

ORANGE PEEL

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BY: JASON BARKER

Dixon Fire Department

Engine 81

ATTIC FIRES

Your company is dispatched to investigate an “odor”. The dispatch details are sketchy, but the homeowner reports coming home to smell “something funny”. Upon arrival you find nothing showing from the single story frame dwelling. You and your crew enter the home. Your crew investigates further and discovers a smoke condition in the attic space. They advise that the smoke is building and it is getting hot. You radio your findings and request the balance of the assignment for an “Attic Fire”.

The response to an attic fire is commonplace, but before we get too far into the subject let us agree on some facts:

1. Typically the products of combustion (heat, gases, and carbon particles) rise upward and outward.
2. Fire and fire extension will follow the path of least resistance, and will exploit weakness in the construction.
3. So it is safe to say that most fires that extend from the original “Fire Box” will most likely find their way to the highest point of the building, the Attic Space.

What Is An Attic? Conventional thought labels the “Space” above the highest “normally occupied area of a building” as the attic. Attics take on many shapes and sizes. The attic may be a very small void space, to the full length open “Cockloft” over the row of strip mall stores.

Attics may also be quite large. In my home, the attic includes the lair of my teenage daughter on one end and a walk in storage space on the other. These large attic spaces may be either finished or unfinished. As in my house, the finished attic provides additional living space. The finished attic spaces generally contain ordinary furnishings vs. the unfinished attics that may have heavy fire loading and unprotected structural members.

ATTIC FIRES

The origin of an attic fire varies, but some common causes are from defective chimney linings, damaged wiring, lightning strikes, human errors and/or fire traveling vertically from below. These extending fires often go unnoticed until they become visible from the outside. As a result, attic fires are often well involved on arrival of the fire companies.

SIZE-UP

As with any fire response a proper SIZE-UP is a must. The company must look at the:

1. Occupancy Type
2. Construction Features
3. Size of the space
4. Location and extent of fire and/or smoke showing.

Knowing your company's response area is a must. The types of buildings; target hazards; and occupancy types will give you the baseline knowledge to manage a fire incident. This knowledge may be gained from preplanning, as well as from non-fire incident responses. These inspections provide the company with an opportunity to examine the buildings prior to a fire.

OCCUPANCY TYPE

It is important that the fire companies know basic construction features of various occupancy types. Do draft curtains divide the attic, or is it an open common attic? Where are the firewalls? Where are the scuttles and attic access points? Where are the likely routes for fire extension? Common Construction Features of some occupancy types include:

Commercial occupancy's: Commercial occupancy's may have a large common attic space. If the building is older there may be multiple roof assemblies and thus multiple void spaces, and avenues for fire to extend to and hide in.

Multi-family dwellings: Multi-family dwelling may have a common attic space that can span multiple occupancies, increasing the life safety hazard for the residents.

Single-family dwellings: Is not uncommon for the single family dwelling to have an occupied attic space. The extended family member or teenager looking for his or her own space may occupy the attic. In addition the attic space may house HVAC units or water heaters.

Building construction can be described by using many methods. The common example is using the Type I to Type V descriptions. This works, but is that “protected”, “unprotected” “one-hour”... who knows? Do not get me wrong. A good knowledge of building construction will help save firefighters lives. But in most response areas the buildings can be broken down into simpler terms; Old vs. New. Each is not without its own hazards.

Old buildings may have Balloon Frame Construction. They may be built from unreinforced masonry (URM). Many have large fire loads and complicated floor plans that confuse and trap firefighters.

New construction presents its own set of hazards. The lightweight, trussed and/or panelized construction features do not withstand fire conditions as well as the “Old” construction does, posing a risk to firefighters occupying the fire area.

SIZE

The size of the attic space is an important factor. Small confined areas respond to fire differently than do large “Common Attic Spaces”. The potential for accelerated fire growth with “Back Drafts and Flashovers” is present in all attic spaces, but more so in smaller spaces. There have been documented incidents where a truck company opens up an attic space (cockloft) checking for fire extension and boom... The ceiling covering contained the smoldering fire and when the company breached that covering fresh air was introduced into the space and there was a dramatic increase in fire activity.

