



THUNDER BAY TIMBER OPERATORS ASSOCIATION

LOG BOOK

SPECIAL
FIRE ISSUE
1951

The 1951 Forest Fire Season Is Here

Between Now and October 31st (or later if the Fire Hazard
still exists) We Have a Job To Do.

Our Task:

- (1) Practise and Preach Prevention of Forest Fires.
- (2) Organize woods industry personnel into fire crews.
- (3) Train these fire crews to know their jobs.
- (4) **Attack** every fire with speed and strength.

The Department of Lands and Forests are charged with the responsibility of preventing and suppressing fires on all Crown Lands. But, in addition to paying a fire tax to the Department of Lands and Forests, each operator has two added responsibilities

(1) under the Forest Fire Prevention Act, and,

(2) because we want to keep this forest of ours green and productive forever and this industry in which we work in operation forever.

Woods operators have plenty of fire equipment, tools and machinery on hand to put out fires.

Each company, each division of a company and each camp should have a fire plan. Superintendents, camp foremen, etc., are charged with direct responsibility to prevent and suppress forest fires.

You should know your plan, organize all employees into fire crews and train them — ready for action.

To assist you in the ATTACK, inside this pamphlet are illustrations, definitions and suggestions which it is hoped will assist you if and when a fire occurs in your area.

Our Aim in 1951--

NO FIRES STARTED BY COMPANY EMPLOYEES!
A FIRE FIGHTING PLAN FOR EACH AREA!
ALL EMPLOYEES ORGANIZED INTO FIRE CREWS
— TRAINED AND READY!
QUICK ACTION TO PUT OUT FIRES!

RETURN TO
FORESTRY LIBRARY
Woods Division,
Marathon Corp. of Canada Ltd.
Port Arthur, Ontario



This leaflet is circulated to key personnel in the Woods Industry in Northwestern Ontario with the hope it will be of assistance in the Prevention, Detection and Suppression of Forest Fires.

Mr. George Sonley,
Marathon Paper Mills,
Public Utilities Bldg.,
PORT ARTHUR, Ontario.

Kinds of Fires

Forest fires are generally divided into three classes:

SURFACE FIRES

Surface fires are those which run over the surface of the ground, feeding in the top layer of dry, loose litter, grass, needles, weeds, small bushes, and the outer surface of logs, etc. They usually are intensely hot and spread rapidly with a fairly large volume of flames. Spruce, fir, and growth aspen, grass types, old growth, etc. are typical.

GROUND FIRES

Ground fires are those which consume the thick layers of decaying humus and other vegetation which are more compact and usually contain somewhat more moisture than the top layers of loose litter and duff. These fires tend to spread slowly or smolder, are most persistent and require a long time to burn out or to extinguish. Thick mats of needles and deep humus as found in old timber, peat bogs, etc. are typical.

CROWN FIRES

Crown fires are those in which the foliage of trees is consumed. This is the most difficult type to control. Such a fire when started spreads through the tops of trees at a rapid rate. Dense coniferous stands of timber lend themselves readily to this type of fire.

Parts of a Fire

HEAD OF THE FIRE —

This is that part of the fire that is spreading most rapidly. With level terrain this is the lee side or the side in which direction the wind is blowing. Fires burn more rapidly up hill than they do on the level or down hill, and thus the up hill side is frequently the head of the fire.

REAR OF THE FIRE —

On level terrain with a wind this is the windward side or the side from which the wind is blowing. Where the fire is burning on a steep slope, it is usually the side at the base of the slope.

FLANKS OF A FIRE —

The flanks of a fire are the sides connecting the rear and the head of the fire.

FINGERS OF A FIRE —

Generally the forest fire fuels are not uniform; there are patches of slash, small ribbons of meadow or grass, open ridge tops, patches of dense conifers, and other fuel types may all be intermingled. Fires spread more rapidly in some fuels than others. There are often short steep slopes and fires will run up these more rapidly than they will run on level terrain.

Whirl winds, or a shift in wind direction, may temporarily change the direction in which the fire will burn. Any or all of these factors contribute to the irregular shape or cause fingers.



CHECK YOUR PLAN FOR FIGHTING FIRE IN YOUR AREA AND REMEMBER TO TAKE INTO ACCOUNT THE FOLLOWING FACTORS:

- | | |
|---|---|
| (a) Major causes of fires in area. | (g) Meteorological factors — wind, temperature, relative humidity, deepness of forest, precipitation, thunder-storm activity, length of fire season, etc. (The Department of Lands and Forests Fire Weather Forecast takes into consideration these factors). |
| (b) Past occurrence of fires — location, seasonal period, time of day, etc. | (h) Fire control equipment in area. |
| (c) Forest type — kinds, density. | (i) Number of men available. |
| (d) Topography — flat, rolling, steepness of slopes, etc. | |
| (e) Accessibility — how to get to a fire; transportation available, etc. | |
| (f) Visibility. | |

This sticker is to be placed on the wind-shield of a car or truck. Many fires are started by cigarettes thrown from vehicles, and this will serve not only to remind the driver, but also the passenger to

BE CAREFUL

DETACH HERE

**Remember - ONLY YOU CAN
PREVENT
FOREST FIRES**

USE IT!



