Deployment

If you are part of a crew, your supervisor will decide where and when to deploy fire shelters. Follow orders. If you are not in a crew or have become separated from your crew, you must rely on your own judgment. Remember:

- *Follow planned escape procedures first.*
- *Use your fire shelter as a last resort.*
- *Give yourself enough deployment time.*
- *Don't panic.*
- *Have confidence in the shelter and in yourself.*

Get On the Ground

If time runs out while you are attempting to escape, you must get on the ground before the fire arrives and finish deploying on the ground. Death is almost certain if the fire catches you off the ground. **The optimal survival zone with or without a fire shelter is within a foot of the ground.** Once you are entrapped, your highest priority is to protect your lungs and airways.

Picking Your Deployment Site

Your goal in selecting a deployment site is to keep the fire shelter away from flames and convective heat as much as possible. Heat from flames, or convective heat, is quickly absorbed by the shelter and can decompose the glue that bonds the layers. The gases the glue produces can ignite inside the shelter.

When possible, you should take steps to limit the amount of radiant heat that reaches the shelter. Although radiant heat is absorbed much less readily than convective heat, it will increase the temperature inside the shelter. Extreme radiant heat can damage the shelter.

Try to pick natural firebreaks such as wet meadows, creekbeds, wet swampy areas, and rock slides (Figure 7).

Figure 7—Natural fuelbreaks, such as wide creekbeds, can be effective deployment sites.

Figure 8—Deploy fire shelters well away from thick vegetation such as the shrubby understory and the trees in this photograph.

Figure 9—Avoid areas where snags can fall on you, or where logs or rocks can roll on you.

Figure 10—Do not deploy in or next to tall or thick grass, small trees, trees with low branches, brush, piles of slash, or firefighting equipment such as packs, parachutes, tools, or chain saws. Firefighters who have deployed their fire shelters in sites that were otherwise adequate have been burned because they deployed too close to such fuels.

Large rockslides (right) can be effective deployment sites, but firefighters must deploy their shelters well away from grass, brush, and trees.

Figure 11—Wide areas that have been cleared of fuel, such as dozer lines or roads, can be effective deployment sites.

Figure 12—Ground fuels such as grass or tree litter can ignite rapidly in front of intense flames. Clear the deployment site to mineral soil if at all possible. If time is critical, pick a site with the sparsest fuels.

Figure 13—Burned areas can be effective deployment sites if there is no residual fuel that can reburn.

Figure 14—The lee side of ridgetops or knobs can be effective deployment sites because the convective heat and flames will generally continue rising above them. Fire intensity often drops when fire reaches a ridge. However, be alert for the possibility that the fire will spot and run up the lee side. Recommendations for staying away from fuels still apply.

Broad ridgetops (right) can offer effective deployment sites. Do not deploy in draws.

Figure 15—Flat areas on slopes, such as benches or road cuts, offer some protection from radiant and convective heat. Level areas like these can keep you below the path of flames and convective heat. A drainage ditch on the uphill side of a road cut can be an effective deployment site unless it contains fuels that can ignite and burn the shelter.

Four firefighters deployed their fire shelters on this road (right) during a burnover. All four survived with only minor burns.

Figure 16—Keep away from narrow draws, chutes, and chimneys. They tend to funnel smoke, flames, and hot gases.

