

BULLETIN No. 71
1963

FORESTS DEPARTMENT
WESTERN AUSTRALIA

**SAFETY IN
CONTROLLED
BURNING**

Bill Moore

SAFETY IN CONTROLLED BURNING

To.....

of

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All employees on any job must be alert. If one employee fails to be alert, he may cause harm to himself or one or more others.

It is essential for each employee to know and observe the line drill and safety measures set out in this booklet.

The booklet should be carefully preserved and re-read from time to time.

I hereby acknowledge receipt of this safety code and I agree to comply with the rules and regulations contained in this book.

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SECTION A

INTRODUCTION

This booklet deals with two particular aspects of controlled burning of forest areas as practised by the Forests Department of Western Australia.

They are, line drill and discipline when strip burning, and measures of safety and survival for the individual.

Listed below are the basic safety rules governing these two aspects, and these must be "hammered home" to every officer and employee on the job. It is stressed that the fundamental theme is one of **discipline**—team discipline in formation, on the one hand, and personal discipline on the other.

In this work responsibility for individual thought and action does not cease with the acceptance of an order from a senior officer. Responsibility for his own safety, and the safety of workmates, must be borne by every man on the job.

SECTION B

STRIP BURNING

1. General

Most methods of controlled burning require "stripping" to be done.

"Stripping" refers to the lighting of roughly parallel lines of fire over varying distances and at set spacings.

The lines should normally be lines of spots. Continuous lines of fire are often dangerous, damaging and wasteful of time and effort, and will only be used under certain circumstances.

"Stripping" is normally carried out by two or more men moving together in formation. The formation will be echelon or line abreast depending on the lighting method adopted.

In the following instructions "close formation" stripping refers to the use of three (3) or more men (in echelon or line abreast) running parallel lines of fire and maintaining full time contact with their neighbours. Density of scrub and topography will govern the distance at which one man is visible from the next and able to maintain contact. This distance will seldom be more than five chains and often will be less.

"Open formation" stripping refers to the running of single strips on a wide spacing of between approximately 8 and 15 chains. Contact between such widely spaced lines cannot be maintained and so, to avoid men working entirely alone, each of these strips will be run by a pair of lighters working in contact.

2. Prior Inspection of Area to be Burnt

(a) Each area must be thoroughly inspected and considered by an officer before lighting is allowed. He must decide, firstly, whether the area can be stripped without endangering the men performing the work.

(b) If he decides the area can be stripped he must then prescribe:—

- (i) Whether open or close formation stripping is to be used.
- (ii) The type of formation—echelon or line abreast.
- (iii) The direction and spacing of the strip lines.
- (iv) The spacing of the spots along the lines.
- (v) Broadly, the weather conditions necessary.
- (vi) Later, the actual day on which the burning is to be carried out.

(c) He must pass the necessary information and instructions to the overseer directly in charge of the lighting and ensure that he fully understands the job.

3. Instructions to the Lighters

(a) The overseer (or officer) directly in charge of the lighting must brief all the members of the gang together before the commencement of the running of each strip line.

He must ensure that each man knows exactly what is to be done.

(b) He must outline to them:—

- (i) The whole area to be burnt. He should show them this on a plan and, if possible, drive them around the whole perimeter.

- (ii) The roads and tracks in the vicinity and where they lead.
- (iii) Associated features on plan—such as creeks, ridges with steep slopes, swamps, burnt country, etc.
- (iv) Wind direction and any likely change, together with any likely change of plan to meet a change of wind.
- (v) Direction of strip lines, and whether formation will be echelon or line abreast.
- (vi) Spacing and placing of the men in the formation

(In close formation stripping, he should line the men up in their correct positions.)

and even number them if this is thought to be necessary. He should arrange to place his most capable and experienced man as a "marker" on one end of the formation. The second most experienced man should be at the other end with less experienced employees in the middle.

- (vii) Action to be taken by individuals if they lose contact with their neighbour or neighbours.

4. Maintaining Formation and Direction

(a) The overseer must be responsible for seeing that each man starts his line correctly.

(b) In close formation stripping he must move with the men while they are lighting.

(He should not be using a torch himself—except where he is accompanied by only two men—but should concen-

trate on maintaining the lighters in formation and direction. He should be in a position to adjust the method or pattern of lighting—even call a halt to it—in the light of any changes in weather, topography and fuel type.)

In open formation stripping he should move through with, or as part of, the last pair to start.

(c) Members of gangs must also play their part in maintaining direction and formation. They should insist on instruction, as above, if they have not received it.

(d) Each man must maintain contact with his neighbour or neighbours.

