

FIRELINE HANDBOOK

CHAPTER 2—INITIAL ATTACK

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DEFINITION OF INITIAL ATTACK

Initial attack is the action taken by resources that are first to arrive at an incident. All wildland fires that are controlled by suppression forces undergo initial attack. The kind and number of resources responding to initial attack varies depending upon fire danger, fuel type, values to be protected, and other factors. Generally, initial attack involves a small number of resources, and incident size is small. **REGARDLESS OF FIRE TYPE, LOCATION, OR PROPERTY/RESOURCE BEING THREATENED, FIREFIGHTER SAFETY WILL ALWAYS BE THE #1 PRIORITY.**

CHARACTERISTICS OF AN INITIAL ATTACK INCIDENT (TYPE 4 & 5 INCIDENTS)

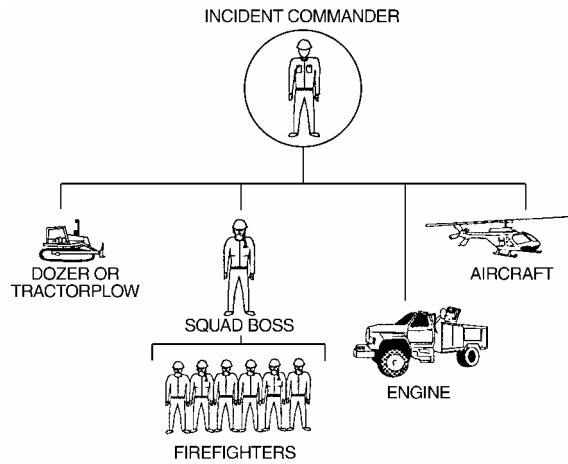
Resources vary from a single resource (Type 5) to several single resources (Type 4), possibly a single strike team or task force.

Normally limited to one operational period - at least the containment phase. Mop up/control may extend into multiple periods.

Normally does not require a written incident action plan. May use the ICS Initial Briefing Form (ICS 201).

The initial attack incident commander (ICT4 and ICT5) may be a single resource boss/company officer and is responsible for performing all command and general staff functions.

EXAMPLE OF INITIAL ATTACK ORGANIZATION (Type 4 Incident)



DUTIES OF INITIAL ATTACK INCIDENT COMMANDER

Upon Dispatch

Obtain the following incident information when dispatched to a wildland fire:

- Person reporting the fire – "Tim Murphy, 2121 Road St., 555-5555."
- Fire location – "north slope of Bald Mt, near lower campground."
- Best access – "Farm Road off main highway."
- Landowner, if available.

- Size – "less than 1 acre."
- Fuels involved (grass, brush, timber, etc.).
- Rate of spread (creeping, running, spotting, crowning).
- Hazards – "down powerlines, mining claims in area."
- Values threatened – "housing tract within ½ mile of fire."
- Other jurisdiction(s) involved (State, County, Local Fire Dept/Agency).
- Current fire weather information.

REMEMBER – NOAA WEATHER RADIO FORECASTS DO NOT REPLACE A FIRE WEATHER FORECAST, ONLY SUPPLEMENT IT.

- Fire cause, if available.
- Appropriate fire management response as determined by agency (full or modified suppression, fire use).

WRITE DOWN DISPATCH INFORMATION – DON'T RELY ON YOUR MEMORY

If you did not receive all the needed information or you are not sure if you have correctly copied the information, have the dispatcher repeat it.

Use Maps to:

- Locate fire, identify access route(s), locate values threatened, and establish jurisdiction.

Fire Behavior:

- Pay particular attention to all fire behavior information, especially predicted fire weather.

En Route to Incident

TRAVEL SAFELY! DO NOT SPEED!

Consider what you know about the area:

- Type of fuel(s) and terrain.
- Access problem(s) - "Will there be people leaving the area?"
- Control points (natural and person-made).
- Ownership(s).
- Jurisdiction(s) - "May need to establish unified command."
- Local fire history.
- Resources en route - "What resources are other jurisdiction(s) sending?"
- Additional resource availability - "Will there be difficulty in getting additional resources (ground or air)?"

Fire behavior considerations:

- Combination of fuels, topography, and weather effecting rate of spread.
- How will this fire burn compared to others in similar areas?
- Is the fire danger increasing or decreasing?

Local weather indicators:

- Changes in wind speed and direction from initial reports.
- Presence of whirlwinds, dust devils as indicators of erratic winds.
- Changes in cloud cover and build-up.
- Unfavorable weather changes predicted.
- Diurnal winds effecting fire behavior.
- Observed weather conditions are much different from predicted conditions, especially wind speed and direction.