FIRE ACTIVITY

When we size up any fire activity we look for the following: Where is the Fire Burning? In the case of a suspected attic fire, is the area below the attic space free of fire and smoke? Is there smoke and/or fire showing? Are the smoke and or flame under pressure? What color is the smoke?

Consider this: A fire in a well-sealed attic may not respond in the normal fashion. The hot air may not rise. The rapid build-up of super-heated products of combustion may force the fire downwards, suddenly involving areas below and distant from the original fire. The firefighters’ could suddenly be lost and or trapped by the sudden extension of the fire.

ACTION PLANS

One basic fire ground action plan includes the RECEO action model. In attic fire scenario RECEO may include the following:

Rescue: Remove occupants

Exposures: Consider both external and internal exposures

Confinement: Ventilation tactics

Extinguishment: Direct Vs indirect

Over-haul

The additional components of the RECEO model, Salvage and Over-haul, can be addressed in the Exposures and Confinement sections. By taking actions to protect and salvage the uninvolved contents, we are protecting the internal exposures. Removing and/or covering the building's contents prior to opening up the attic space must be a consideration at all fire scenes.

TOOLS

Your tool selection will depend on the construction and occupancy. Choosing the proper tools to gain access too and combat an attic fire again depends on your size-up and pre-incident knowledge of the fire building. The basic tool selection for interior operations at an attic fire includes: A" Hook", folding ladder, salvage cover(s), hose line and if available a Thermal Imaging Camera (TIC).

LOCATE THE FIRE

Pin pointing the location of the fire is the first task. In the attic fire scenario this may not be such an easy task. The attic fire has the potential to breach the attic space and come down behind the interior crew, cutting off their normal egress route. With a suspected attic fire, it is a good practice to make an inspection hole in the ceiling covering as you enter the fire building and to continue to make inspection holes as you progress into the building. Never let the fire get behind you!

CONFINE THE FIRE

Based upon the size-up you will need to utilize different methods to confine the fire. An example is a commercial occupancy, with a large open attic space: Fire control may require vertical and/or strip ventilation to confine an attic fire. Single Family Dwellings: it may be best to keep the space as intact as possible. Poorly timed ventilation may prevent an early knock down of the fire. Balloon Frame Construction is unique. In a Balloon Frame building you must anticipate fire spread to the attic space no matter where the origin of the fire may be. Conversely any actions taken on an attic fire may extend the fire below the attic space Fires in these types of building are difficult to confine.

EXTINGUISHMENT

Methods of extinguishing attic fires vary. One option is to introduce water fog into the closed attic space. The steam conversion should extinguish the fire. This method does not preclude the need to pull the ceiling however. By pulling the ceiling you gain access to hidden pockets of fire, as well as gain access for over-hauling the involved areas. The "Gable Vent Attack" is another option is attack the fire. The potential to spread the fire throughout the attic is increased with this method, but it may initially isolate the living space from fire attack activities. The presence of blown in cellulose insulation complicates fire attack and over-haul.

Fire can spread undetected throughout the attic space. The fire burrows through the insulation extending fire far remote from the initial are of involvement. It may be necessary to expose all the entire attic space to find all the area that may have been exposed to fire.

VENTILATION

Vertical ventilation at top-floor and attic fires is especially important to localize the fire and retard the lateral spread. Once in the attic, the fire can bank down quickly and rapidly spread horizontally. This rapid spread is especially evident in unfinished attics. However, this is also true in finished attics that are subdivided into rooms for living space. The pitch of the roof and the low, angled ceilings leave little space for the heated gases to collect. Since fires burn upward, attic fires respond well to vertical ventilation. If the vent hole is well placed and of adequate size, less water will be needed to extinguish the fire. . Correspondingly, there will be less water damage below. If ventilation is delayed, interior hose streams will push heat around, driving it into voids

SUMMARY

In summary, proper size-up, quick access and timely well-placed water application and ventilation are the KEYS to successfully controlling an attic fire.