



In-Station Training

Fire Behavior



Topic: Reading the Fire

Drill Number: 13-3

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Training Code:

Aim

Firefighters recognize and apply key fire behavior indicators to anticipate fire development.

References

The following CFBT-US Blog Posts provide a detailed examination of the B-SHAF (Building, Smoke, Air Track, Heat, and Flame) system for reading the fire. Instructors are encouraged to spend some time exploring the content of these posts prior to conducting this 10-Minute Training.

[How to Improve Your Skills](#)

[Heat Indicators Part 2](#)

[Building Factors](#)

[Heat Indicators Part 3](#)

[Building Factors Part 2](#)

[Flame Indicators](#)

[Building Factors Part 3](#)

[Flame Indicators Part 2](#)

[Smoke Indicators](#)

[Incipient Stage Fires: Key Fire Behavior Indicators](#)

[Smoke Indicators Part 2](#)

[Growth Stage Fires: Key Fire Behavior Indicators](#)

[Air Track Indicators](#)

[Flashover & Fully Developed Fires: Key Fire Behavior Indicators](#)

[Air Track Indicators Part 2](#)

[Heat Indicators](#)

[Decay Stage Fires: Key Fire Behavior Indicators](#)

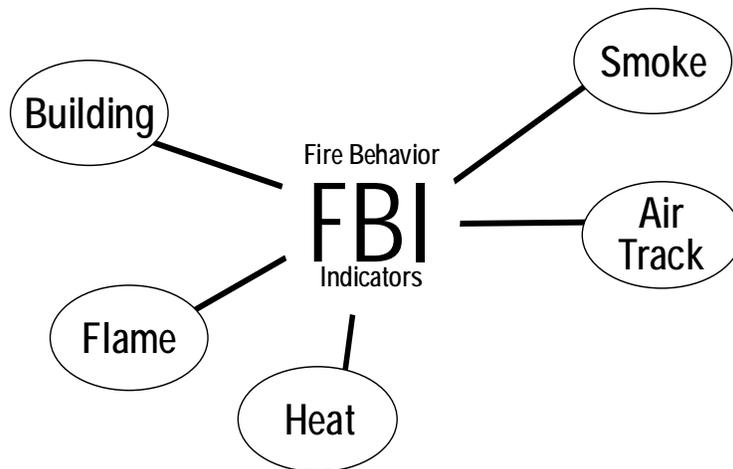
Conducting the Drill

Do not simply hand out this document and read it to your crew (as that defeats the purpose of getting the Firefighters to think and puzzle their way through the questions). Use a whiteboard or blank piece of paper to review the following concepts with your crew. The 10-Minute Training document can be distributed as a reference after the discussion.

Fire Behavior Indicators

The B-SAHF (Building, Smoke, Air Track, Heat, & Flame) organizing scheme for fire behavior indicators provides a sound method for assessment of current and potential fire behavior in compartment fires. Draw the simple concept map illustrated below on a white board or piece of paper, review the definitions of each category and ask the members of your crew to identify additional detail in each category to build an improved understanding of how to read the fire.

As an alternative, you can use one or more photo or video of a building fire to provide an opportunity for observation and to stimulate thought about each of the indicator categories. Warning! If you use a video, this drill is likely to expand well beyond 10-minutes!



Building: Many aspects of the building (and its contents) are of interest to firefighters. Building construction influences both fire development and potential for collapse. The occupancy and related contents are likely to have a major impact fire dynamics as well.

Smoke: What does the smoke look like and where is it coming from? This indicator can be extremely useful in determining the location and extent of the fire. Smoke indicators may be visible on the exterior as well as inside the building. *Don't forget that size-up and dynamic risk assessment must continue after you have made entry!*

Air Track: Related to smoke, air track is the movement of both smoke (generally out from the fire area) and air (generally in towards the fire area). Observation of air track starts from the exterior but becomes more critical when making entry. What does the air track look like at the door? Air track continues to be significant when you are working on the interior.

Heat: This includes a number of indirect indicators. Heat cannot be observed directly, but you can feel changes in temperature and may observe the effects of heat on the building and its contents. Remember that you are insulated from the fire environment, pay attention to temperature changes, but recognize the time lag between increased temperature and when you notice the difference. Visual clues such as crazing of glass and visible pyrolysis from fuel that has not yet ignited are also useful heat related indicators.

Flame: While one of the most obvious indicators, flame is listed last to reinforce that the other fire behavior indicators can often tell you more about conditions than being drawn to the flames like a moth. However, that said, location and appearance of visible flames can provide useful information which needs to be integrated with the other fire behavior indicators to get a good picture of conditions.

It is important not to focus in on a single indicator, but to look at all of the indicators together. Some will be more important than others under given circumstances.

Use the [B-SAHF Worksheet](#) to guide observation and frame critical questions when practicing reading the fire.

Feedback

Please forward your feedback on this 10-minute training to [Chief Ed Hartin](#)