

Module 5: Transportation Safety

Topic 1: Module Objectives

Module introduction

Narration Script: You have a mission to protect life, property, and natural resources from fire. But to do that, you have to travel to the fireline and get there in one piece. Fire transportation safety isn't difficult or technical. It starts with using a little common sense. Like so many other aspects of fire fighting, traveling to and from the fireline requires you to observe proper precautions and take time to do things the right way. Transportation safety prevents mistakes that can put you or the other members of your crew in jeopardy. This topic will review basic safety procedures for traveling to the fireline by vehicle, boat, helicopter, fixed-wing aircraft, and even getting there on foot.

Module overview

In earlier topics, you learned how to make safety part of your preparations for fire fighting and how to work safely when you're on the *fireline*. In this topic, we'll talk about the road less traveled—and that's oftentimes where wildland fires are located. You'll learn about staying safe while you're traveling to the location of a fire.

We'll cover the basics of safety for practically every type of transportation you're likely to use:

- **Vehicle**
- **Boat**
- **Helicopter**
- **Fixed-wing aircraft**
- **Foot travel**

Narration Script: Before you can fight a fire, you have to get to the fire scene safely. The nature of wildland fires makes them sometimes less than convenient to get to. No matter how long it takes, or how you get to the fire, there are some basic safety rules you should follow. In this topic, we'll describe basic safety procedures for using several forms of transportation.

Topic 2: Transportation Safety Procedures

Topic introduction

If you're going to fight fires, you have to get to the fire and move along the *fireline* safely. Transportation to the fire might be as simple as driving an engine over surface roads or as difficult as reaching a remote site by helicopter or boat.

The terrain can be extremely demanding and unforgiving. Helicopter flights expose firefighters to the hazards of flying in mountainous terrain. There may even be times when you use boats to reach areas where there are no roads. And in a wildland setting, you're certainly going to do some traveling on foot.

Each form of transportation comes with some amount of risk. In this topic, you'll learn safety guidelines for using different types of transportation.

Narration Script: Transportation to a wildland fire can be routine or something out of the ordinary. To reach a fire in remote or rugged terrain, you may have to travel by air, on the water, or even on foot. But no matter how you get there, you need to take the proper precautions to get there safely.

Apparatus safety operations

As we just mentioned, safety on the roads includes safe operation of apparatus and *heavy equipment*, as well as an understanding of traffic hazards.

Let's start with a twofold discussion of wildland fire apparatus safety concerns:

- Consider the safety of the personnel operating on and around the equipment
- Consider the protection of the apparatus from mechanical damage and *exposure* to fire

Within these two concerns, apparatus safety considerations can also be broken down into several broad categories:

- General guidelines
- Off-road guidelines
- Engine operation safety
- Personnel transport

You will investigate each category in turn for more details about fire apparatus safety.

Narration Script: Part of your role on any scene is to operate equipment in a way that protects you and the others around you. Get ready to explore how to safely operate and work around fire apparatus.

Motor vehicle transportation

Traveling on fire *apparatus* is one of the methods of transportation you'll use most often. Before, during, and after a fire, apparatus operators are responsible for the safe operation of the vehicle and for the safety of the personnel on and around the vehicle, including pedestrians.

Here are some common-sense safety rules for drivers and passengers:

- Drive at safe speeds—saving structures or vegetative fuels does not justify having an accident
- Ride inside the vehicle—don't ride outside on the tailboard, running boards, bumpers, fenders, or any other area
- Wear safety belts and protective clothing at all times
- Turn fire apparatus headlights on—they must be on at all times, day or night, whenever the vehicle is in motion
- Stay awake and alert—don't drive if you're sleepy

Narration Script: Fighting fires is dangerous enough. Staying safe on your way to the fire needs your attention too. If you are the vehicle operator, this means operating the fire apparatus in a safe way. If you are the vehicle passenger, you still have some rules to abide by. Just think about the safety guidelines you abide by when driving your own personal vehicle: don't speed, keep your body parts inside the vehicle, wear your safety belt, use your headlights, and stay awake when you're at the wheel.

