

**CFR**


Congreso Internacional Fuego y Rescate



# Reading the Fire

## B-SAHF

**Valdivia, Chile**  
**January 2010**

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



For what is experienced judgment except opinion based on knowledge acquired by experience?

If you have fought fires in every type of building with every different configuration and fuel load, under all types of conditions, and if you have remembered exactly what happened in each of these combinations your experienced judgment is probably very good.

Adapted from:

*Fundamentals of Fire Behavior*, 1948

H.T. Gisborne US Forest Service

# Learning Outcomes

- ▶ Recognize that fire behavior is predictable.
- ▶ Understand human limitations in predicting fire behavior during emergency incidents.
- ▶ Identify the elements of the B-SAHF organizing scheme for fire behavior indicators.
- ▶ Understand the relationship of the B-SAHF indicators to stages of fire development and burning regime.

# Surprises are Bad!



When reading about firefighter fatalities, injuries, or near-miss incidents involving rapid fire progress, ask yourself:

*Would the firefighters involved have done what they did if they knew what the outcome would be?*

In most of these cases, neither the firefighters nor key decision makers recognized the likelihood or timing of rapid fire progress.

# Fire Behavior is Predictable

- ▶ Given the same fuel, ventilation, and compartment configuration fire behaves consistently
- ▶ Firefighters have incomplete information and must make quick decisions.
- ▶ Limited information, time pressure and limited expertise make predicting fire behavior difficult

# Experience

An experienced individual is skilled or knowledgeable as the result of active participation or practice.



*For firefighters, this requires participation in training and firefighting operations as well as thinking about these experiences to draw out lessons learned.*

# Expertise

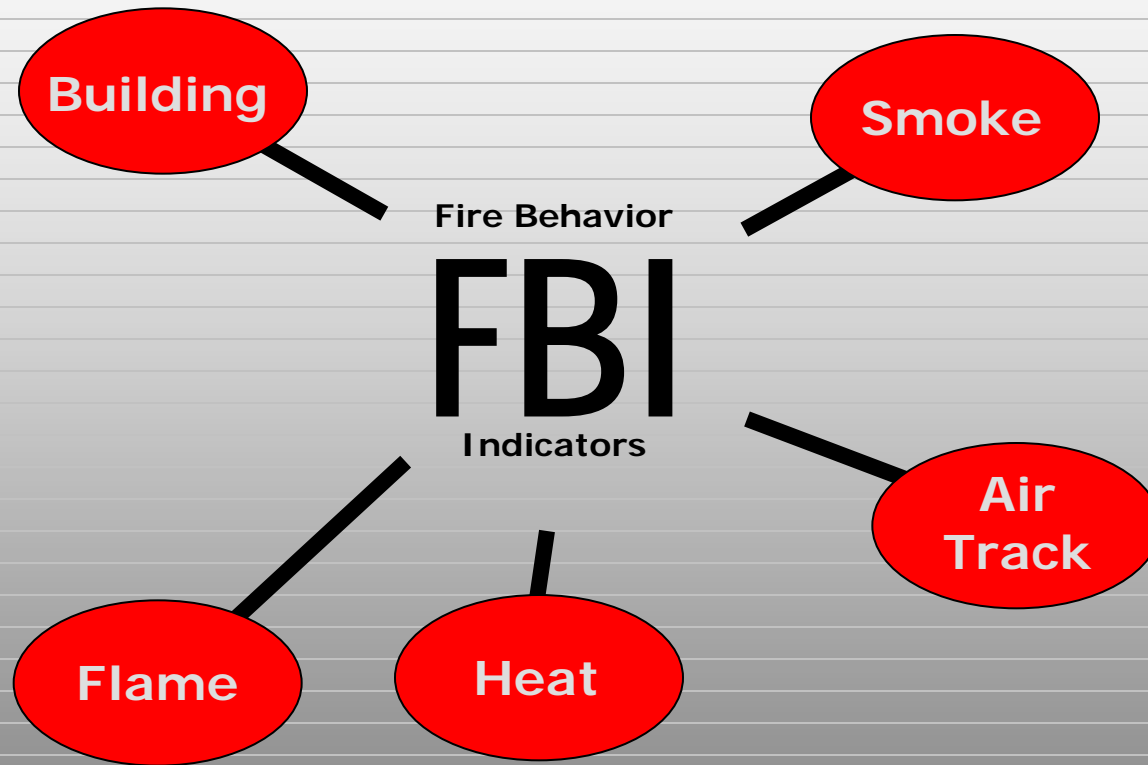


Routine: Proficiency in performing specific tasks

Adaptive: Applying knowledge and skill under varied and changing circumstances.