MAY WANT TO REQUEST A SPOT WEATHER FORECAST

Smoke column indicators:

- The smoke column can give you some idea what you will be confronting (refer to Appendix A, Page A-57 for Smoke Column Indicators).

Arriving On-Scene

When approaching the scene:

- Use caution when approaching scene. Observe fire scene for "Look Up, Look Down, Look Around" concerns.
- Watch for people leaving the area, take information (license numbers, vehicle and suspicious person descriptions) that may assist with a fire investigation.
- Identify best access routes into fire and escape routes; pass information on to incoming resources.

Once on-scene:

- Advise dispatch and on-scene resources that you are on-scene and assuming command.
- Name fire, size-up fire conditions and potential, passing information onto agency dispatch and on-scene resources.
- Initiate Risk Management Process. (Refer Chapter 1, Page 4 for Guidelines on Risk Management Process.)

DO NOT CROSS THE FIRE'S HEAD UNLESS IT CAN BE DONE SAFELY!

- Ensure that access into the fire scene is kept open and fire equipment is positioned to protect from fire damage and allow quick access out of the area.

- Attempt to locate fire origin and protect area (DO NOT remove any evidence unless necessary to prevent destruction).
- Account for all personnel and equipment that are already on-scene.
- Review Initial Attack Safety Checklist. (Refer to page 106.)

TAKING ON-SCENE ACTION

FIRES SHOULD BE FOUGHT AGGRESSIVELY, BUT SAFETY AND PROTECTION OF PERSONNEL AND EQUIPMENT MUST BE TOP PRIORITY.

REMEMBER:

- **STANDARD FIREFIGHTING ORDERS**
- **LCES**
- **WATCH OUT SITUATIONS**

Using the information from the fire size-up, develop incident objectives and fire suppression strategies, and ensure that assigned personnel know them.

Incident objectives to consider are as follows:

- **FIREFIGHTER SAFETY**
- Life hazard - "Protect residences leaving area."
- Property values - "Keep fire from reaching housing tract."
- Resource values - "Keep fire from reaching stand of timber."

- Keeping fire from spreading into heavier or more dangerous fuels.
- Keeping fire isolated on one side or in a single canyon or drainage.
- Keeping fire as small as possible within financial limits as determined by agency.
- Making sure that all assigned resources contribute to suppression efforts.

Fire Suppression Strategy(s) used to control a fire will depend on:

- Rate of spread
- Fire intensity (flame length)
- Spotting potential
- Values to be protected
- Kind and number of resources assigned

Present and predicted fire behavior and weather conditions will determine which strategy(s) and tactics you will use. It will be decided how close equipment and personnel work near or at the fire's edge by the flame length. (Refer to Appendix A, Page A-58 for Guidelines on Fire Suppression/ Flame Length Interpretation table.)

Suppression action(s), whether direct or indirect attack, need to start from an anchor point (road, creek, burned out area, etc.). Always be aware of hazards in the fire area (powerlines, snags, mines).

Initial briefing of resources at or arriving on-scene:

- Briefing should be face-to-face when possible.
- Briefing should include:
 - Incident objectives
 - On-scene conditions (weather, fire intensity, rate of spread, potential)
 - Division/Group assignment
 - Tactical and air-ground radio frequencies
 - Safety concerns
- Make sure personnel understand their assignment before going to work.
- Ensure that all responders are wearing the appropriate personal protective equipment (PPE).

ASSESSMENT OF INCIDENT PROGRESS

After resources have been deployed and suppression actions started, need to assess incident progress and make any changes to the incident action plan.

- View fire from a point where a complete picture of the fire can be obtained, use field observers as necessary.
- Is the incident action plan working? If not, make necessary changes.
- When making changes to the incident action plan, evaluate probability of success and consequence(s) of not changing plan.

**MAKE SURE THAT ALL AFFECTED RESOURCES
ARE ADVISED OF INCIDENT ACTION PLAN
CHANGES**

- Will changes in weather, fuel, or topography have enough of a fire behavior impact prior to control?
- Is rate of spread or fireline intensity increasing to a point where strategies may need to be changed?
- Are additional resources needed, including overhead (Div/Group Supervisors, etc.)? If so, place an order with dispatch.
- Can any resources be re-assigned or released?
- Has incident size and complexity reached a level where you are no longer qualified as an Incident Commander?

DO NOT HESITATE IN ASKING FOR HELP!

- Review the Initial Attack Safety Checklist as needed or when incident conditions change. (Refer to page 106.)