Reduced visibility situations

Vehicle operators have to take extra care when visibility is poor due to smoke, fog, or darkness. First and foremost, the operator should reduce speed appropriately. Next, use a spotter or scout to walk ahead of the vehicle or behind the vehicle when backing up.

Spotters should:

- Watch for obstacles such as logs, stumps, rocks, low-hanging limbs, ditches, and gullies
- Carry reliable hand lights, wear highly visible clothing, and stay within the driver's field of view at all times
- Use agreed-upon hand signals with the driver

Narration Script: Even though you'll always have your headlights on while the engine is running, poor visibility can be an issue in smoke, fog, or darkness. Slow down, first of all, and use a spotter to watch for obstacles you may encounter at the wildfire. Spotters should be as visible as possible to the driver, carrying lights, wearing appropriate clothing, and staying in the driver's field of view.

Also, it pays to agree on a set of hand signals for common maneuvers such as turning, stopping, and reversing. Get in the habit of using your arms to show the decreasing distance to objects like trees and rocks. You often operate in tight quarters and need every inch.

Knowledge Check 1

Multiple choice—check the box of the answer(s) you choose.

Have you observed some key safety procedures?

When visibility is poor, spotters should take all of the following safety precautions, EXCEPT

- walk ahead of the vehicle.**
- carry a drip torch to remain visible to the driver.**
- watch for obstacles the driver might not see.**
- carry a bright, reliable hand light.**

The correct answer is carry a drip torch to remain visible to the driver.

Off-road apparatus guidelines

Fighting wildland fires often requires driving your apparatus off the roadway to reach the fire. Some fire apparatus are specifically designed for off-road use, and some are not. For example, some fire apparatus are not suitable for off-road use because of their weight, low ground clearance, and a large turning radius.

Read the following to steer into some guidelines when using fire apparatus off-road.

Capabilities and Limitations

Even if you're driving a heavy-duty brush truck, you've got to know what you can and can't do safely. Know your vehicle's capabilities and limitations before you go to an incident, and operate accordingly. If you mishandle or overtax your vehicle, you can get yourself killed or damage expensive equipment.

Watch Your Speed

It may sound obvious, but drive at speeds appropriate for the conditions. The crew and apparatus could be in jeopardy if a breakdown occurs. Also, you may be operating in hilly terrain—don't forget to use the transmission to slow down on steep descents. Brake overheating and failure are common problems.

Narration Script: If you determine the apparatus can go off-road, you'll want to know what the unit can and cannot do—its capabilities and limitations. Pushing a vehicle beyond its capabilities will put you and others in danger.

Cautions in off-road apparatus operation

When operating off-road, maneuvering an apparatus can be tricky. Even though all-wheel- or four-wheel-drive vehicles have superior climbing ability, they also have a higher center of gravity that makes them more susceptible to rollover than other types of apparatus.

Keep vigilant for the following situations:

- Loose and unstable ground
- Slopes
- Soft terrain
- Bridges and streams
- Railroad bed shoulders

Read the following for off-road cautions when operating an apparatus.

Loose and Unstable Ground

On steep hillsides, loose or unstable ground can cause the vehicle to slide or overturn, especially if it has a relatively high center of gravity.

Slopes

Never drive up and down slopes exceeding 40 percent or across slopes exceeding 20 percent. Many newer vehicles are equipped with inclinometers to help identify these limitations.

Soft Terrain

Even on level terrain, a vehicle can become mired in soft ground, sand, or mud, leaving it vulnerable to being overrun by a fire.

Bridges and Streams

Never drive across a bridge unless you know it to be strong enough to support the vehicle's weight. And although you will be tempted, do not attempt to ford streams with apparatus that is not designed to do so.

Railroad Bed Shoulders

The shoulders of railroad roadbeds are not designed for vehicle traffic. It may look like the quickest way from point A to point B, but you can damage your tires on the coarse, angular rock used on these roadbeds. Also, this rock is loose, and you will be in danger of sliding and rolling over on these steep inclines.

Narration Script: Even all-wheel- or four-wheel-drive vehicles can get stuck. If you get stuck, you can't fight the fire, and you may be putting yourself, your crew, and your vehicle in the path of the fire. If you encounter any of these five situations, raise the yellow flag and take heed.