# B-SAHF

A Basic Framework





# Building

- ▶ Building construction influences both fire development and potential for collapse.
- ▶ Occupancy and related contents are likely to have a major impact fire dynamics as well.



Building factors are present before the fire starts. Consider fire behavior during pre-incident planning.

# Smoke



- ▶ This indicator can be extremely useful in determining fire location and extent.
- ▶ Smoke indicators may be visible on the exterior as well as inside the building.

*Reading the smoke is critical, but not sufficient in predicting fire behavior*

# Air Track

- ▶ Related to smoke, air track includes movement of both smoke and air.
- ▶ Observation of air track
  - Starts from the exterior
  - Becomes more critical when making entry
  - Continues to be important while working inside.



# Heat

- ▶ Energy, heat, and temperature; related, but not the same
- ▶ Heat and temperature cannot be directly observed
  - Observed indirect indicators
  - Tactile indicators
- ▶ Protective clothing provides insulation, temperature changes faster than you feel it!



# Flame



Flames may be obvious, but these indicators must be integrated with the other B-SAHF indicators.

# Integration



- ▶ Don't focus in on a single indicator.
- ▶ Look at all of the relevant indicators.
- ▶ Continue B-SAHF assessment throughout the incident!
  - Exterior
  - Interior



# Fire Behavior Indicators



- ▶ Building
- ▶ Smoke
- ▶ Air Track
- ▶ Heat
- ▶ Flame

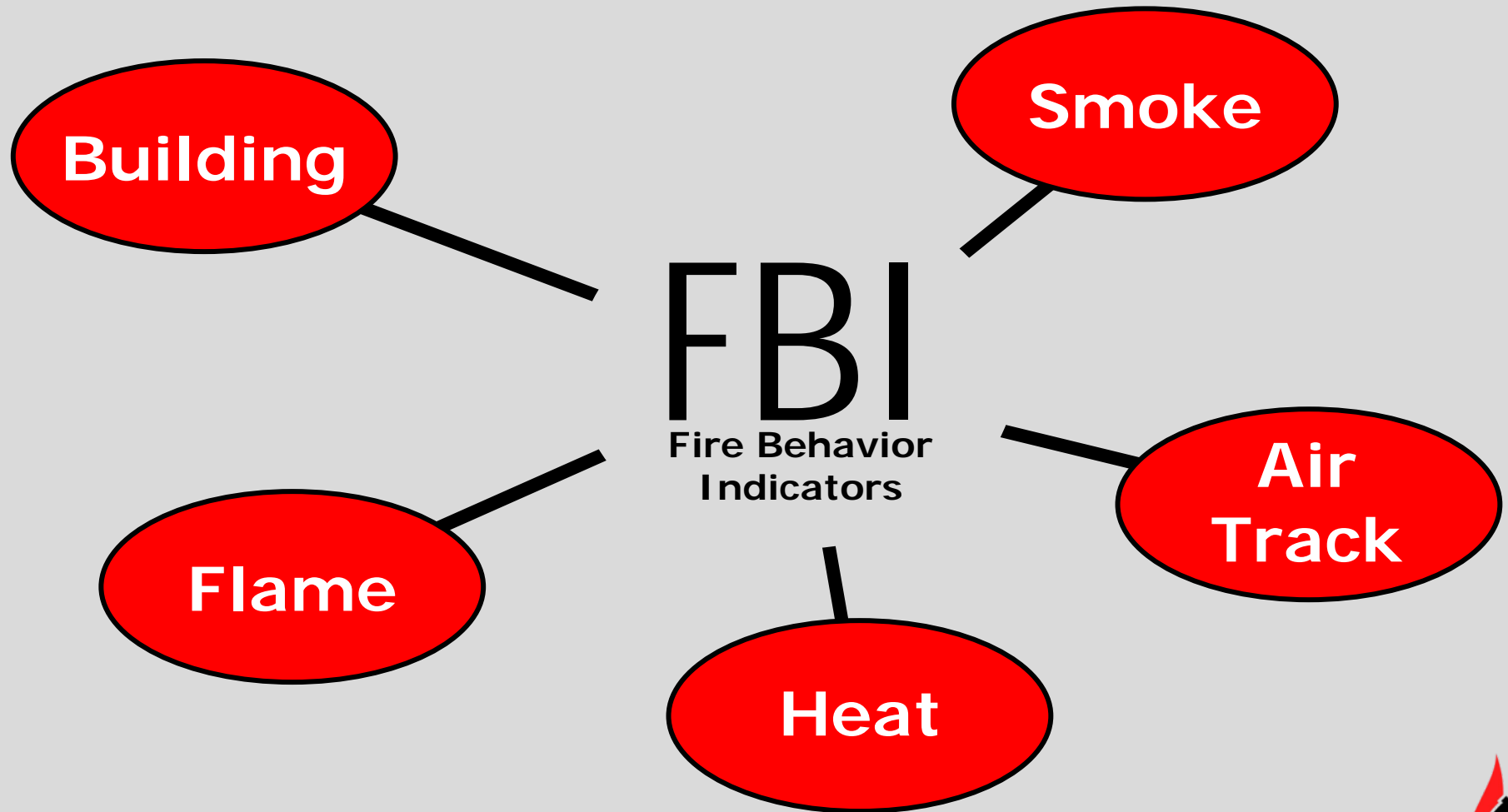
**B-SAHF**

# Expectations



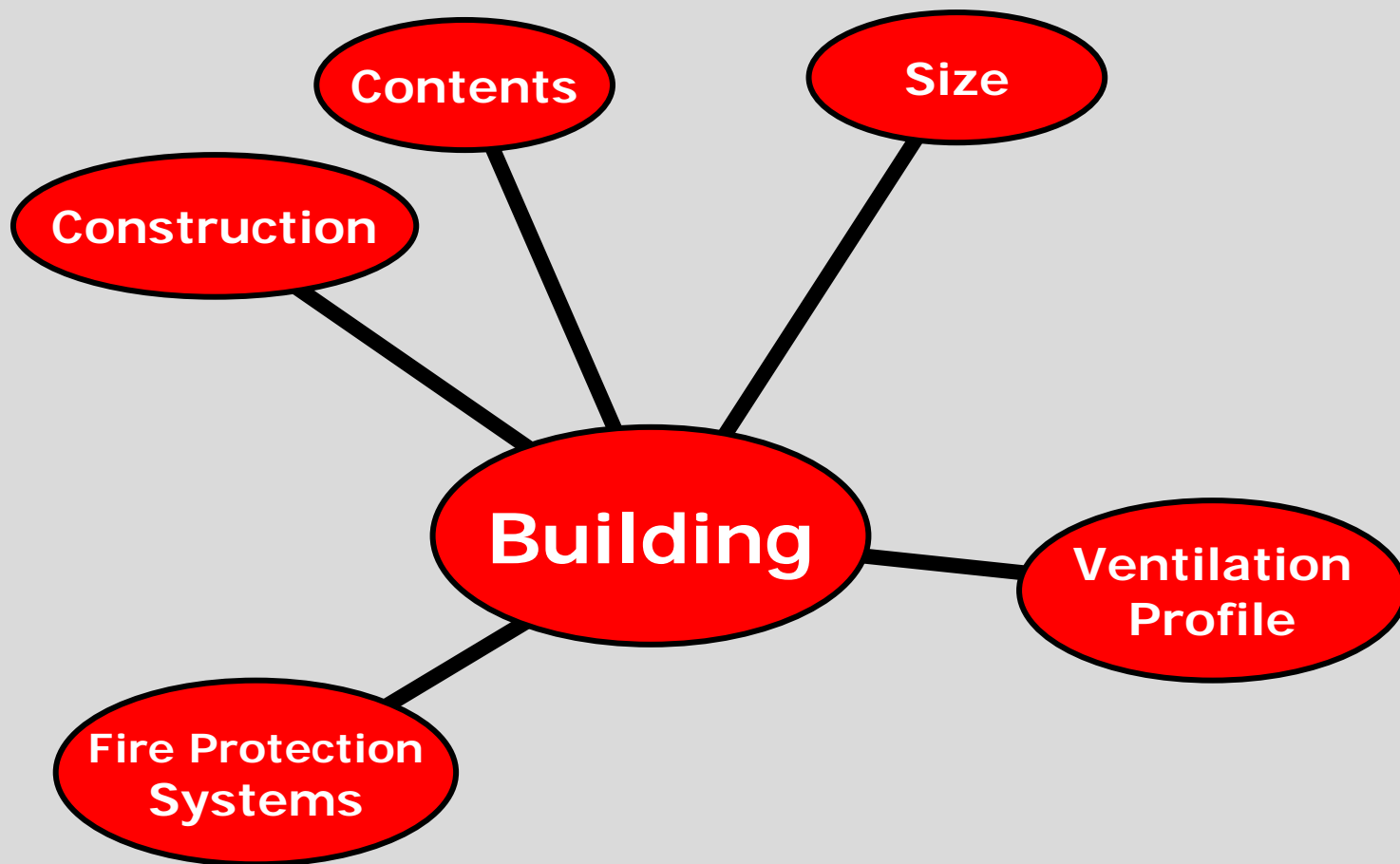
- ▶ During size-up, develop a mental movie of what you expect to find inside.
- ▶ Validate your expectations during and after door entry.
- ▶ ***Watch out for conditions which conflict with your expectations!***





