A QUARTERLY PUBLICATION

TASK FORCE TIPS

FALL 2001

TASK FORCE TIPS

www.tft.com

GET IN THE ZONE

InterZone That Is!

IN THIS ISSUE

Often, these calls are just referred to as brush, grass, or cover fires, and if structures are somehow involved or threatened, wildland urban interface, or InterZone, seems to be a popular phrase. Whatever term your agency uses, the challenges facing a typical municipal structural department dealing with a running wildland fire may seem insurmountable. The correct choice of fire fighting equipment and some level of wildfire cross-training for the first responders will ultimately determine your level of success. Here are a few basic action plans any department can easily and relatively inexpensively implement to improve suppression performance.

- ***Participate in wildland fire cross training programs to better understand the effects of weather, topography, and fuels on fire behavior as well as tactics needed for fast moving fires.***
- ***Consider the use of single layer NFPA and OSHA approved Nomex or fire retardant cotton clothing and lightweight helmets with goggles instead of the heavy structural firefighting ensembles.***
- ***Add flexibility to your fire stream choices with the addition of lightweight 1" hoselines, simple dual gallonage nozzles, and inexpensive forestry wyes, tees, and adapters. Pulling hundreds of feet of heavy 1-3/4" hose through the woods should never be the only choice you have.***
- ***Use Class A foam during operations to maximize water usage and eliminate rekindles. Whether it is batch mixed, injected through an eductor, or proportioned at the truck, Class A foam is an inexpensive and efficient tool for wildfire operations and structural exposure protection.***

For years, agencies such as the U.S. Forest Service, National Park Service, Bureau of Land Management, and California Department of Forestry and Fire Protection have counted on Task Force Tips, Inc. to provide unique, rugged, high performance wildfire suppression equipment. If you are looking to upgrade your InterZone capabilities, visit our web site www.tft.com to help create your wish list.

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WELCOME

The old fire service joke about *"years and years of incredible tradition unimpeded by any real progress"* is no truer than looking at the myths and urban legends that surround the decades old Smooth Bore vs. Combination nozzle controversy.

It seems in the fire streams management business that no other issue solicits as much emotion, inaccurate and misleading articles, or rancor as two firefighters having a heated discussion on the use of smooth bore tips. Certainly, a close second in the emotional stress category is the preference of pistol grips, but that discussion falls well short of the bravado surrounding reach, penetration, and flow issues.

Now, before I go any further with this thought, I will mention that we do make over 25 combinations of smooth bore nozzles and tips, a full line of NFPA compliant fixed and selectable gallonage nozzles, as well as the broadest selection of automatic nozzles in the world. And, even though our goal is to produce the finest, most rugged equipment available in all categories, fire streams management is ultimately all about flexibility, options, and performance.

The myths of smooth bore tips hitting harder and reaching farther are quite simply dismissed when a simple side-by-side demonstration with a low-pressure or dual-pressure combination nozzle providing an equal flow is undertaken. The use of a smooth bore tip limits a firefighter's options. No longer can a stream be gated to reduce flow and nozzle reaction without degrading stream quality. No longer can a fog pattern be used for firefighter protection or hydraulic ventilation. No longer can fire flows be matched to the ever-changing conditions within the fire environment.

Successful, rapid, fire suppression is primarily about providing maximum flow to the seat of the fire while at the same time offering the firefighter the highest level of options, flexibility and safety. As a fixed gallonage device, the smooth bore tip restricts your attack crew's capabilities

In this quarter's newsletter, we will take a look at smooth bore/combination nozzle performance. Also, I invite you to take our on-line firefighting quiz and see how you stack up to other fire service professionals. Just drop by the web site www.tft.com and click on the quiz section. Enjoy this quarter's information and let us know how we can help.

Regards,

Stewart McMillan
President

TFT®
TASK FORCE TIPS

UPCOMING SHOWS

New Jersey Firefighters' Convention

Sept. 13-15, 2001
Wildwood, NJ

Visit with Jim, Chris, and Richie from Cottrell Associates and go through several of the eastern demonstration / support vehicles that will be on display.