Forest Fire Fighting

One of the most important facts is that a small fire is easily put out by 1 to 5 men, and that it is necessary to discover and extinguish it as soon as it is to be put out while it is small. The drier the forest fire fuels, the higher the wind, the more humidity, the more important it is to get there quickly since it is under these conditions that the fire can spread in a short time.

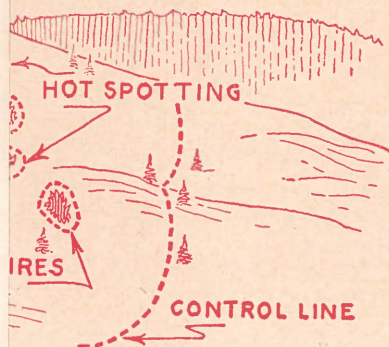
Experienced men and take several days to control and mop up.

The fire should be divided into two separate operations, namely (1) controlling or checking the spread, and (2) mopping up the completion of the suppression job.

The reader must remember that these are only general rules, that every fire is different and the primary consideration is to check the rate of spread as quickly as possible and then to methodically and systematically mop it up and patrol it.

GENERAL PLAN OF ATTACK

- (1) Attack the "head" of the fire and mop its advance.
- (2) If the front of "head" is too hot for direct attack, attack the flank or sides and pinch in the front.
- (3) When the advance is checked surround it and extinguish all fires around the fire line.



OF A FOREST FIRE

The first step in fighting a forest fire is to carefully review the situation and determine where the initial attack should be made. The spread of the fire as soon as possible. There are three general ways of accomplishing this, namely hitting it on the flanks. Each of these three ways will be discussed briefly.

HITTING THE HEAD OF THE FIRE — This is merely concentrating the initial attack upon those sectors of the edge of the fire that are burning the hardest and sectors where the fire, if not checked, is likely to get into heavy slash fuels, grass meadows or other fuels where it will spread rapidly and be hard to check. On a small fire, one man with a shovel, bough, wet gunny sack or other suitable tool can concentrate on the hottest spot of the fire, knock it down and temporarily check it; go on to the next one and do the same, and keep working around the fire in this manner until reinforcements arrive or until the fire has burned itself out to a point of relative safety. He can then proceed to systematically put an adequate fire control line around it and mop it up. This same procedure can often be employed quite successfully on larger fires with several men, each man working alone, or by working in small crews.

HITTING THE HEAD OF THE FIRE — Where there is a wind blowing and the fire is spreading rapidly in only one direction the quickest way to stop its spread is to hit the head of the fire. Making the decision of whether or not it is possible to control the head of the fire is of great importance. If it is attempted and it proves unsuccessful, a great deal of time may be lost and men exhausted; on the other hand, if control of the head is not attempted when it is possible, the fire will continue its rapid spread and soon become a large fire.

Several factors determine whether or not the fire should be hit on the head. It is a decision that experienced forest fire suppression men often find difficult to make. The type of fuel, burning conditions, number of men, and kind of equipment available all must be considered. However, the general rule is to hit the head of the fire if there appears to be a chance of stopping it, even though this means hard, fast work in the heat and smoke, since if the head can be controlled the crew can then handle the rest of the fire and mop it up.

HITTING THE FLANK OF THE FIRE — If the head of the fire is too hot to work and the fire is spreading in one general direction, start control lines at the base of the fire and work up along both sides or flanks, and pinch it out at the head. Quite often one flank of the fire is paralleled with a natural barrier, such as a lake, stream, road, or fuels in which the fire will not spread rapidly. In this case only one flank would need to be worked or have a control line, and the other flank, along the natural barrier, would only have to be watched so that no fire will cross.

HONOURARY FIRE WARDENS

Key personnel in the woods each year are appointed Honourary Fire Wardens by the Department of Lands and Forests and this Honourary position is a very important one, particularly in the prevention of fires. Honourary Fire Wardens who notice any person violating the safety measures which are supposed to be taken in any area, should warn that person immediately and if the results are not satisfactory, strict action should be taken. In addition, such regulations as:

- (1) No lunch fires in the bush;
- (2) No smoking while walking or working in the bush;
- (3) No smoking of tailor-made cigarettes;
- (4) No matches, use a safety lighter;

are aimed at the prevention of fires.