# FBI

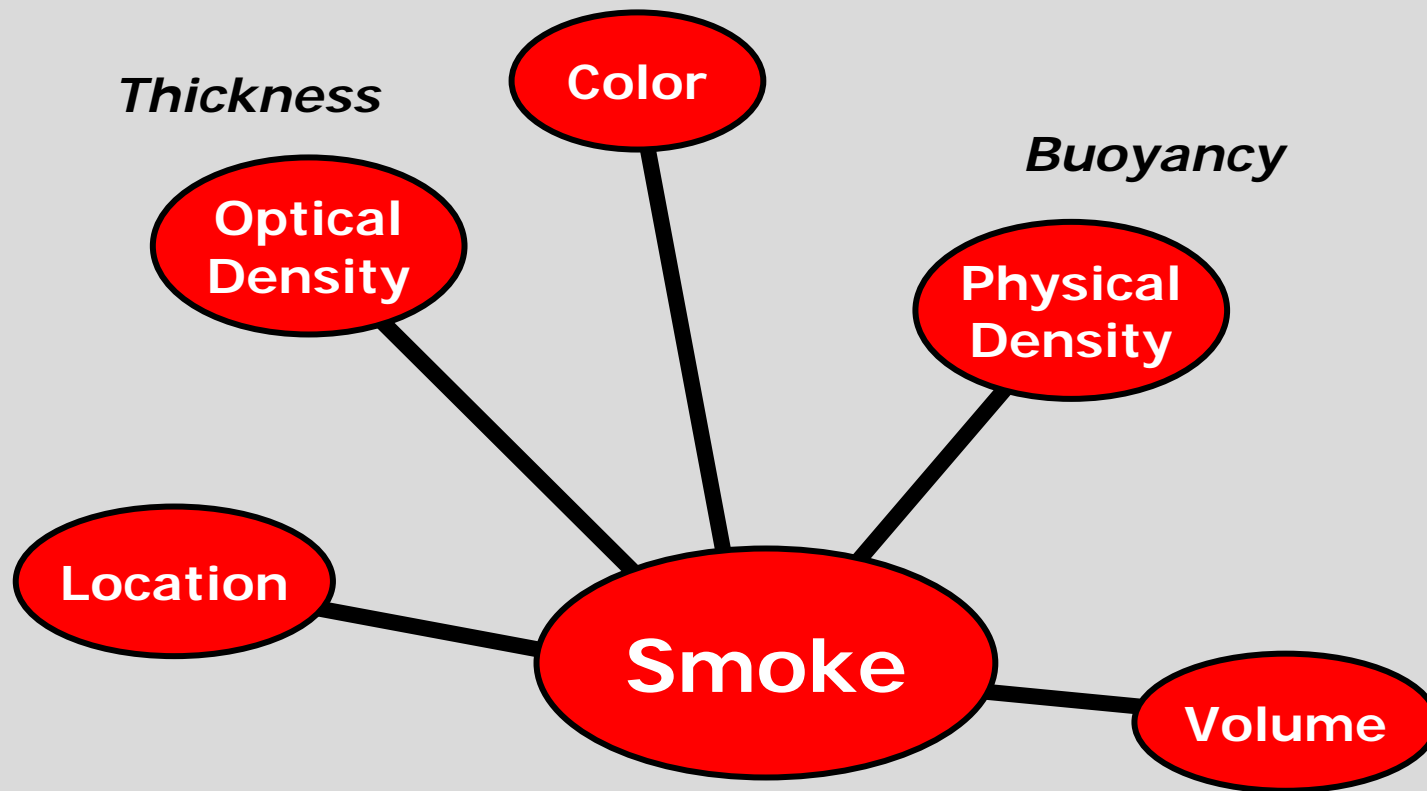
Fire Behavior  
Indicators





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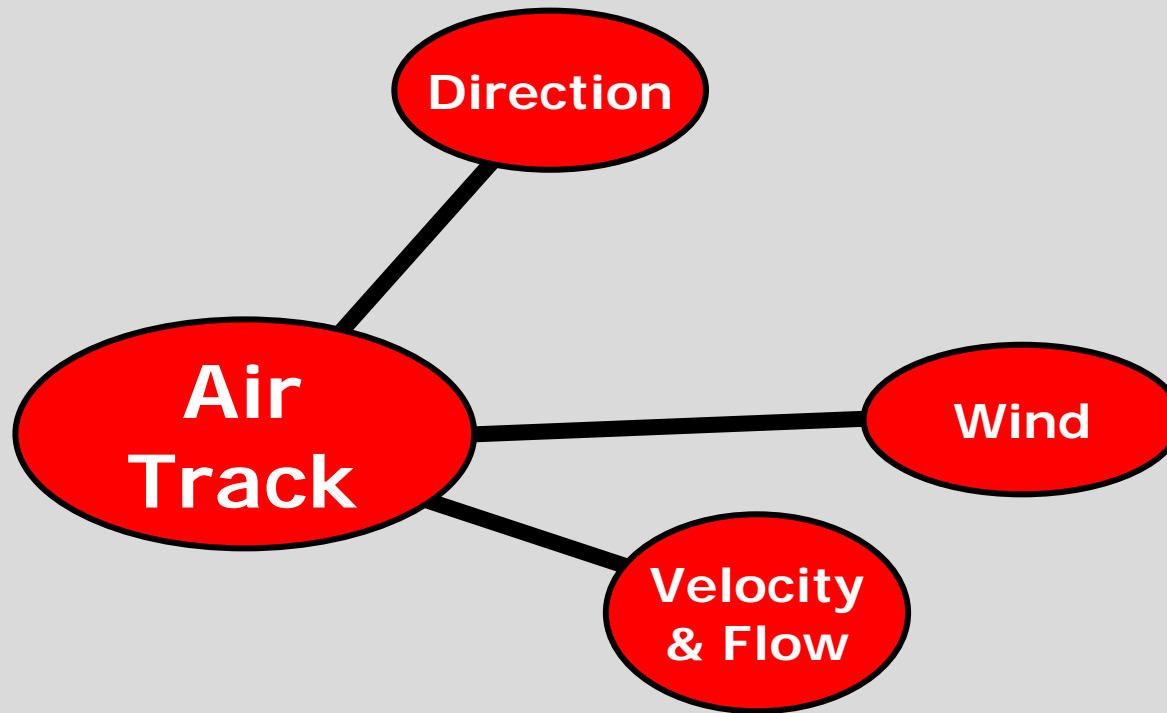