CAFC Fire Rescue Canada

Sept. 21-23, 2001
London, Ontario, CN

Stop by and visit with Larry Linton our Canadian Regional Manager and his demonstration / support vehicle

Alaska Joint Conference

Sept. 25-28, 2001
Anchorage, AK

Visit with Doug O'Donnell, Northwestern Regional Manager at this once-a-year firefighters' conference.

Hot Zone 2001

Oct. 11-14, 2001
Fort Worth, TX

The second annual HOTZONE 2001 Conference will be held at the Ramada Plaza Hotel in Fort Worth, Texas. Stop by and visit TFT's rep Jerry Pilarski and review all of the new products on his demonstration / training vehicle.

Fire Tech Reno

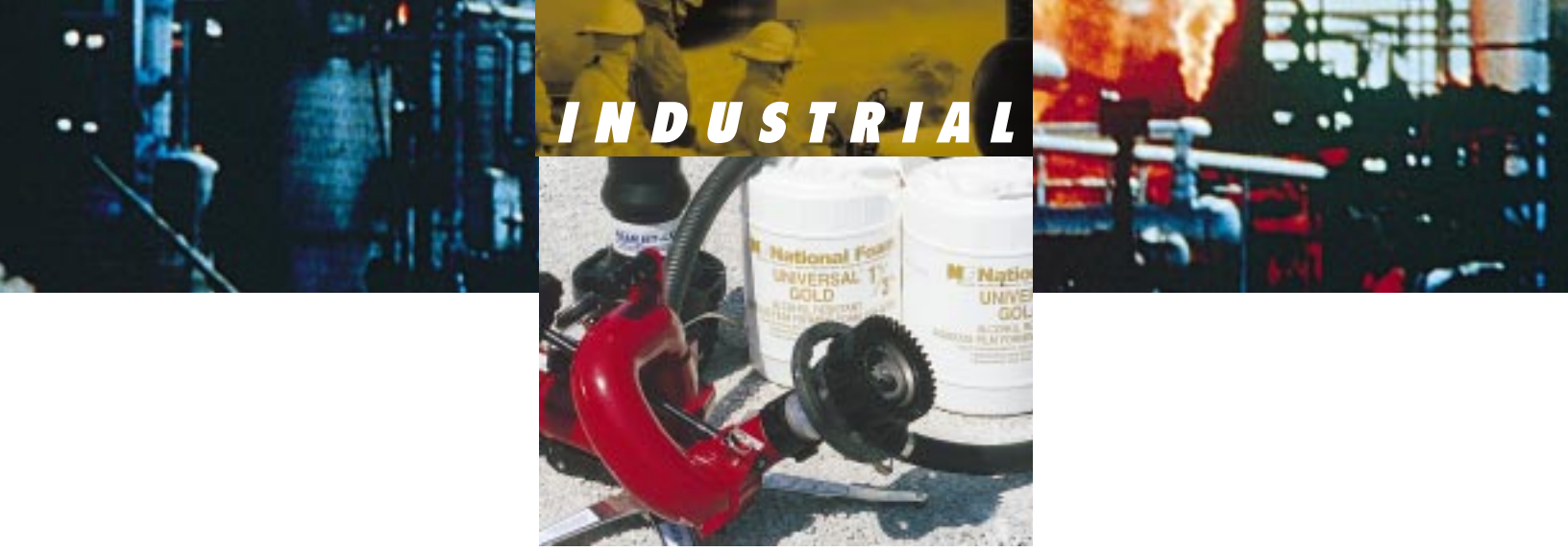
Nov. 6-10, 2001
Las Vegas, NV

The 12th Annual Fire Training School and Exposition will be held at the Reno Sparks Convention Center. Look for our local TFT regional manager in the L.N. Curtis and Sons trade show booth.

Colorado State Leadership Challenge

Nov. 29- Dec. 1, 2001
Breckenridge, CO

Dave Burns, North Central Regional Manager, will be in attendance with the local demonstration/support apparatus.