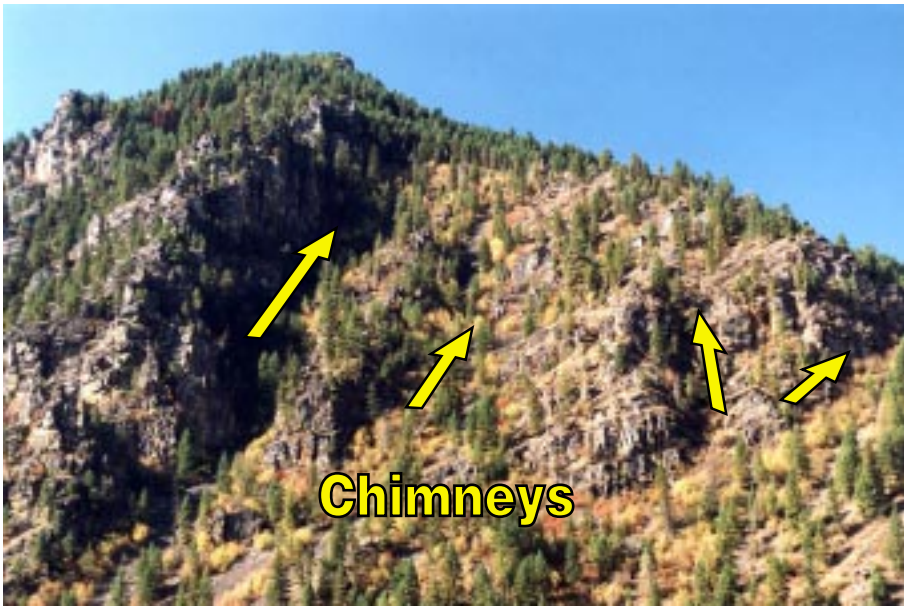


Figure 17—Avoid saddles on ridgetops since they also funnel smoke and heat.

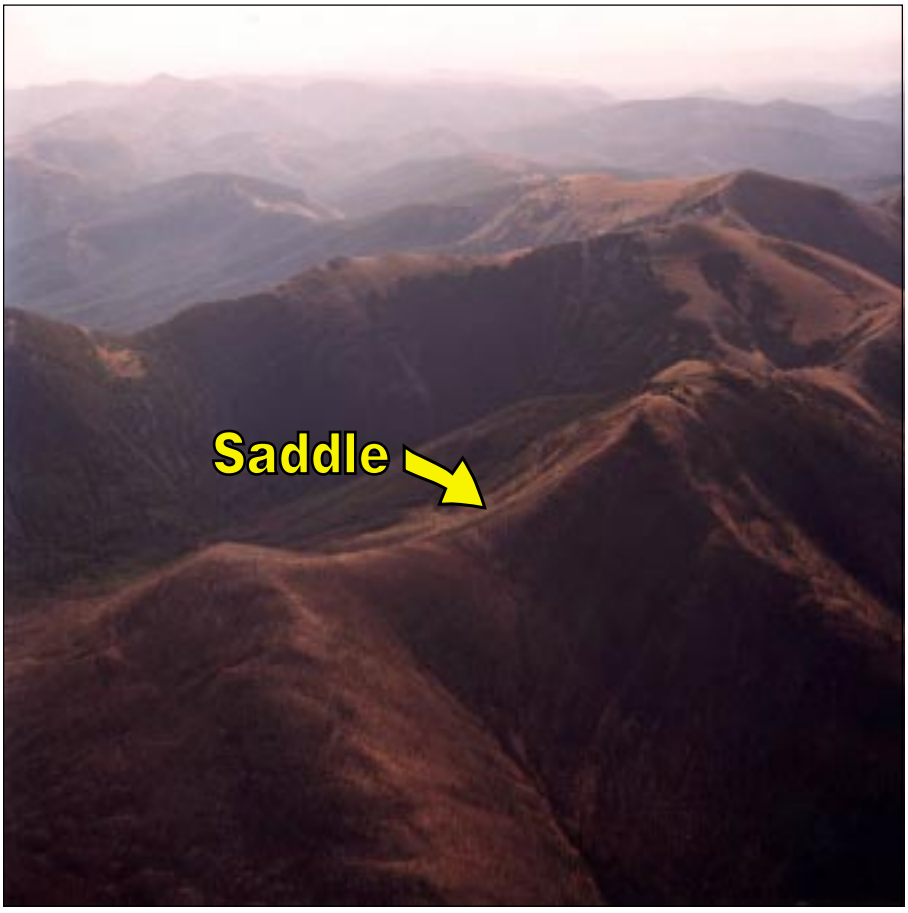


Figure 18—Stay out of draws, even when deploying on a road.