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Fire Behavior  
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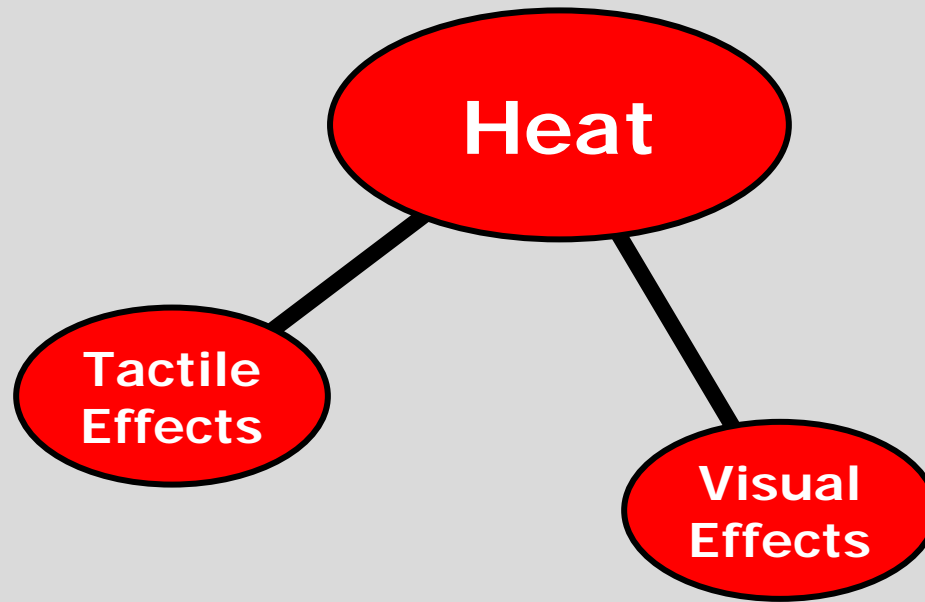