MASTERFOAM

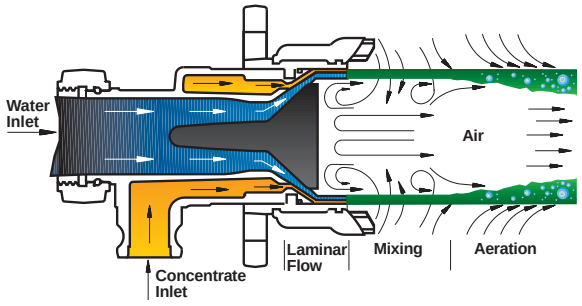
THE INSIDE STORY

WHEN REACH AND ACCURACY MEAN EVERYTHING

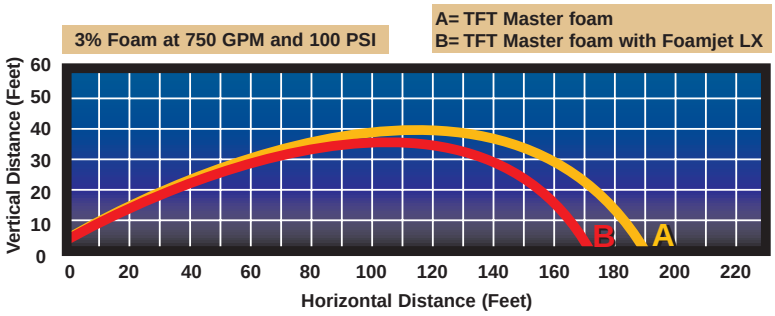
Recent concerns about the environmental viability and long-term market availability of AFFF and AFFF-ARC type foams have caused many fire suppression agencies to reexamine their foam application operations and capabilities. With 3M's departure from the marketplace, even the military establishment is reexamining the performance of straight 3% protein foams on hydrocarbon-based fuels.

These concerns, coupled with the reality that most chemical and petroleum processing units are running near maximum output, have many fire and safety managers scrambling for ways to maximize and expand their fire protection equipment and operations. To solve this challenge, the Masterfoam self-educting nozzle can provide any agency with outstanding performance, unparalleled injection accuracy, and reach and stream quality that far surpass all other self-educting nozzles.

Produced under license for Williams Fire and Hazard, the Ansul Corporation, as well as fire protection specialists worldwide, TFT's unique patented Masterfoam self-educting equipment has become the standard for nozzle performance. Using unique radial foam injection and manufactured from either hard-coat anodized aluminum alloy or corrosion resistant brass, the Masterfoam comes with an optional low-expansion foam attachment for increased foam volume without sacrificing reach.



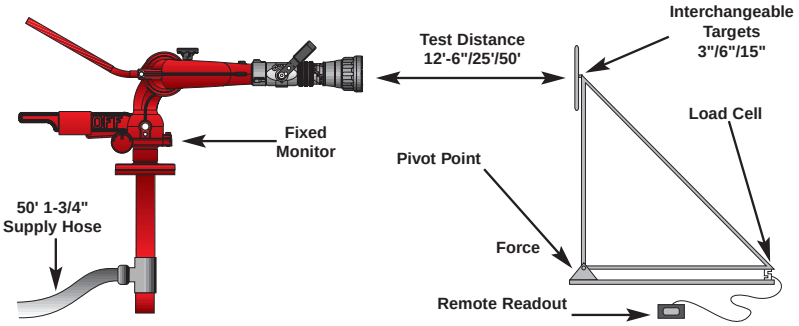
Lightweight and rugged, the Masterfoam can be used on fixed monitor systems protecting high hazard areas, used on a fire apparatus deck gun for outstanding reach and maneuverability, or connected to a Crossfire or Blitzfire portable monitor for maximum flow with limited staffing. With flows up to 750 gpm and injection ratios up to 6%, this self-educting system can be supplied from either five-gallon pails, an on-board foam tank, or coupled to high volume foam concentrate totes.



With an operating range from 50 psi up to 150 psi, and gallonage selections of 350 gpm, 500 gpm, and 750 gpm, the operational flexibility provided by the Masterfoam is ideal for any foam application. Providing reach exceeding 180 feet and offering outstanding injection accuracy with most commercially available foam concentrates, the Masterfoam is also a cost-effective choice for large industrial complexes, metropolitan hazardous materials responders, and even rural departments searching for the perfect foam application tool.

For complete operational instructions and information on-line, visit www.tft.com/library/files/liz-030.pdf.