Knowledge Check 2

Matching—select the match you choose from the pull down list.

Let's see if you know what to stay away from to operate safely off-road.

Match each off-road hazard with the potential dangerous outcome.

Loose and unstable ground

Slopes

Soft terrain

Bridges

Railroad beds and shoulders

The correct matches are as follows:

Loose and unstable ground: Sliding or overturning due to high center of gravity

Slopes: Sliding due to incline

Soft terrain: Stuck and possibly overrun by a fire

Bridges: Collapse due to vehicle weight

Railroad beds and shoulders: Tire damage

Engine operations, equipment, and hoseline safety

Safety guidelines for using engines in the wildland environment resulted from many years of experience on thousands of wildland fires. Safe and effective engine operations start with proper communication and coordination with the rest of the incident organization.

There are lots of other safety tips. Consider the following three categories:

- Engine operations safety tips
- Engine equipment safety tips
- Hoseline safety tips

We'll cover each of these categories in turn.

Narration Script: Would you rather learn from the mistakes of others or from your own? Safety precautions for using engines, hoselines, and other equipment in a wildland environment should be second nature. You'll learn more about these safety precautions in the next few sections.

Engine operations safety tips

First, let's talk engine operations safety. The term *operator* is used to describe the person who drives the apparatus. Responsible engine operators are never reckless. They have a responsibility to drive cautiously and safely.

Accordingly, here are some operator safety guidelines:

- Stop at red lights and stop signs, even when responding
- Turn on headlights whenever the engine is running
- Use amber flashers and traffic cones when parked on a roadway or shoulder
- Park on the side of the road so as not to block it
- Park in a safety zone with someone always attending the engine
- Operate in the *black* when possible
- Always park facing your *escape route*
- Use wheel chocks on all vehicles

Narration Script: If you are an engine operator, stop at all red lights and stop signs even when using emergency warning lights, sirens, and air horns. Proceed only when it's safe to do so. We've said it before but here it is again for good measure—turn the engine's headlights on when the engine is running. Engines parked on a roadway or shoulder at fires should have only amber flashers on and be marked with traffic cones at the front and rear to warn motorists of the presence of apparatus and personnel. Position engines on the side of the road (not blocking it) to protect the vehicles and to allow room for other vehicles to pass. At the fire, park your engine in a safety zone, and do not leave it unattended. Operate engines in the black whenever possible. Back engines into one-way roads and driveways facing the escape route. Always use wheel chocks for vehicles that are stopped and parked.

Equipment safety tips

Next in line, we have some safety concerns about the engine itself. It's all about taking care of the apparatus.

You'll protect the engine from fire by following these tips:

- Do not lock apparatus doors
- Roll up all windows to prevent burning embers from entering the vehicle cab
- Ensure that all compartment doors are closed
- Use hose bed covers to protect equipment stored in open hose beds

Narration Script: Personnel must always have access to the inside of the vehicle, so don't lock the doors. Also, you never know where burning embers might fly, and you wouldn't want a fire to start inside your engine. Your best bet is to make sure that the windows are rolled up. Compartment doors are a hazard when left open, not to mention the hazard from flying embers, so be sure to shut them. And to protect equipment in an open hose bed from burning embers, cover the bed with a flame-resistant bed cover.

Hoseline safety tips

You won't have much success fighting a fire without undamaged, reliable hoselines.

Consider these guidelines for hoseline safety:

- Use hose bed covers to protect hose from embers
- Connect a protection line for rapid deployment, and have it charged and ready
- Staff engines with at least three personnel, including a driver/operator, a nozzle operator, and at least one additional firefighter
- Wear eye protection if you are a nozzle operator
- Keep hoselines as short as possible
- Do not block access ways with hoselines
- Lay supply lines on the shoulder of the road only

Narration Script: Now let's talk hoseline safety. Stray embers can damage hoselines if not protected. Hose bed covers will do the trick. Protection lines can save your life and keep your engine from becoming part of the problem. Be sure you deploy with the specified number of crew for your apparatus. At a minimum, there should be a driver, a nozzle operator, and another firefighter. The nozzle operator and anyone near the nozzle area must wear safety goggles. And since you may have to pick up and move in a hurry—you'll want to stay flexible and be ready to "cut and run" when necessary. Keep your pre-connects short for this reason. Access ways should never be blocked with hoselines. Laying supply lines on the shoulder of the road is a better idea. That's all for now about hoseline safety.