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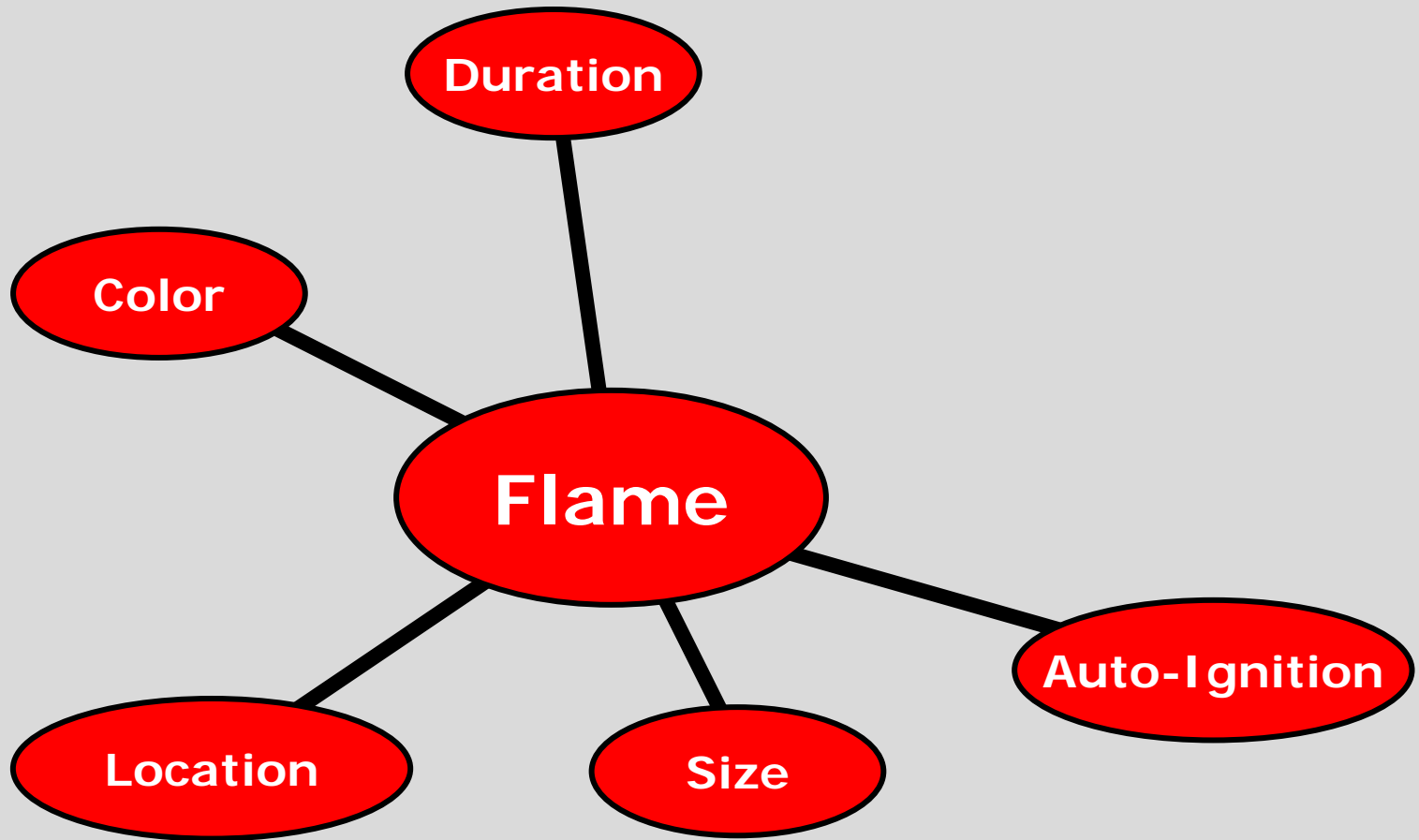