TAKE THE SMOOTH BORE TEST



"A fire stream can be defined as a stream of water or other extinguishing agent after it leaves the fire hose and nozzle until it reaches the desired point. During the time a fire stream of water passes through space, it is influenced by its velocity, gravity, wind, and friction with the air. The condition of the stream when it leaves the nozzle is influenced by operating pressures, nozzle design, nozzle adjustment, and the condition of the nozzle orifice."

This is the opening statement from the ***IFSTA Pumping Apparatus Driver/Operator Handbook*** 1st edition, Chapter 7 – Fire Hose Nozzles and Flow Rates and clearly summarizes the rules that affect fire streams and their characteristics. When testing or evaluating nozzles, the fire service generally measures flow and pressure as its primary yardstick for comparisons. Much controversy has surfaced recently concerning the ability of one type of nozzle and fire stream to outperform another. Consider the following excerpts from the new IFSTA manual. "…for example, it is not possible to obtain a solid stream from a fog stream nozzle..." or "…a solid stream has the ability to reach areas that other streams might not reach…" Much of the currently available comparative data surrounding these issues is subjective in nature with ***little or no evidence*** to support any claims made.

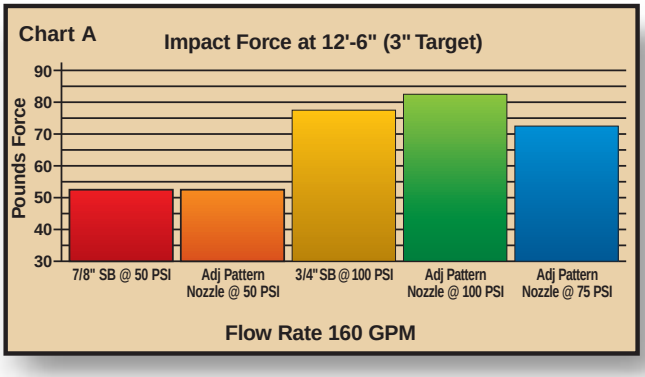
One specific characteristic of a fire stream that has not been measured until now is the "hit" or "punch" of a stream. This particular characteristic clearly separates the smooth bore advocates from those in the adjustable pattern "combination" nozzle camp.

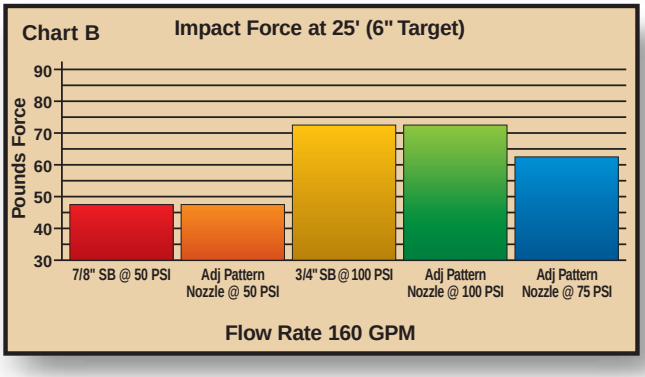
Proponents of smooth bore fire streams claim that for greater impact, a smooth bore nozzle must be used. Others claim that a combination nozzle set to the straight stream position, and flowing the same amount of water at the same nozzle pressure will have similar results.

As a result of this controversy, Task Force Tips, Inc. engineered a test method (noted in the diagram) to accurately measure the impact of a fire stream. The device consisted of a test stand that used interchangeable 15", 6", and 3" diameter circular "targets" attached to a vertical member of the test apparatus. A compression load cell was located on the horizontal leg a distance that is equal to the distance from the pivot point to the center of the target. The impact of the stream pushed the target, and the vertical support transferred the force to the load cell, which in turn indicated the impact of the stream in lbs/force on a digital readout.

THE TEST SET UP

A flow rate of 160 gpm was chosen for comparisons since it represented a typical fire attack. Each nozzle tested was operated at, or very near, this flow rate. This provided a constant measurement to which the different operating pressures and nozzle types could be compared. The smooth bore and combination nozzles were both operated at 50 and 100 psi at a similar 160 gpm flow rate. By comparing the impact with different types of nozzles at the same flow and pressure, the performance capability of one type over another could be easily determined. A 7/8" smooth bore was used to deliver 160 gpm at 50 psi, and a 3/4" smooth bore was used to deliver 160 gpm at 100 psi. Three individual TFT 70-200 gpm automatic





handline nozzles were gated to 160 gpm at 50 psi, 75 psi, and 100 psi respectively.