Figure 19—Large objects that will not burn, such as large rocks or piles of dirt, can help protect you from heat if they are between you and the approaching flames.

Standard Deployment Procedures

If you must deploy your fire shelter:

1. Remove your shelter from its case (Figure 20).

2. Scrape away ground fuels if time permits. Clear an area 4 by 8 feet (larger if you have time) down to mineral soil. A clean area minimizes flame contact with the shelter and reduces the likelihood the shelter will produce gases that could ignite inside it. Never deploy your shelter immediately downwind or uphill from a large concentration of fuel.

3. Pull either red ring on the vinyl bag down to the bottom and up the other side (Figure 21).

4. Pull the two halves apart at the bottom and remove the shelter.

5. Pick your deployment site. The lowest depression on the site is best. It should be as free of fuels as possible.

Figure 20—Pull the shelter from its case.

Figure 21—Pull the red ring to open the vinyl bag.

6. Flip out the shelter and unfold it (Figure 22).

7. Place your shelter so your feet are toward the oncoming flames. The end facing the advancing fire will become the hottest part of the shelter. It will be easier to hold that end down with your feet than with your hands and elbows. Keeping your head away from the heat as long as possible will better protect your lungs and airways.

8. The shelter can be deployed from a standing position or from the ground. Some firefighters have reported that deploying from a standing position is easier and allows you to better anchor the fire shelter.

   If the fire is closing in, get on the ground and finish your deployment there. Keep your face next to the ground as you pull the shelter over you, headfirst.

Figure 22—Flip out the shelter and unfold it.

Regardless of the deployment method, you must:

- *Position your feet and body so the holddown straps are beneath you when you lie prone (Figure 23).*
- *Fold out the floor panels when you are on the ground so they are under your body.*
- *Push the sides of the shelter away from your body to provide an air gap between you and the shelter material.*
- *Hold the shelter down with your feet, legs, elbows, and hands.*

What to Take Into the Shelter and What to Toss Aside

Some items should not be taken into the shelter under any circumstances. These are dangerous flammable items such

Figure 23—Position yourself properly inside the fire shelter.

as fusees and gasoline. Throw these items well away from you when you deploy your shelter. You should also keep tools such as pulaskis and shovels away from the shelter. Otherwise, they might cut the shelter material.

You should always wear your hardhat and gloves in the fire shelter. Wear your face and neck shroud if you have one. If you have time, take water with you so you can stay hydrated. Take your radio to maintain communication during and after the entrapment.

You should remove your pack before entering the shelter. Your pack may contain dangerous items, such as fusees. In addition, you can get into the shelter more quickly without your pack, particularly during high winds.

Group Deployment

People have suggested that in a group deployment of fire shelters, certain formations may be better than others. Fire shelters should be deployed close together. However, no particular formation is recognized as best. Optimal shelter placement will depend on the conditions. Select the best deployment sites available.

Sharing a Shelter

Never plan to share a shelter unless someone is without one. The shelter is designed for one person, but in some entrapments, two persons have shared a shelter. Sharing a shelter greatly increases your risk of injury because it reduces the amount of insulating airspace and increases body contact with hot shelter material. If sharing is unavoidable, both persons should lie with their heads at the end away from the oncoming flames. If you must get into a shelter with another person, yell at them so they know wind is not lifting the shelter. Always enter from the side away from flames or hot air, so you don't expose the shelter's occupant.

During an Entrapment

Once you've prepared your spot, get into your shelter and stay there. You must protect your airways and lungs from the fire's hot gases. Turbulence can lift a shelter's edge, letting in hot gases. Fires can generate winds of 50 mph or more, so you must hold the shelter down firmly. **Gloves are critical.** Without them you may burn your hands and be unable to hold down the shelter. In 1979, a firefighter in Idaho was killed when his hands were burned and he was unable to hold down his shelter. Wear your hardhat so the shelter fabric does not burn your head.