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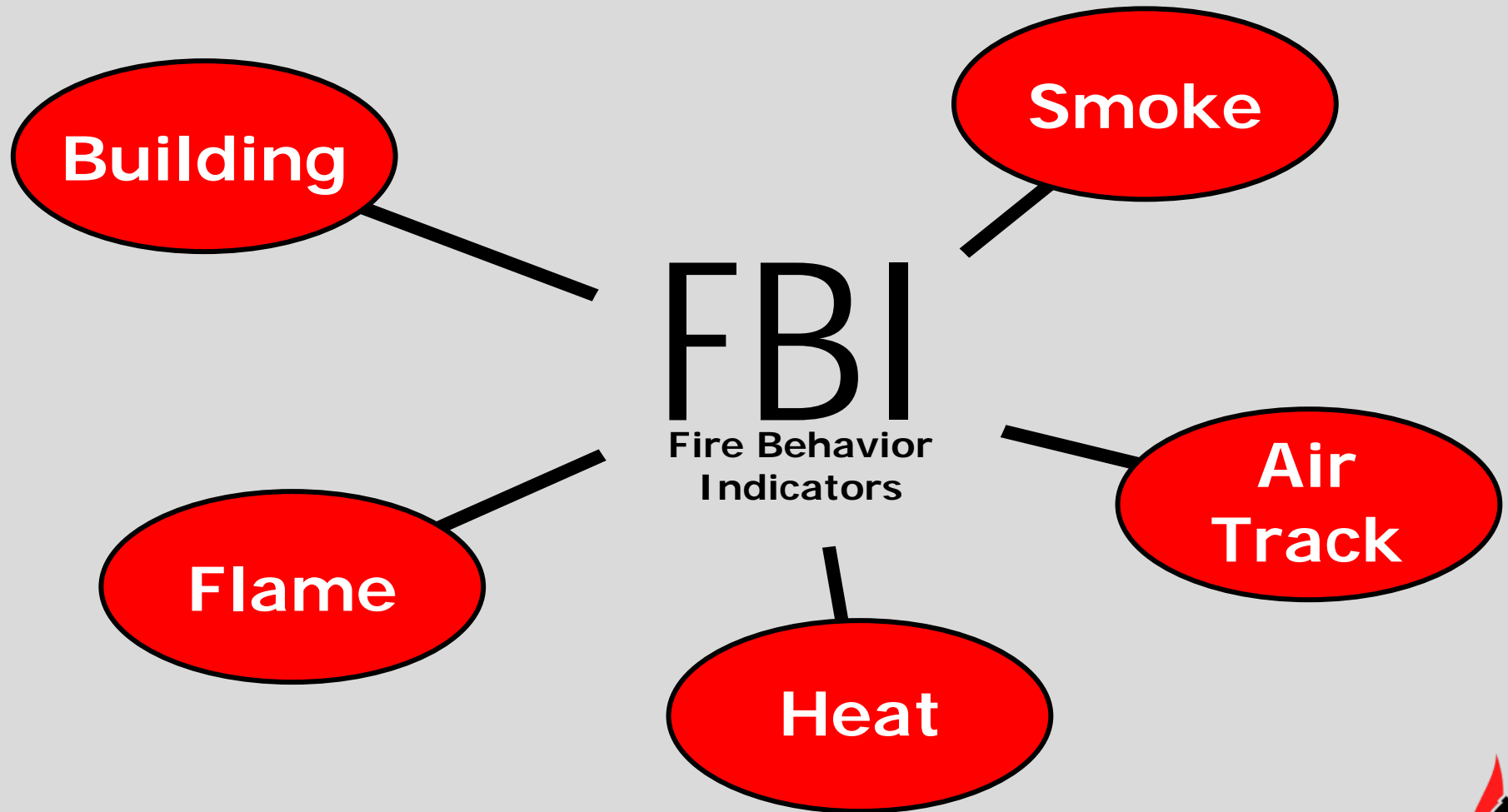