The impact measurements were taken at distances of 12'-6", 25', and 50'. The measurement was from the target face to the point at which the water exited each nozzle. At the 12'-6" distance, the 3" target was used. This was done to address the claim of smooth bore advocates that "solid" streams are more compact than "hollow" streams from combination nozzles and, therefore, have more impact. At the 25' distance the 6" target was used, and at 50' the 15" target was utilized. To secure the nozzle, a fixed monitor was used. This assured accurate readings by keeping the nozzle stationary once water was flowing and eliminated error caused by handholding the nozzle. The monitor was fed with a 50' section of 1-1/2" hose. The pump used was a Hale 1000 gpm model, and all flows were verified using a calibrated electromagnetic flow meter cross referenced with pitot readings on the smooth bore nozzles. The flow meter data were collected using a 30-channel chart recorder. One set of tests was undertaken at each distance with the five different nozzles and yielded a total of 15 sets of data. Each test was run approximately 3 minutes to insure sufficient data was collected to average the results.

THE TESTS

The first series of tests used a 3" target at a distance of 12'-6" (Chart A). At that distance, there was very little difference in the impact from either the smooth bore tip or the combination nozzle operating at 50 psi. At 100 psi nozzle pressure, the combination nozzle developed 10% more impact than its smooth bore counterpart at the same flow and pressure. The 75 psi nozzle developed impact values as expected between the 50 psi and 100 psi nozzles. It is interesting to note (and logical based on Newton's theory) that, at this distance, the impact values are very close to the reaction forces.

The second series of tests used a 6" target at a distance of 25' (Chart B). Again, either at 50 psi or 100 psi nozzle pressure, there is no noticeable difference in impact for either the combination nozzle or the smooth bore tip. The 75 psi nozzle again performed as expected, with impact forces between the tests for high and low pressure nozzles at this distance.

The third series of tests used a 15" target at a distance of 50' (Chart C). At the 50-foot range, the combination nozzle developed a slightly greater (5%) impact force than the smooth bore nozzles at either 50 psi or 100 psi. The 75 psi combination nozzle developed impact forces between the 50 psi and 100 psi combination nozzles.

THE CONCLUSIONS

Referring to the bar graphs of each series of tests (Chart D), it is obvious that there is little difference between the "punch" or "hit" of a fire stream based on the type of nozzle from which the fire streams exits. Rather, the impact ("punch/hit") is more a function of the velocity of a fire stream (pressure) and its mass (flow). If the flow rate and pressure of the two fire streams are similar, the impact force will be similar also. The smooth bore nozzle has **NO ADVANTAGE** over the combination nozzle when it comes to impact capability. Conversely, if the impact forces are similar, then the combination nozzle is preferable due to its ability to vary the pattern to meet the needs of the firefighting team. If the best of both worlds is desired, an automatic combination nozzle provides maximum impact for any given flow at 100 psi and has the obvious advantage of pattern control and selection.

Can you match the water stream with the nozzle that produced it?

Midmatic LP flowing 160 gpm @ 55 psi

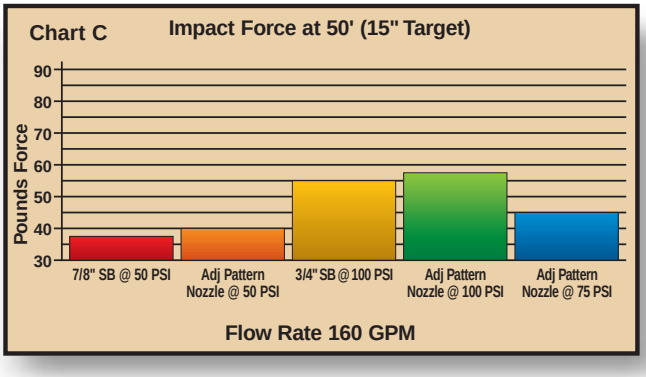
7/8" Smooth bore flowing 166 gpm @ 50 psi