A Fire Danger Sign should be in every camp.

Forest Fire Fighting

One is that a small fire is easily put out by 1 to 5 men, and that it is necessary to discover and put it out while it is small. The drier the forest fire fuels, the higher the wind, the more humidity, the more important it is to get there quickly since it is under these conditions that the fire spreads most rapidly and becomes a large fire in a short time.

Large fires may require several hundred men and take several days to control and mop up.

The suppression of a forest fire can be divided into two separate operations, namely (1) controlling or checking the spread, and (2) mopping up and patrol operations which involve the completion of the suppression job.



The reader must remember that these are only general rules, that every fire is different and the primary consideration is to check the rate of spread as quickly as possible and then to methodically and systematically mop it up and patrol it.

GENERAL PLAN OF ATTACK

- (1) Attack the "head" of the fire and mop its advance.
- (2) If the front of "head" is too hot for direct attack, attack the flank or sides and pinch in the front.
- (3) When the advance is checked surround it and extinguish all fires around the fire line.

CONTROLLING OR CHECKING THE SPREAD OF A FOREST FIRE

The first thing to do upon reaching a fire is to carefully review the situation and determine where the initial attack should be made with the objective in mind of stopping the spread of the fire as soon as possible. There are three general ways of accomplishing this, namely hot spotting, hitting the head of the fire, or hitting it on the flanks. Each of these three ways will be discussed briefly.

HOT SPOTTING — This is merely concentrating the initial attack upon those sectors of the edge of the fire that are burning the hardest and sectors where the fire, if not checked, is likely to get into heavy slash fuels, grass meadows or other fuels where it will spread rapidly and be hard to check. On a small fire, one man with a shovel, bough, wet gunny sack or other suitable tool can concentrate on the hottest spot of the fire, knock it down and temporarily check it; go on to the next one and do the same, and keep working around the fire in this manner until reinforcements arrive or until the fire has burned itself out to a point of relative safety. He can then proceed to systematically put an adequate fire control line around it and mop it up. This same procedure can often be employed quite successfully on larger fires with several men, each man working alone, or by working in small crews.

HITTING THE HEAD OF THE FIRE — Where there is a wind blowing and the fire is spreading rapidly in only one direction the quickest way to stop its spread is to hit the head of the fire. Making the decision of whether or not it is possible to control the head of the fire is of great importance. If it is attempted and it proves unsuccessful, a great deal of time may be lost and men exhausted; on the other hand, if control of the head is not attempted when it is possible, the fire will continue its rapid spread and soon become a large fire.

Several factors determine whether or not the fire should be hit on the head. It is a decision that experienced forest fire suppression men often find difficult to make. The type of fuel, burning conditions, number of men, and kind of equipment available all must be considered. However, the general rule is to hit the head of the fire if there appears to be a chance of stopping it, even though this means hard, fast work in the heat and smoke, since if the head can be controlled the crew can then handle the rest of the fire and mop it up.

HITTING THE FLANK OF THE FIRE — If the head of the fire is too hot to work and the fire is spreading in one general direction, start control lines at the base of the fire and work up along both sides or flanks, and pinch it out at the head. Quite often one flank of the fire is paralleled with a natural barrier, such as a lake, stream, road, or fuels in which the fire will not spread rapidly. In this case only one flank would need to be worked or have a control line, and the other flank, along the natural barrier, would only have to be watched so that no fire will cross.