UPDATING INCIDENT STATUS

At the earliest opportunity, the following incident information should be forwarded to the agency dispatch (continue to keep dispatch updated of any significant changes and progress on the fire):

- Actual location
- Size of fire

- Rate of spread
- Fire potential (how large will/may fire get)
- Anticipated control problems
- Estimated control time
- Values threatened
- Fuel type
- Topography
- Weather conditions (especially if different from initial report)
- Resources on-scene
- Additional resource needs
- Resource releases
- Cause (if known) - **DO NOT PROVIDE THIS INFORMATION OVER RADIO IF POSSIBLE.**

FIRE SUPPRESSION STRATEGIES

The strategy(s) used to control a fire depends on the rate of spread, intensity, spotting potential, values at risk, size, type of available resources, and other factors. Anchor control lines to an existing barrier such as a road, creek, burned area, etc., to minimize the chance of being flanked by the fire. Suppression action(s) may include one or a combination of the following strategies:

Direct Attack

- Used when fire perimeter is burning at low intensity and fuels are light, allowing for safe operation at the fire's edge.
- Control efforts, including line construction, are done at the fire perimeter, which becomes the control line.
- Unless special situations dictate otherwise, line construction will start from an anchor point.
KEEP ONE FOOT IN THE BLACK WHEN POSSIBLE.

Advantages of Direct Attack

- Safest place to work. Firefighters can usually escape into burn area.
- There is minimal area burned.
- No additional area is intentionally burned.
- Full advantage is taken of burn out areas.
- May reduce the possibility of the fire moving into the crowns of the trees or brush.
- Eliminates the uncertain elements of backfiring.

Disadvantages of Direct Attack

- Firefighters can be hampered by heat, smoke and flame.

- Control lines can be very long and irregular, because the line follows edge of fire.
- Firefighters may accidentally spread burning materials across line.
- Doesn't take advantage of natural or existing barriers.
- Usually more mop up and patrol.

Indirect Attack

- Used when a direct attack is not possible or practical.
- Fireline is located some distance from fire's edge.
- Terrain, fuels, fire behavior, and available resources will dictate fireline placement.
- Burning out of indirect line is handled as a second phase of line construction.

Advantages of Indirect Attack

- Can locate line along favorable topography.
- Take advantage of natural or existing barriers.
- Firefighters work out of smoke and heat.
- More time to construct line.
- Allows line to be constructed in lighter fuels.
- May be less danger of slopover.

Disadvantages of Indirect Attack

- More acres will be burned.
- May be dangerous to firefighters, because they are some distance from the fire and can't observe it.
- Fire may cross line before it is fired out.
- Burning out may leave unburned islands.
- Brings into play the dangers of back firing.
- Fails to take advantage of line that has already burned out.

FIRE SUPPRESSION TACTICS

Fireline Location Guidelines

Locate line, after consideration of the following:

- Provide for safety of personnel.
- Locate line adequate distance from fire so it can be completed, burned out and held with predicted rate of spread and fire behavior.
- Allow adequate time to permit forces to build lines and also do other needed work, such as snag falling and burning out, in advance of severe burning conditions.
- Make line as short and straight as practical, use topography to your advantage.

- Use easiest routes for control without sacrificing:
 - Holding practicability.
 - Too much area or resource value.
- Eliminate possible hazards from fire area and provide adequate safe distance between lines and hazards that must be left in the fire area.
- Avoid undercut lines and sharp turns in the line.
- Use existing natural and person-made barriers.
- Use heavy equipment, where appropriate, for line construction.
- Encircle area where spot fires are so numerous that they are impractical to handle as individual fires. Burn out unburned fuels.
- Consider environmental effects and agency policy.
- See Downhill Checklist. (Refer to Chapter 1, Page 17.)

Fireline Construction Guidelines

- Make line no wider than necessary; consider height of vegetation.
- Clean all lines to mineral soil, where practical.
- Discard unburned line construction material outside of the fireline.
- Scatter charred or burning material inside burned area.
- Below the fire on steep slope, construct trenched lines to catch rolling material.
- Increase effectiveness of line width by cooling down adjacent fire with dirt or water.
- Cover uncharred, rotten logs and stumps just outside the line with dirt or wet down.
- Fall or line snags near fireline before burnout, if time permits.
- Build fireline as close to fire edges as conditions safely permit. Burn out fireline as control line proceeds.
- When building fireline uphill, burn out from the top down after line is tied in.
- Keep one foot in the black, where possible.