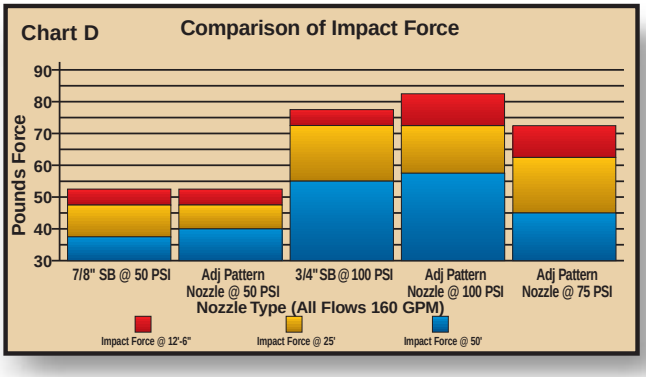
Thunderfog Selectable flowing 155 gpm @ 100 psi

Midmatic LP flowing 160 gpm @ 75 psi

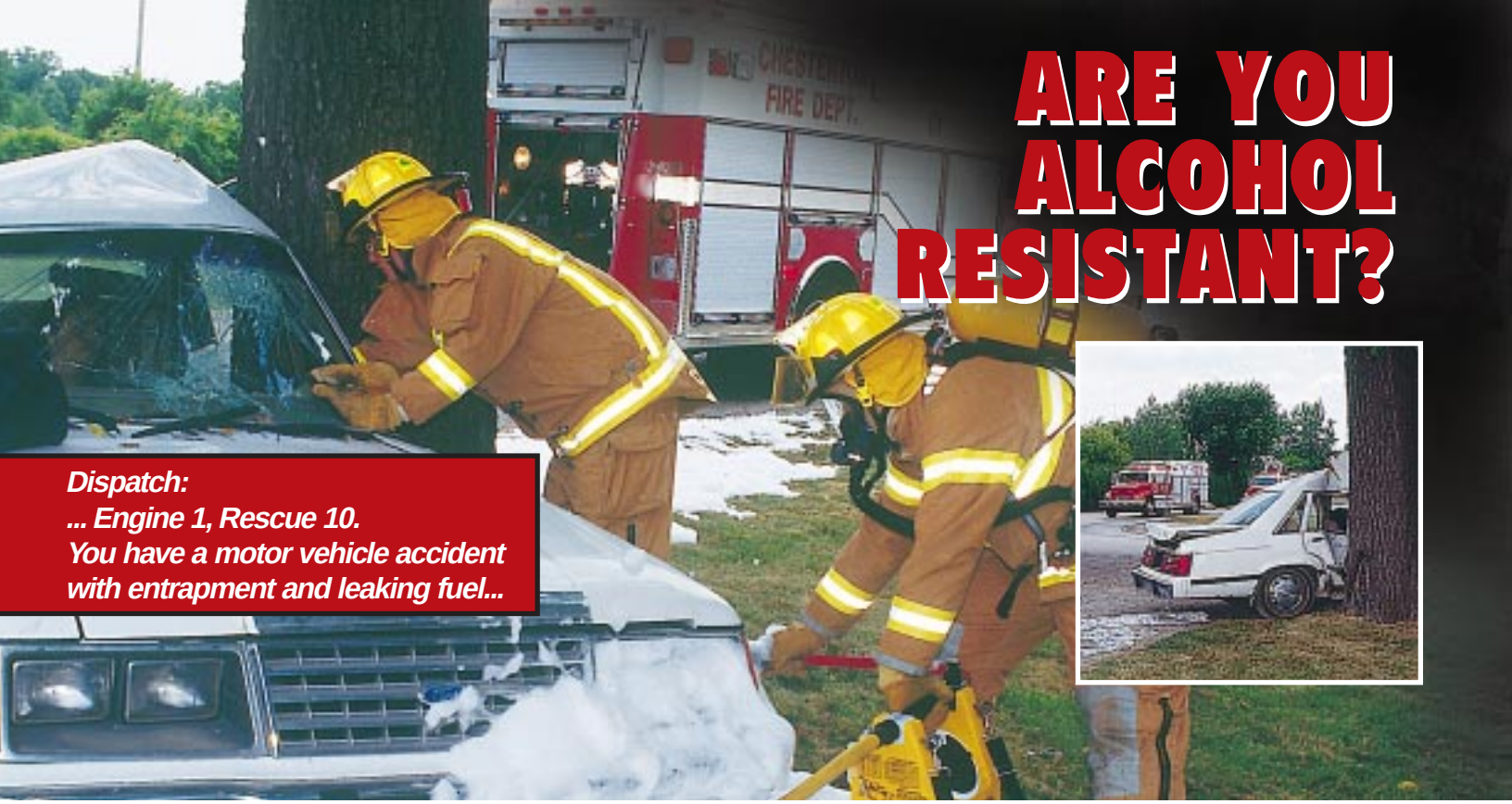
Mid-Force flowing 160 gpm @ 100 psi

1 7/8" Smooth bore flowing 166 gpm @ 50 psi
2 Midmatic LP flowing 160 gpm @ 75 psi
3 Midmatic LP flowing 160 gpm @ 55 psi
4 Mid-Force flowing 160 gpm @ 100 psi
5 Thunderfog Selectable flowing 155 gpm @ 100 psi





ARE YOU ALCOHOL RESISTANT?



Dispatch:
... Engine 1, Rescue 10.
You have a motor vehicle accident with entrapment and leaking fuel...

The U.S. EPA, in its attempt at reducing pollutants and carbon monoxide emissions throughout the United States, since 1991 has mandated the use of alcohol-based additives in vehicle fuels to make the fuel burn cleaner and achieve even stricter regional emission standards.

COMMON ADDITIVES

- *MTBE – methyl tertiary butyl ether*
- *TAME – tertiary amyl methyl ether*
- *ETBE – ethyl tertiary butyl ether*
- *DIPE – di-isopropyl ether*
- *Ethanol and Methanol*

Up to now, the most commonly used additive has been MTBE. MTBE or methyl tertiary butyl ether, in the past a by-product of the fuel processing industry, and now under severe environmental scrutiny, remains present in fuels in levels from 15% up to 30% of total volume in many departmental jurisdictions.

The challenges to the fire service surface as these chemicals are more understood and dealt with in emergency situations. They are polar solvents, and as such, must be treated in a different way. As we have learned in the past, foam concentrates must be designed chemically and applied manually (Type III application) to work specifically on alcohol or polar solvent based fuels.