Personnel transport safety

Just because you're going to a fire doesn't mean you can ignore safety rules when it comes to personnel transport. Firefighters are often transported from an *incident base* to a forward staging area or from one section of fireline to another in a vehicle, such as an engine, helicopter, personnel transport unit, or school bus.

As you may imagine, all of the apparatus safety guidelines we've discussed up until now also apply to personnel transport safety—no matter if a few firefighters are going to a fire or an entire brigade!

Narration Script: Driving to a scene is one of the most dangerous things you do. In 2004, the U.S. Fire Administration reported that 33 U.S. firefighters died in vehicle-related incidents. No matter what mode of transportation takes you to the fire—an engine, helicopter, or school bus—there are always safety rules to follow. Also, it doesn't matter where firefighters are going—to an incident base, staging area, or the fireline itself—safety matters!

Personnel transport safety for drivers

Here are some safety guidelines specific to personnel transport drivers. Drivers must:

- Be qualified for the vehicle and operating conditions—if you are not qualified, you better not be driving
- Have shifts that do not exceed the maximum duty day for your agency, with no more than 10 hours of behind-the-wheel driving
- Get at least eight hours of off-duty time between shifts

- **Be responsible for the safe operation of the vehicle, including using wheel chocks if provided and making daily mechanical checks before driving**
- **Remove unsafe equipment from service and report equipment status to the ground support unit**
- **Perform a vehicle walk-around before departure**
- **Use spotters when backing or turning around**
- **Observe all traffic signals, safe speed limits, headlight rules, and safety rules at all times**

Narration Script: Compare the responsibilities of an apparatus driver with those of a bus driver. Everyone knows that the bus driver is responsible for the vehicle and is in charge. All passengers must follow this person's instructions. If there is a problem with the bus, then it's up to the driver to report it to the administration. Transporting kids in a bus or firefighters in a vehicle is a similar situation. The driver is responsible for some very valuable cargo!

Passenger safety for personnel transport

The safety guidelines we just covered have more to do with safe operation of the vehicle itself. But drivers carry a precious cargo, hence a few more safety guidelines. Drivers must:

- **Have the supervisor ride in the cab or close to the driver whenever possible when transporting personnel**
- **Not transport personnel and loose tools together**
- **Ensure all passengers remain seated at all times with arms and legs inside the vehicle**

Narration Script: While being transported to and from the fire, the supervisor should be close to the driver to relay instructions and so that crew members can see their leader. If tools are left unsecured, they could shift around and injure personnel. So, all tools must be carried in another vehicle or stowed in a cargo space. And, be sure to keep your arms and legs inside the vehicle!

Knowledge Check 3

Multiple choice—check the box of the answer(s) you choose.

Let's see if you know the safety procedures for personnel transport vehicles.

Identify a correct safety tip for you to follow when driving a personnel transport vehicle.

- Drive no more than 8 hours during your shift, with at least 12 hours between shifts**
- Make sure your supervisor performs a vehicle walk-around to make sure all is clear before departure**
- Drive no more than 10 hours during your shift, with at least 8 hours between shifts**
- Report unsafe equipment to the ground support unit at the end of your shift**

The correct answer is drive no more than 10 hours during your shift, with at least 8 hours between shifts.

Traffic hazards safety overview

When you think of danger associated with wildland fires, traffic hazards probably aren't high on your list. However, many wildland fires originate along roads and highways because lighted materials are intentionally or thoughtlessly thrown from vehicles.

Examine the traffic hazard issues you'll face:

- **Fighting wildland fires along roads**
- **Preventing smoke-related traffic problems**
- **Arriving first on the scene**
- **Dealing with smoke-related traffic accidents**

You will investigate each traffic hazard issue in turn.

Narration Script: Roads are terribly hazardous to firefighters. We've discussed apparatus and heavy equipment safety, but before we get into other safety topics, let's talk about traffic hazards. When wildland fires start along the road, you combine traffic and smoke—not a healthy situation.

