**, it was **18%** of the moment effort; at **20' feet**, it was **33%** of the moment effort; and at **30' feet**, it is **46%** of the moment effort.

*But what is key is the TOTAL EFFORT from start to finish. The TOTAL EFFORT of the entire evolution, when you measure the SURFACE AREA under all **YELLOW BARS** compared to the SURFACE AREA under all the corresponding **BLUE BARS**, it is then, therefore, evidenced by the TOTAL EFFORT from **zero (0') to 30'** is only **26%**! So now, how much energy remains?*

Hence, in the same way that the video at <http://HoseRoller.net> [and <http://HoseCabinet.com>] demonstrates that one firefighter can do the same work as four (4)... in one quarter (1/4) the time... and a quarter (1/4) of the effort... and with absolutely **NO water restrictive kinks EVER!** The graph above is the mathematical evidence this evolution of deploying hose from a coil configuration proves (upon demonstration) all claims are far more efficient than any other methods that most are even aware of, let alone can imagine! Hence the inquiries, *“How did you...?”*

The choice is yours! Continue to fold that long flat stuff on that horse wagon as ordered in the nineteenth century, or consider that there is a better method that produces an incredibly, yet predictable, demonstrated, calculated, and now mathematically proven result? ...to ensure <http://FireAndLifeSafety.org>

Mr. Hoffmann has spent over 40 years (since the Gnass Pack in 1981) reviewing long-held beliefs and firefighting methods. Through applying mathematics and physics, he educates more efficient and accurate methods for calculating hydraulics, friction loss, and engine pressure in seconds. After 14 months of intense work and leadership, he invented the world's first <https://WaterTenderApp.com> Shuttle Calculator at IFSTA specifications.

He has since dedicated his life to serving the <https://FallenFiance.org> of our fallen First Responders and Military personnel who suffer the same shattered heart and soul, yet only worse due to ZERO Death Benefits from an ‘Ultimate Sacrificed’ wedding date. Please donate today <https://ToMakeADifferenceForOthers.org>

Mr. Hoffmann's other accomplishments at <http://RWHoffmann.com> include his Power-Grid independent Solar Powered/Battery Backup/Satellite Internet manual/automatically controlled water pump and Exterior Fire Sprinkler System. A method that significantly reduces Fire Losses as 3,000 gallons will last longer than 30,000 gallons of the same water because: <http://WetHomesDontBurn.com>.

<https://OutThinkWildfire.org> to be NFPA <http://FireWiser.org>