Because of its tremendous affinity for water, the alcohol tends to aggressively destroy the foam blanket and the potential vapor barrier you are trying to create because of the reduced surface tension of the fuel in relationship to the foam agent. The level of MTBE, or other additive, in a fuel-related incident might require that the initial attack strategy to deal with vapor suppression or mitigation of a polar solvent fire be thoroughly reviewed.

KEYS TO SUCCESSFUL VAPOR SUPPRESSION OR EXTINGUISHMENT OF BLENDED FUELS

- *Use a UL Type III listed AFFF-AR (alcohol resistant) foam concentrate*
- *If using a dual listed foam 3X6%, or 3X3%, use the most concentrated mix ratio*
- *The use of a multi-expansion foam attachment is necessary to create the following expansion ratios*
  - *7-10 to 1 for fire suppression*
  - *10-25 to 1 for vapor suppression*
- *Practice gentle application techniques and avoid plunging foam into the fuel or disrupting the foam blanket after application*
- *Survey local distributors and terminals within your jurisdiction for usage of blended fuels*
- *The higher the level of alcohol or polar solvent, the better the creation of the polymeric membrane that provides vapor suppression*
- *Never mix AFFF-AR foams with other foam concentrates*
- *Application rates of 0.15 gpm/sq. ft. are necessary for most blended fuel applications. (i.e., 95 gpm eductor can handle about 750 sq. ft.)*
- *Refer to NFPA 11 for application and support recommendations*

FOR ADDITIONAL INFORMATION
REQUEST TASK FORCE TIPS TECHNICAL DOCUMENT. LIA-025

WILDLAND URBAN INTERFACE

Tools, Tips and Tricks

Often, dramatic improvements in firefighting operations can be achieved with the implementation of simple cross-training procedures or the addition of some inexpensive highly effective equipment. Your agency's success in dealing with suppression and wildfire operations can be greatly improved with the addition of these three simple tools.