Keep the shelter's sides pushed out so the shelter material does not touch you. Even small air gaps offer excellent insulation. **Do not roll up in the shelter**. This reduces the availability of breathable air, can cause conduction burns, and can allow the air temperature inside the shelter to rise more quickly.

Keep your nose pressed to the ground as much as possible. The air right at ground level is usually cooler and cleaner than air even inches higher. Breathe through a dry bandanna to help reduce the heat and smoke you inhale.

(With) any change in elevation inside the shelter, there was a drastic change in the temperature. If you look at the burn injuries that I received, anything that was off the ground and certainly the things that were higher up in the shelter (were) the areas (where) I received the most significant burns.

Entrapment survivor

Moving Your Shelter

You may want to move your shelter as the flame front changes position or to be closer to someone in trouble. Move by crawling on your belly, keeping the shelter edges close to the ground. If you have to adjust the shelter, remember that your lungs are vulnerable. Try not to breathe until your face is against the ground. If you are wearing a shroud, keep the front of it fastened in case any heat enters the shelter. Moving is risky. It exposes your airways and lungs to hot flames and gases. It may allow the shelter to fill with smoke. There's a chance of losing your shelter in high winds because you can't hang onto the shelter as well while moving. You can do little to help another person during the peak of an entrapment. **Do not move unless it is absolutely necessary**.

Talk to Others

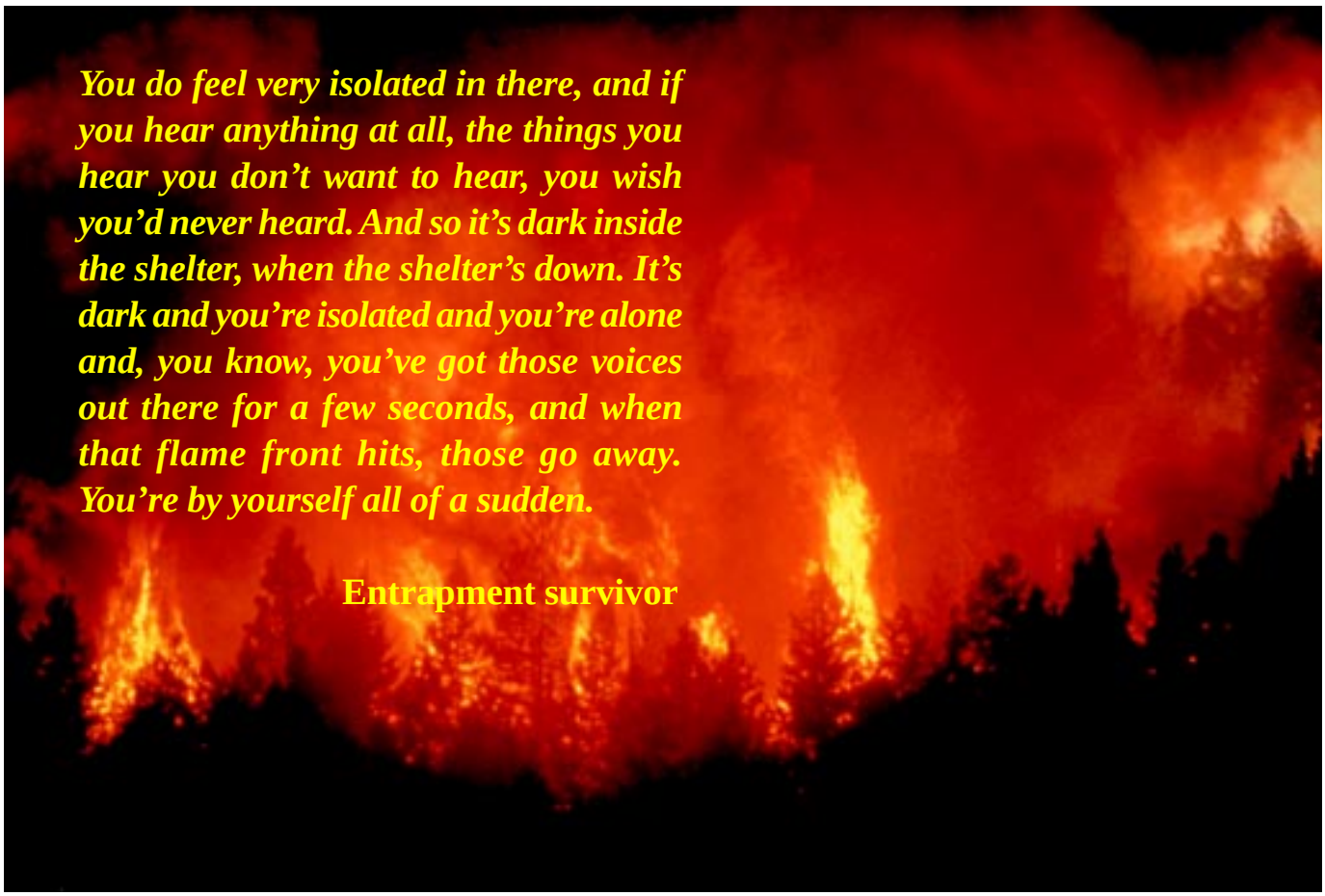
During entrapment, talk to other trapped firefighters by radio or shout back and forth. If someone yells at you, try to let that person know you're okay. If someone doesn't respond to your shouts, **do not leave your shelter.** Fire entrapment can induce panic. Some people may not answer until after the danger has passed. During very turbulent conditions, it will take all your effort to hold down the shelter. At a fire's peak, the noise will be deafening. You may be unable to hear anyone. Keep calm. As soon as the noise subsides, resume talking to each other.