Water Use Guidelines

- Use water sparingly when it is in short supply.
- Direct water at base of flame.
- Have hand tool personnel work with nozzle personnel to make most effective use of water, especially during mop-up.
- Require good communications between nozzle personnel and water source.
- Plan for ample water supply--request water tenders as needed.
- Coordinate so all units do not run out of water at once during critical period.
- Do not block roads.
- Keep engines pointed in a direction for quick escape.
- After direct attack with water, follow up with a fireline to mineral soil around the entire fire.
- Provide eye protection to all personnel working with nozzle.
- Use foam or other water additives to increase effectiveness and save water.

Class-A Foam Use

- The addition of Class-A foam concentrate to water enhances water's natural ability to extinguish fires burning in Class-A combustibles only.
- Generally speaking, Class-A foams can be safely used on combustibles that leave an ember when consumed by fire.
- Class-A foams work by cooling combustibles below ignition temperature.
- Class-A foams reduce the surface tension of plain water that provides for deeper penetration into fuels.
- Mixture rates for Class-A foam may vary depending on the application from .1% to 1%.
- Class-A foams can be generated in dry or wet consistencies depending on the mixture rates and degree of aeration.
- Class-A foams may be introduced into water streams by any of the following methods:
 - ✓ Batch mixing directly into a water tank or water supply.
 - ✓ Through the discharge/intake side of the pump proportioning utilizing the Venturi Principle.
 - ✓ Positive pressurization that injects foam into the water stream.

- Class-A foams are subjected to tests for approval of acceptable corrosion levels and to establish toxicity levels. Only approved foams should be used.

Dozer and Tractor Plow Guidelines

EQUIPMENT OPERATORS SHALL BE EQUIPPED WITH PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Ensure that all personnel are aware of location of working equipment.
- Be certain all dozers or tractors used are in good mechanical condition, have approved spark arrestors, have safety canopy, have a clean belly pan and have been signed up under rental agreement, if required.
- Equipment operators have required communications with incident.
- Take advantage of favorable fuels and topography.
- Consider working equipment in tandem especially when working near a fast moving fire for increased production and safety.
- Buck logs and fall trees or snags in fireline as needed.
- Push flammable material to outside of line.
- Any burning material should be pushed well inside the fireline and scattered.

- Allow no one, other than the operator, to ride on equipment.
- During mop-up:
 - ✓ Rehab Lines - water bar where necessary.
 - ✓ Scatter large logs or hot piles into burned area.
 - ✓ Scatter piles on outside of line.

Principles of Retardant Application

- Determine tactics direct or indirect based on fire size-up and resources available.
- Establish an anchor point and work from it.
- Use the proper drop height.
- Apply proper coverage levels.
- Drop downhill and down-sun when feasible.
- Drop into the wind for best accuracy.
- Maintain honest evaluation and effective communication between the ground and air.
- Use direct attack only when ground support is available or extinguishment is feasible.
- Plan drops so they can be extended or intersected effectively.
- Monitor retardant effectiveness and adjust its use accordingly.

Directing Retardant and Bucket Drops

- Give general location on incident.
- Finalize location with:
 - ✓ Clock direction - straight in front of the aircraft is 12 o'clock, out the right door is 3 o'clock, the tail is 6 o'clock, and the left door is 9 o'clock. When giving direction, remember that helicopters and air attack generally orbit in a right-hand pattern and air tankers in a left-hand pattern.
 - ✓ Position on slope - lower third, upper third, mid slope, top of ridge, etc.
 - ✓ Aspect - direction slope is facing.
 - ✓ Describe prominent landmarks - Don't say, "I have a red hard hat. I'm wearing a yellow shirt. I'm waving. I'm by a big rock. I'm by the big tree." Visualize what the pilot sees from the air and describe the target.
 - ✓ Use signal mirrors - use smoke or fusee, if a mirror is unavailable. Stand in drop location (when safe) for identification and move away before drop.
- Describe target from your location and explain mission. The pilot will decide drop technique and flight path.
- Assure pilot all personnel are safe and know aircraft intentions before the drop.

- Give feedback to pilot about drop accuracy. Be honest and constructive. Let the pilot know if drop is early, late, uphill, downhill, on target too high, or too low. Report low drops immediately.

Helicopter Use Guidelines

Helicopters may be the first unit to arrive at the fire. They are often used to drop water, foam, or fire retardant. The initial attack incident commander should integrate this resource into the control action.

- Helicopters may be used for reconnaissance work.
- Helicopters may be used to transport equipment, supplies, or personnel if certified to do so.

Burning Out Guidelines

- Always have an anchor point to support burning operations.
- Do not start burning out until a control line has been prepared and adequate firefighting forces are available to hold line.
- Fall snags and remove ladder fuels before burning out.
- When possible, fire from the top down in steep topography; fire into the wind; fire from the lee side or ridge top; fire from a wide canyon bottom; fire from roads or benches.