Tool

TFT Twister series 1" nozzle, 1" ball shutoff, and forestry smooth bore set. (Model numbers D1024+D75DR+DSB)

Tip

This combination nozzle, smooth bore tip, and ball valve configuration is ideal for use with lightweight 1" forestry or booster line. The two-piece combination allows the line to be shut down, the nozzle removed, more line added, and the nozzle added back to the extended line. With flows rarely exceeding 40 gpm, these highly mobile 1" attack lines are perfect for running attacks on brush and grass fires, cooling and wetting down structures in advance of a moving fire, or for mopping up after the fire has been brought under control. The combination nozzle will provide a straight stream and wide covering fog pattern, and the different smooth bore tips offer excellent reach and penetration while restricting flow to rates as low as 3 gpm.

Trick

Often several hundred feet of lightweight 1" forestry hose can be bundled with the necessary nozzles, valves, and adapters in the same way many departments put together high-rise bundles.

Tool

TFT Forestry Gated Wyes (Model number AYL and AYS series)

Tip

These lightweight gated valves, much like their bigger municipal brothers, are designed for rugged use in deployment of 1" lines from a larger supply line. With a 1-1/2" inlet, and two 1" outlets, and gated ball shutoffs on both sides, these valves can be easily preconnected in hose bundles and packs.

Trick

Often, when bundled in pre-designed packs the 1-1/2" inlet of the gated wye will also have a 2-1/2" adapter added. This allows the bundle to be used from either an 1-1/2" or 2-1/2" supply source.

Tool

TFT Twister Forestry Tee (Model number AT series)

Tip

A scaled down version of the commonly used fire department LDH water thief, the forestry tee can be added at any 1-1/2" hose connection and will provide a valved 1" outlet. This gives an attack crew the ability to attach a 1" forestry line at any connection point without having to open or close the main supply line. This also allows the original attack line to stay in use, with only a small reduction in flow when the valve is opened to the 1" line.

Trick

Forestry tees can be added directly into structural pre-connects and left there. When a 1" line is needed for use with either a forestry line, or a supply line to a PRO/pak, it can easily be added with limited disruption to the original attack crew.

Blitzfire OSC

NEW PRODUCTS

The TFT Blitzfire OSC oscillating monitor provides all of the functions of the famous Blitzfire portable monitor as well as offering an automatic oscillation feature. With a user-selected sweep of 20, 30 or 40 degrees, the oscillating unit is rated up to 500 gpm with your choice of smooth bore tip or any of the new Max-Force or Max-Matic 500 gpm nozzles. Weighing in at about 31 lbs, the Blitzfire OSC is ideally suited for hazardous materials situations, exposure protection, and cooling operations when staffing is limited. With its unique safety shutoff, low attack angle, and integrated volume control, the Blitzfire OSC's oscillation mechanism can be easily overridden if manual control is desired.

- ***Adjustable sweeping range 20, 30, or 40 degrees***
- ***Vertical travel from 10° to 50° above horizontal***
- ***On/Off knobs can stop oscillation at any point***
- ***Built in safety valve***
- ***Integrated slide valve for nozzleman flow control***

ASK THE EXPERT

Mike Grcich
Service Manager
800-348-2686

Q: ***I hear that some nozzle manufacturers take up to six weeks to repair a nozzle. What is the standard time frame for your service department?***

A: The following photos show the standard time frame for any nozzle sent in for repair.

9:43 a.m.

Customer's nozzle is delivered to TFT's north facility receiving dock and logged into our computerized tracking system.

10:22 a.m.

Nozzle's serial number and repair information is logged to customer account file by service team. Customer instructions reviewed.

11:10 a.m.

Nozzle is completely disassembled, inspected, repaired, and upgraded. Repair data is added to customer file for future reference.

1:15 p.m.

Nozzle is completely wet tested to NFPA #1964 flow and pressure and operational performance criteria.

2:24 p.m.

Nozzle is repacked for shipment back to the customer.

4:30 p.m.

Customer's nozzle is picked up by UPS and is "live" in the UPS/TFT national tracking system.

Register for Your Copy of the Task Force Tips Newsletter On-line at www.tft.com

TASK FORCE TIPS

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