Fighting fires along the road

Many fires start in the median strip of divided highways. To attack these fires, you are often forced to park and work on or near the road. If you face this situation, handle it safely by establishing control points on both ends of the problem area. Call law enforcement as soon as possible to assist with traffic control.

Don't be hesitant to block the road when necessary. Residents may not like it, but your safety is more important than keeping traffic moving. In this case, be sure drivers can see warning signs and personnel.

Warning—Passing Vehicle Hazard

Due to smoke obscuring vision, firefighters and motorists are at considerable risk of being hit by passing vehicles. Proceed slowly and with caution, especially if traffic has not been completely stopped.

Preventing smoke-related traffic accidents

Anticipating what could happen with traffic when potential or actual smoke is a factor is the key to addressing traffic safety problems in the vicinity of a wildland fire. Acting decisively prevents accidents from occurring.

When you recognize potential smoke-related traffic problems:

- **Advise your supervisor**
- **Implement applicable provisions of the incident traffic plan such as posting warning signs**

- **Ensure proper equipment is ready and appropriate personnel are briefed on contingency plans and available to control traffic**
- **Notify local law enforcement units of the potential problem**
- **Establish periodic *patrols* to monitor problem areas**

Narration Script: Of course, adhere to your agency’s policy, but in general, follow this process. Communicate with your supervisor, who will in turn “up-channel.” Post warning signs. Check that equipment is ready, people are ready, and a traffic control plan is ready. Inform the police so they are prepared too. And patrol the area periodically to check out the situation.

Marking parked apparatus and directing traffic

When fires are reported or spotted on the road, you are often at the scene before law enforcement. When this is the case, you may have to direct traffic as well as fight the fire.

Follow these safety precautions along the road:

- **Have a supply of highway flares and traffic cones on the apparatus**
- **Place cones or flares as appropriate in the roadway to guide motorists around parked apparatus**
- **Make sure flares do not roll into vegetation at the side of the road**
- **If you have to park on the roadway or the shoulder, set the cones or flares before doing anything else**

Narration Script: When fighting fires along the road, you’ll often find that directing traffic falls to you as well—at least until law enforcement arrives. Keep your flashers on and drop cones and flares so motorists don’t run into your rigs. If you are allowed to use flares, make sure they don’t roll into the fuel on the side of the road—a handful or two of gravel will keep them in place. You wouldn’t want to start a new fire, would you now?

Using headlights

Smoke is a hazard in every instance but especially when on roads and in traffic. The A number one rule is—*use those headlights!*

Drive emergency vehicles with the headlights on, even when you aren’t using emergency lights. They may not be perfect, but headlights will at least partially shine through the smoke, dust, or anything else that’s obscuring your vision. Unless the apparatus is parked and the engine is turned off, turn on those headlights for safety. Also, seeing headlights shining through the haze enables firefighters on foot to move out of your way.

Narration Script: Mixing vehicles and smoke can be a big problem because it means you can’t see people on foot and people on foot can’t see you. Unless of course you turn on those headlights!

Arriving first on the scene

If you are the first on the scene when smoke-related traffic problems occur:

- Take immediate action to prevent accidents
- Establish control points on both sides of the problem area
- Slow or stop traffic entering the problem area
- Advise drivers of alternate routes
- Implement radio and television traffic advisories for the problem area
- Keep a log of all actions taken

Dealing with smoke-related traffic accidents

If smoke-related or incident-related traffic accidents do occur:

- Make every effort to assist and protect those involved
- Notify appropriate medical units and request assistance if necessary
- Notify appropriate law enforcement units
- Provide additional personnel for traffic control if required
- Notify the IC so that local safety and tort claims personnel may be assigned
- Record facts of the accident, including names, addresses, and statements of witnesses
- Record license plate numbers of all vehicles in the vicinity of the accident
- Follow agency policy regarding making statements to individuals other than law enforcement officers

Narration Script: Even the best of planning and anticipating can't prevent all accidents from happening. So in the unfortunate event of an accident, follow these common-sense guidelines.

Knowledge Check 4

Multiple choice—check the box of the answer(s) you choose.

You are first on the scene of a wildland road fire along a heavily trafficked area.