- You must manage the amount of heat generated; too much heat may cause fire to jump control lines; not enough heat will cause an unclean burn and require extensive mop-up.
- Burning operations must not adversely affect the actions of other firefighting forces.
- Keep those around you informed when burning out; firefighters not kept informed may see the burning operation and think it's a flare-up or slopover.

MANY BURNING OPERATIONS HAVE BEEN STOPPED BY AN UNWELCOME RETARDANT DROP.

INCIDENT MOP-UP

Start mop-up as soon as line construction and burnout operations are completed. All material near the fireline needs to be extinguished to prevent a rekindle and possible escape. Mop-up can be done with water (wet mop-up) or without water (dry mop-up).

Rule of Mopping Up a Fire

Rule: Start work on each portion of line as soon as possible.

What? Start with the most dangerous line first. Work from the fireline toward the center of the fire. Small fires are totally extinguished. On larger fires, mop up a minimum of 100 feet, or to such a distance that nothing will blow, roll, or spot across the line.

Rule: Secure and extinguish burning materials.

What? Arrange burning fuels so they can't roll across the line. Spread smoldering fuels and apply water so they will cool. Scatter fuels away from the line.

Rule: Deal with special hazards INSIDE the line.

What? Fall snags; extinguish logs and stumps. If you can't fall the snag, clear around the base, so that burning materials will not fall into flammable fuels.

Rule: Deal with special hazards OUTSIDE the line.

What? Move slash back, away from the fireline. Fall snags and cover with dirt. If stumps are close to the line, cover them with dirt.

Rule: Reinforce the fireline.

What? Widen and clean the fireline. Reinforce any undercut line. Burn out or cold trail islands. Dig out roots that cross under the fireline. Feel for hot material along the fireline.

Rule: Check for spot fires.

What? CONSTANTLY check for spot fires, especially downwind from the fireline. CHECK heavier fuels (logs, snags, slash, etc.) for smoldering material.

Snag Removal

- Fall any snags that are both inside and outside the fireline, to a distance of 1½ times their height.
- Larger snags, or those with fire inside them, should be felled by an experienced faller.
- DO NOT attempt to fall a snag if you are not experienced.

Patrolling the Fire

- Begins right after fireline has been constructed.
- Intensity of patrol decreases as the danger of a rekindle decreases.
- Assigned specific sections of fireline for patrolling.
- Constantly move along fireline, watching for smoke both inside and outside the fireline, feeling for heat build up in fuels not completely burned up.
- Pay particular attention to areas where only water was used in suppression.

INITIAL ATTACK SAFETY CHECKLIST

Answer the following questions (repeat this checklist whenever there is a change in conditions on the fire or a predicted change in fire conditions). If the answer is NO to any of the checklist questions, you MUST take the appropriate corrective action(s) IMMEDIATELY.

Yes No

- | | | |
|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| — | — | Does everyone (dispatch and on-scene resources) know who the Incident Commander is? |
| — | — | Have you sized up the fire and established Incident Objectives? |
| — | — | Have you initiated the Risk Management Process?
(See page 4, Chapter 1) |
| — | — | Do you have a current fire weather forecast for fire location? |
| — | — | Is the observed fire weather consistent with the forecast? |
| — | — | Have you developed a plan to attack the fire (direct or indirect, anchor points, priority areas)?
Have you communicated this plan to all personnel assigned to the fire, including new arrivals? |

**INITIAL ATTACK SAFETY CHECKLIST
(continued)**

Yes No

- | | | |
|-----|-----|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ___ | ___ | Can you control the fire with the resources available (on-scene and en route) under expected conditions? |
| ___ | ___ | Do you have sufficient supervision on-scene? |
| ___ | ___ | Do you have a complete list of resources on-scene and have been ordered for the fire? |
| ___ | ___ | Are Situations and Standard Firefighting Orders being followed? |
| ___ | ___ | Lookouts in place or you can see all of the fire area? |
| ___ | ___ | Can you Communicate with everyone on the fire and with dispatch? |
| ___ | ___ | Escape routes and Safety zones established? (If you are using the black, is it completely burned out and without a re-burn potential?) |
| ___ | ___ | Will you control the fire before the next operational period? |
| ___ | ___ | Have you reported the fire's status to dispatch? |

**INITIAL ATTACK SAFETY CHECKLIST
(continued)**

Yes No

- | | | |
|---|---|---------------------------------------------------------------------------------------------------------------|
| — | — | If the fire will not be controlled before the next operational period, have you informed agency headquarters? |
| — | — | Does the fire size or complexities remain within your capabilities and qualifications to manage the fire? |