HONOURARY FIRE WARDENS

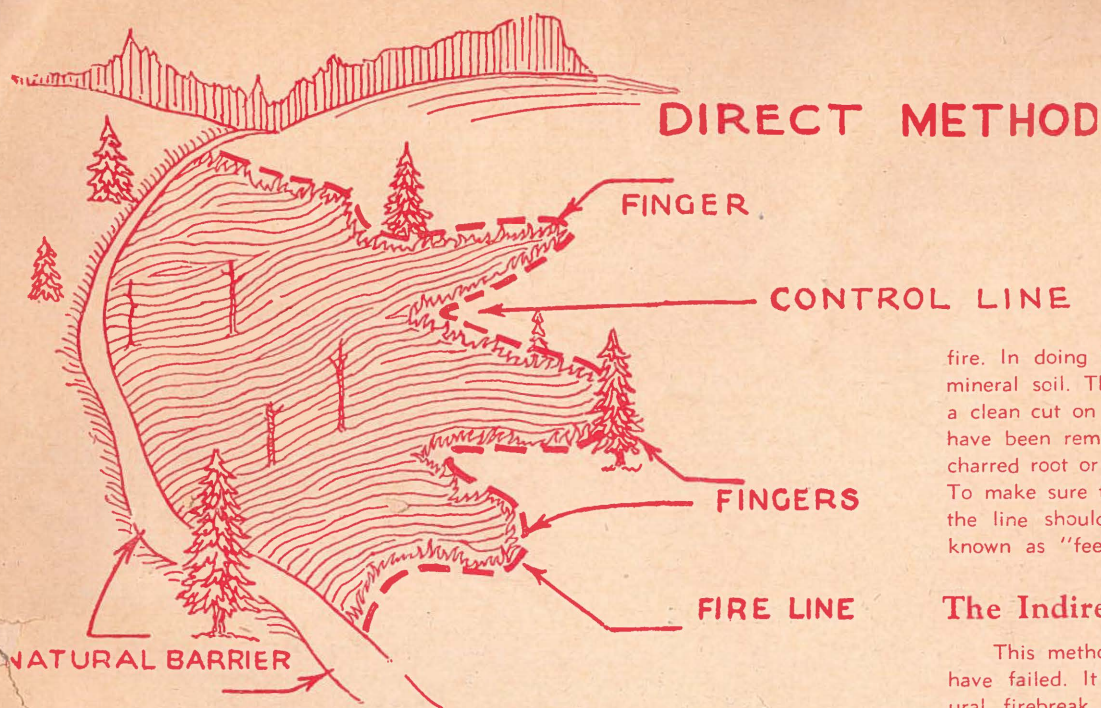
Key personnel in the woods each year are appointed Honourary Fire Wardens by the Department of Lands and Forests and this Honourary position is a very important one, particularly in the prevention of fires. Honourary Fire Wardens who notice any person violating the safety measures which are supposed to be taken in any area, should warn that person immediately and if the results are not satisfactory, strict action should be taken. In addition, such regulations as:

- (1) No lunch fires in the bush;
- (2) No smoking while walking or working in the bush;
- (3) No smoking of tailor-made cigarettes;
- (4) No matches, use a safety lighter;

are aimed at the prevention of fires.



A Fire Danger Sign should be in every camp.



The Direct Method

The Direct Method — As the name implies, this involves direct action on the fire itself. It consists of digging out every spark of fire along the edge of the burn. This may be done by scraping in, shoveling in, or digging out and throwing in the burning embers along the edge. In this case the fire line becomes the edge of the

fire. In doing this it is necessary to dig down to mineral soil. The result is a U-shaped trench with a clean cut on the outside from which all embers have been removed. There should not be a single charred root or leaf on the outside of the fire line. To make sure that no sparks are left, the edge of the line should be felt with the hand. This is known as "feeling for fire" or "cold trailing."

The Indirect Method

This method is used only when other methods have failed. It consists of back-firing from a natural firebreak (road, stream, etc.) or a line considered dangerous in the hands of an unskilled or careless person. Use them only when other methods fail and only from a well-prepared line or a good natural barrier.

Try This Out

Do you know what a TEWT is?

In Army language it is a **TACTICAL EXERCISE WITHOUT TROOPS!**

In the Army, when the troops were busy training (i.e. cutters busy cutting, maintenance men working, etc.) or resting (Sunday) a group of key personnel, to increase their tactical knowledge and to study methods of ATTACK, etc., would have a theoretical military problem to work out. This was done in two or three ways:

- (i) using a map or aerial photograph.
- (ii) a sand table or blackboard.
- (iii) on the ground

In this way Canadian leaders were able to learn about the tactics of war while the men were training. Applying this to the woods industry, while the operation is going on key men should take time to test themselves and their assistants — take a map or better still an aerial photograph of a camp area. Mark "X" as the place a fire might start. Then think out and discuss with your key fire fighting men the actions each would take. When your assistants get their pumps on the fire (in theory) and all set — have the wind change. In addition to being instructive and good training such TEWTS are fun too.

**TRY THIS OUT ON YOUR KEY MEN!
IT'LL PAY DIVIDENDS**

Woods operators in Northwestern Ontario have over \$400,000 of equipment on hand which is for fire suppression use exclusively. In addition, operators have available for fire fighting purposes blankets, tents, cooking equipment, axes, shovels, trucks, boats, radio-telephone equipment and other equipment carried on logging operations. Thousands of dollars (in 1950 \$73,000.00) are spent annually on special Fire Prevention work alone.

**WE ARE PREPARED
BUT
LET'S PREVENT FIRES.**



PREVENT FOREST FIRES

You have seen how fires are fought

But Remember —

Such effort is costly.

Every fire that is stopped before it starts is time and money saved and timber for the future.

The assistance of the Wisconsin Conservation Department and their booklet "Handbook For Fighting Forest Fires" and the constructive criticism of officers of the Ontario Department of Lands and Forests and local industry members is very much appreciated.