Compartment Fire Behavior Training (CFBT)

Hose & Nozzle Technique: Drill 2

CFBT-US
Not just what and how, but why!

Prerequisite Training

Learners must have received basic instruction in the use of personal protective equipment, hose, nozzles, and have developed basic proficiency in nozzle operation from a fixed position (see Hose & Nozzle Technique: Drill 1).

Learning Outcomes

1. Demonstrate the following nozzle techniques in conjunction with movement of a hoseline forward and backward:
    a. Gas Cooling (Short and Long Pulses)
    b. Surface Cooling/Direct Attack (Painting and Penciling)

Reference

Grimwood, P., Hartin, E., McDonough, J., & Raffel, S. (2005). 3D Firefighting: Training, Techniques, & Tactics. Stillwater, OK: Fire Protection Publications.

Resource Requirements

This drill requires a pumping apparatus and sufficient hose and nozzles to provide each team of learners with a hoseline. If possible teams should be limited to no more than five learners to maximize practice and minimize session duration. If possible, the same nozzles that will be used operationally should be used for this drill.

Training Prop

This evolution requires an open area on the drill ground where water can be discharged and sufficient water supply to allow all learners to have ample opportunity to practice their skills. If possible, a vertical wall and several three dimensional targets should be provided for learners to practice painting and penciling techniques.

CFBT Instructors

One instructor is required for each team of learners during this lesson.

Learners

The maximum number of learners is dependent on the availability of resources and instructors.

Safety

Inspect the training area prior to conducting this evolution to ensure that there are no walking or working surface hazards. Instruct the participants to use caution when directing water from hoselines.

Use of a 1 m x 10 m (3’ x 30’) hall runner can minimize potential for injury or damage to protective clothing as a result of abrasion when practicing nozzle technique in conjunction with movement on a rough surface.

Personal Protective Equipment

Learners should wear structural firefighting clothing and self-contained breathing apparatus during this drill. However, in hot weather session duration should be limited.

Scene Control

Scene control will vary to some extent based on the specific training location. The immediate training area will be limited to participants and (accompanied) observers of the training activity.

If in-service apparatus is at the training location, position it to ensure ease of egress.

Instructional Activities

This lesson involves the following instructional activities. Base your instructional approach on learners experience level and understanding as the lesson progresses.

Firefighters often perceive that gas cooling will slow advancement of the hoseline (based on the perceived need to stop and apply water before advancing). However, a skilled nozzle operator can generally apply short pulses while moving. Long pulses as needed to deal with larger spaces or more severe fire conditions will generally require the hose team to stop, apply water, and assess conditions before advancing.

1. Provide a quick review of nozzle technique and the skills that learners will be practicing.
    a. **Short Pulse:** Have the learners imagine opening and closing the nozzle as quickly as possible. Then tell them that the short pulse is slightly quicker than that (to emphasize that this needs to be an extremely short application of water). Water hammer is not an issue due to the minimal duration of the pulse and small amount of water involved.
    b. **Long Pulse:** A long pulse is anything longer than a short pulse. The duration of long pulses is dependent on compartment configuration and fire conditions. In practicing this skill, learners should apply pulses from several seconds up to 15 or 20 seconds. The long pulse requires that the nozzle be opened quickly (to provide maximum pressure and obtain the desired droplet size) and closed relatively slowly (to minimize potential for water hammer).
    c. **Painting:** Developing a thin film of water on a hot surface requires gentle application. This requires opening the nozzle only enough for water to reach the intended target. Overly vigorous application results in water bouncing off and not cooling the intended surface.
    d. **Penciling:** Penciling is similar to pulsing (short or long), but with a straight stream. This technique is used to maximize reach when applying water to hot surfaces. Brief application uses the same quick operation of the nozzle shutoff as a short pulse, longer application requires quick opening and slower closing of the shutoff in the same manner as a long pulse.
2. Demonstrate the position of the nozzle operator and other members of the hose team when working with a charged hoseline. The number of personnel used should reflect the learners' operational reality (e.g., don't use three or four firefighters on a hoseline if they will typically operate with two).

a. The nozzle operator needs to maintain control of the nozzle at all times and be aware of the pattern setting (review how to resent when working in a dark or smoke logged space).

b. Backup firefighter should be close (but not too close). Gas cooling requires that the hose behind the nozzle operator be lower than the nozzle (at higher flow rates it should be on the floor to redirect nozzle reaction.

3. Have the learners practice moving the hoseline forward and backward in conjunction with nozzle operation (short and long pulses, penciling, and painting).

    a. Keep nozzle out in front (don't hug the nozzle) to permit good control

    b. Don't walk if you can't see your feet.

    c. When advancing, the backup firefighter must avoid being trapped between the hose and inside corners or doorways (always work to the outside of corners).

    d. The nozzle operator scans to the front and sides for important fire behavior indicators and landmarks. The backup firefighter is responsible for observing to the rear and to the sides. Communication between the nozzle operator and backup firefighter is critical.

    e. Being able to move the hoseline backward as well as forward is also an important skill (e.g., when using a hoseline to support primary search or in the event of a tactical withdrawal).

4. Have the learners practice each technique (short pulse, long pulse, painting and penciling).

    The instructor should provide hands-off, diagnostic feedback to assist the students in mastering each of the skills. Learners should develop proficiency in each skill prior to moving on to the next.

5. Debrief all participants focusing on observations and conclusions.

Integration

Hose and Nozzle Technique Drill 2 can be used as a stand-alone training exercise or elements of this drill can be integrated into other training activity. For example, when conducting hose evolutions (focused on deployment of supply and attack lines), elements of Hose and Nozzle Technique Drill 2 can be integrated with deployment of attack lines. In fact, any time that a charged line is being used for training focused on structural firefighting, elements of this drill can be integrated to maximize the effectiveness and efficiency of training in nozzle techniques.