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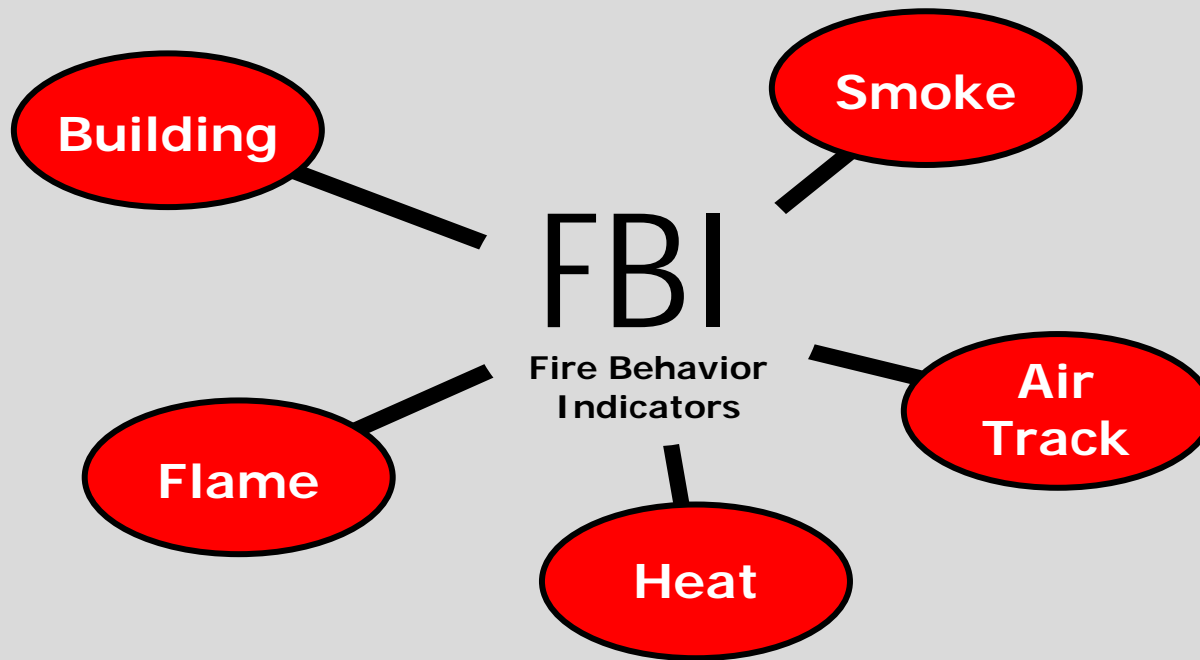
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OFFICIAL VEHICLE  
INSPECTION STATION  
LARCH (1983-2004)











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