Conditions Inside the Shelter

In a prolonged entrapment, peak temperatures inside the shelter can exceed 150 °F. Take advantage of the layer of fresh air usually found at ground level. Take short, shallow breaths through your mouth when you're breathing very hot air.

The fire shelter has pinholes and may have cracks along its folds. Entrapped firefighters say that firelight entering these openings looks like hot coals or embers on clothing. These openings do not reduce your protection. No matter how big a hole or tear your shelter may have, you are better off inside the shelter.

The inside surface of the shelter material can become hot enough to burn you. This is why you should be wearing a hardhat, flame-resistant clothing, and gloves. Usually, the shelter fabric does not touch you, but entrapped firefighters tell of turbulent, fire-generated winds strong enough to blow the shelter against them. Gloves will let you push the cloth away from your body to maintain a protective air gap.



When the first fire front came across us, I would estimate that the winds were probably in excess of 70 miles per hour. The sense of power that you had around you, that energy release that we had around us was just absolutely incredible. It was a very humbling experience. I mean you felt very small and very insignificant at that point.

Entrapment survivor

In longer entrapments, or when flame contacts the shelter, burns are more likely. Shelter material is most likely to contact your feet, buttocks, head, elbows, and hands. It is best to gently shift the points of contact, especially around your feet and elbows, since prolonged contact will cause burns.

If flames contact the shelter, the glass/foil fabric heats up rapidly. The adhesive may start to break down and the shelter may begin to fill with gases and smoke. These gases can ignite, especially if flame enters the shelter. You may still survive if you remain in your shelter with your nose pressed to the ground. **Conditions will be far worse outside the shelter**. Spots of aluminum foil can melt or tear away from the fire shelter, reducing protection. Even so, it is still safer inside. Your flame-resistant clothing becomes your backup protection.

Direct contact with flames or hot gases is the biggest threat to your shelter. It is vital to deploy the shelter in a spot that offers the least chance of such contact. The heavier the fuels, the larger your fuel break needs to be.