What is the first action for you to take?

- Extinguish the fire**
- Call local law enforcement**
- Direct traffic**
- Set up cones and flares**

The correct answer is set up cones and flares.

Aircraft operations safety overview

Air operations at wildland fires are safe when pilots and ground personnel use common sense and follow established procedures. Those working in and around operating aircraft must know the applicable safety procedures and follow them without exception.

You will investigate the following air operations safety procedures in turn so you will be able to follow them to the letter:

- **Helicopter safety**
- **Fixed-wing aircraft safety**

Narration Script: We've put plenty of mileage behind us discussing safety on the road. Next, let's talk about safety in the air. Remote wildland fires often require travel by helicopter or fixed-wing aircraft. These forms of transportation have their own safety rules.

Helicopter safety overview

There are certain well-established safety procedures to follow when working around grounded helicopters and when boarding and riding helicopters.

Check out some basic safety rules, and then we'll dig deeper in a second:

- **Safety around operating helicopters**
- **Safety onboard helicopters**

Read the following so you'll know how to treat the bird with respect!

Safety Around Operating Helicopters

Helicopters are helpful tools for fire fighting, but there are precautions to take when you're nearby at take-off and landing time:

- **Keep the landing zone (helibase or helispot) clear of loose equipment, objects, and unauthorized personnel; if you've got the water, consider lightly spraying dirt landing zones to cut down on dust**
- **Avoid directing lights toward helicopters aloft or on the ground**
- **Stay at least 100 ft. (30 m) away unless authorized to approach by the pilot or crew**
- **Wear both eye and hearing protection**
- **Prohibit smoking within 100 ft. (30 m) of helicopter, fuel storage, and fueling equipment**

Safety Onboard Helicopters

Helicopters are rotary-winged aircraft and have some specific loading and unloading safety procedures:

- **Get a briefing on safety procedures from the helicopter crew**
- **Follow instructions of helicopter crew at all times**
- **Know how much you weigh with your day pack, and tell that to the loadmaster**
- **Stoop when approaching or leaving the helicopter**
- **Keep all bags or equipment tight to your body**
- **Do not throw anything out of a helicopter**

Narration Script: Helicopters provide a fast way to reach fires in remote locations that can't be reached by road. The pilot or other crew members will give you instructions, but you should know some specific safety procedures to follow during loading, unloading, and during the flight.

On and around helicopters

Here are the safety tips for being near helicopters and getting on and off of them.

Narration Script: Safety around helicopters is all about watching out for those blades! When you are approaching or leaving an operating helicopter, there are several things to do. First, crouch down to avoid the main rotor until you are at least 100 feet away. Approach or leave on the downhill side only and in full view of the pilot. Carry all tools horizontally, below the waist and close to your side. Make sure your chin strap is fastened so your helmet doesn't get blown off of your head! And obviously, stay well clear of tail rotors and jet exhausts. Don't go aft of the helicopter doors. When you are onboard the bird, keep the safety harness fastened until the pilot directs you to unbuckle. If you need to exit the aircraft while it's hovering, do so in one smooth, unhurried motion.

General safety for fixed-wing aircraft

Fixed-wing aircraft are used for airdrops, *reconnaissance*, and transport of personnel and cargo.

It's time to put your aircraft ground crew hat on. Follow these safety tips:

- **Do not smoke within 100 ft. (30 m) of aircraft or fuel storage and fuel equipment**
- **Wear both eye and hearing protection around operating aircraft**
- **Attempt to maintain eye contact with the pilot to be sure he or she sees you**

Narration Script: You'll come into contact with fixed-wing aircraft when they've been called in to help extinguish a fire. They come in all shapes and sizes—but most are air tankers that carry water or flame retardant.

Helicopters vs. fixed-wing aircraft

The safety rules you learned for helicopters may not apply to fixed-wing aircraft. Consider these examples:

- **You should not approach a helicopter from aft to avoid the tail rotor. However, the pilot or crew of a fixed-wing aircraft may instruct you to approach from an angle aft of the doors to avoid propellers.**
- **You always stoop and approach from downslope to provide extra clearance for a helicopter's main rotor. With a fixed-wing aircraft, you may walk upright if there's enough clearance, and you may be able to approach carefully from upgrade or downgrade.**

- **Near a helicopter, you carry your tools below waist level to avoid contact with the main rotor. When you're near a fixed-wing aircraft, you should use caution and watch out for those propellers.**

Narration Script: Be safe whether you are working around helicopters or fixed-wing aircraft. However, the rules differ a little between these two types of aircraft. The reason for the differences is actually simple: the dangerous spinning blades and the exhausts are in different places. Plus, the hazards you'll find around fixed-wing aircraft differ depending on the specific type of aircraft.

Knowledge Check 5

Multiple choice—check the box of the answer(s) you choose.

A helicopter is waiting to take you to a fire location in the mountains.

Identify THREE safety precautions you'll follow to board the helicopter.

- Approach from uphill**
- Approach from downhill**
- Shine a hand light in the pilot's direction**
- Stoop as you approach**
- Hold bags or equipment away from your body**
- Carry tools horizontally and below the waist**

The correct answers are approach from downhill, stoop as you approach, and carry tools horizontally and below the waist.

Boat safety

In remote or coastal locations, you may travel to a fire by boat. While approaching a fire from the water provides a margin of safety, traveling by boat involves some risks.

You've probably heard people say, "Don't rock the boat!" This familiar bit of folk wisdom is a warning that you can cause trouble for everyone if you create a disturbance. That advice is especially appropriate when you're a passenger in a boat. A wrong move can have some serious (and wet) consequences for your crew.

You have precautions to follow during all aspects of your voyage:

- **Loading**
- **Onboard**
- **Unloading**

Read the following to ensure smooth sailing.

Loading

Here are a few tips for loading:

- Put on your life preserver while you're still on the shore or dock. You wouldn't wait until you're on the fireline to don your PPE, would you?
- Carefully follow instructions from the boat crew. The crew of a boat is responsible for the safety of passengers, just like the operator of fire apparatus.
- Don't overload the boat. Overloading is one of the most common causes of boating fatalities.

Onboard

Follow these precautions while onboard:

- Keep your arms and legs inside the boat. The boat can hit unseen obstacles or other boats. Don't put any part of your body in the way of a possible collision.
- Stay seated. If you're standing, unexpected turbulence or sudden turns can cause you to lose your balance. A fall can injure you or throw you overboard.
- Remain still. Don't make any sudden or extreme moves that may change the balance of the boat. In other words, don't rock the boat.

Unloading

Follow these precautions when leaving the boat:

- Wait for boat to be secured before you begin unloading.
- Stay seated until the crew directs you to unload. Don't move around until you get the go-ahead.
- Watch your step on wet rocks and painted surfaces. They may be slippery.

Narration Script: You've had a chance to look at safety guidelines for traveling over land or by air. Although it's not as common, there may be times when you'll travel by boat. Approaching or leaving a wildland fire by boat provides a natural safety advantage—you're surrounded by water! However, boat travel has its own unique risks. Here are some safety precautions for traveling by boat.

Foot travel guidelines

No matter how you travel to the scene of a fire, you'll probably end up making the last leg of the trip on your own two feet. A review of transportation safety wouldn't be complete without talking about safety rules for traveling on foot.

Here are three basic guidelines for traveling on foot:

- Keep up—let your supervisor set the pace and select the route for your crew.
- Stay together—if you become separated from your team, stay on the fireline, and try to make contact with your crew. Generally, you are safe in the burned area, and you will eventually be found.
- Spread out—maintain a distance of at least 10 ft. (3 m) between crew members.

Narration Script: No matter what other modes of transportation you use to get to a fire, you'll cover the final distance using the oldest and simplest way to travel—walking on your own two feet. Sure, you've been walking almost your whole life. Most of the time, you probably do it without thinking about it very much. However, there are some guidelines to keep in mind for traveling safely on foot.

Foot travel hazards

It's important to stay alert to the many hazards of foot travel.

Here are just a few major categories of hazards to keep in mind:

- **Tools and equipment**
- **Vegetation**
- **Terrain**
- **Wildlife**
- **Visibility**

You will investigate each type of hazard in turn so you can stay on your feet.

Narration Script: When you set out on foot, you're exposed to challenging obstacles—namely the fire, fire fighting equipment, and the wildland environment itself. If you know what to look for, you can avoid the hazards of foot travel and stay safe.

Tools and equipment

When you're on foot on uneven terrain, there's a safety hazard right in your own hands. If you take a fall, your hand tools can injure you or a co-worker. Always carry your tools properly, and keep a safe distance from other crew members.

Stay alert when heavy equipment is in the area. Equipment operators may not be able to see you in low-visibility conditions. When you're working near heavy equipment, here are some hazards to avoid:

- **Equipment—stay out of the way; the equipment can crush you.**
- **Dislodged burning objects—the equipment can knock down burning trees or other flammables.**
- **Falling debris—the equipment can dislodge rocks, vegetation, or other items that may hit you.**

Narration Script: Be sure to check out the Hand Tools Module of this course to get the information you need for working safely with hand tools and around equipment.

Vegetation

In any area affected by fire, trees and other vegetation are very likely to be unstable. Watch out for falling or leaning trees, limbs, or *snags*. Both the fire and the fireline operations themselves can create falling debris.

As you're walking in line, look out for whipping branches. If you're getting hit by branches released by the person ahead of you, you're following too closely. Remember the 10 ft. (3 m) rule! Drop back a few steps, and give yourself a little breathing room.

Finally, be alert for sharp or poisonous plants. They can cause problems ranging from an uncomfortable rash to a disabling injury.

Narration Script: Review the Potential Hazards and Human Factors on the Fireline Module to make sure you have a clear understanding of these hazards.

Terrain

Many of the most serious accidents you face can occur simply by losing your footing.

Keep an eye on the terrain and watch your step when you set foot on:

- **Loose rock or soil—make sure you have firm footing before you step into uncertain terrain.**
- **Log crossings—keep your eyes on the log, not the water or ravine below.**
- **Stream crossings—loosen your pack and if the current knocks you over, let your pack go. You don't want to wrestle your pack and the current at the same time.**
- **Stump holes—burned out stumps can leave a hole that's hidden under a layer of ash. Look for a tell-tale patch of white ash, and test the patch with a stick or hand tool before stepping.**

Narration Script: Many of these terrain hazards are covered in detail in the Potential Hazards and Human Factors on the Fireline Module.

Wildlife

Animals and insects will react unpredictably when their homes are suddenly invaded by fire, heavy machinery, or humans.

Fire operations and the fire itself can drive snakes, swarms of stinging insects, and larger wildlife out into the open. Appropriate protective clothing and boots give you some protection from smaller animals and insects.

Narration Script: Check out the Potential Hazards and Human Factors on the Fireline Module to make sure you understand how to handle "critter" hazards.

Visibility

Any hazard you encounter while traveling on foot becomes even more dangerous if you can't see it. Smoke, bad weather, or even nightfall can reduce visibility and make a potentially bad situation even worse.

The best defense against poor visibility is preparation. Carry adequate hand lights or headlamps, and practice situational awareness. Get your bearings when visibility is good and you'll be better prepared to move around in the dark.

Narration Script: You'll find even more information on visibility hazards in the Potential Hazards and Human Factors on the Fireline Module.

Knowledge Check 6

Matching—select the match you choose from the pull down list.

There are many different types of hazards you can encounter while you travel on foot at a fire scene.

Match each hazard with the appropriate responses.

Stump hole
Whipping branches
Stream crossing
Hornet nest
Nightfall

The correct matches are as follows:

Stump hole: Test with a stick or hand tool
Whipping branches: Drop back 10 ft. (3 m)
Stream crossing: Loosen pack
Hornet nest: Protective clothing
Nightfall: Use a headlamp

Transportation safety procedures summary

In this topic, you learned about safety guidelines for traveling to and from a fire. This topic included safety tips for traveling on the roads, in the air, on the water, and even on foot. No matter what mode of transportation you use, you are now prepared to reach the fireline safely.

Narration Script: Large wildland fires may involve the use of heavy equipment, personnel transports, and apparatus from multiple agencies. You might have to use one or several forms of transportation to reach the incident. If you take appropriate precautions, you'll be prepared to arrive safely no matter how you travel.