(Overseers are primarily responsible for this, but individuals, on losing contact, must take immediate action. They must cease lighting, put out their torch, notify those, if any, on the side opposite to the marker and then move to regain formation.)

(e) General provisions to aid maintenance of direction and contact are as follows:—

- (i) A maximum of five (5) men may be allowed in any one formation. This implies that only 2, 3 or 4 will be used in certain circumstances.
- (ii) Length of strips should not exceed 120 chains. In areas where roads and tracks are scarce bulldozed walkways or footpaths must, if possible, be laid to limit the line distances to this figure.
- (iii) Yellow (or white) protective helmets must be worn by all officers, overseers and men at all times when burning.

SECTION C

SAFETY AND SURVIVAL MEASURES

1. Personal Safety Measures

(a) Wear suitable clothing—

Preferably woollen garments—never synthetics.
Long trousers (tucked into socks or gaiters),
sleeves rolled down and shirt buttoned to
the neck.

Strong leather boots—never sandshoes or
sandals.

Handkerchief or dust mask to cover face and
mouth.

Protective helmet.

Carry matches—for lighting back burn if neces-
sary.

(b) Avoid danger areas—

Dense scrub thickets.
Steep slopes above fire.
Swamps.

(c) Develop observation to aid a "sense of direction."

Note landmarks, roads, tracks, creeks, ridges,
clearings, burnt country (i.e., "safe
ground").

(d) Insist on prior instructions—

Know burning drill, signals, rendezvous and
escape routes.

If you do not know how to keep a straight line
—ask for instruction.

(e) Learn recommended individual survival measures
—see Section C 2.

(A detailed bulletin on this subject is held by the overseer—borrow it and read it.)

(f) Keep yourself physically fit—

Eat well, get a full quota of sleep, and, when burning or fire fighting, drink more than even thirst demands.

2. INDIVIDUAL SURVIVAL MEASURES (If fire has cut escape route)

(a) Conserve energy—

Don't panic—panic drains physical and nervous energy and clouds judgment.

Don't run unless absolutely necessary.

(b) Shield body from radiated heat—

By clothing as already discussed in "Personal Safety Measures." Heat saps energy—leads to exhaustion and collapse.

(c) Take refuge—

Light back burn and step on to burnt country.

Use running streams and dams;

gravel pits;

clearings in forest;

large open rock outcrops or even large logs.

Assume prone position on ground (air is freshest and coolest at ground level), limit breathing rate and fill lungs as pockets of fresh air arrive.

(d) Move through flames—

Should this become necessary—

Do not delay in front of the flames.

Use clothing to best advantage as a shield.

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Should this become necessary—

Do not delay in front of the flames.

Use clothing to best advantage as a shield.

Select area not obstructed by dense growth, logs or uneven ground.

Select point where flame front depth is at a minimum.

Await, if possible, a lull in the fire when flame height will be reduced.

Take some deep breaths and move through as quickly as possible on to burnt ground.

Bend low before inhaling.

Finally, to quote directly from the C.S.I.R.O. publication "Bushfire Sense":—

In most bushfire tragedies the people are usually dead or nearly dead before the flames actually touch them. By laboratory and field measurement and from the study of case histories of people who have either lost their lives or saved them when encompassed by fire, it is now abundantly clear that radiated heat is the main peril leading to exhaustion and collapse. Radiation causes heat stroke, which is essentially a state of utter exhaustion. Shielding yourself from radiation and desisting from any behaviour or activity such as fear, panic or flight that saps your strength are therefore vital.

Many of the rules for safety and survival listed above are based on these considerations.

3. First Aid for Burns

(a) Avoid handling the affected area more than is necessary. See that your hands are as clean as possible.

(b) Do not apply lotions of any kind.

(c) Do not remove burned clothing and do not break blisters.

(d) Cover the area (including burned clothing) with a prepared sterile dressing, or whatever clean bandaging material is available.

(e) Bandage firmly except when blisters are present, in which case bandage lightly. (Where face is burnt, cut bandaging material in the shape of a mask, with a hole for breathing.)

(f) Immobilise the affected area by suitable means.

(g) Treat for shock—

(i) reassure the casualty.

(ii) Lay him down—position depending on injuries.

(iii) Loosen clothing about neck, chest and waist.

(iv) Wrap him in blanket, rug, coat or whatever cover is available.

(v) If he complains of thirst he may be given sips of water, tea, etc., but **not alcohol**.

(If casualty is badly burned he must be removed for medical aid as quickly as possible. It should then be borne in mind that unless it will take more than four hours to reach such aid he should not be given anything by mouth as he will almost certainly need an anaesthetic. Should such a delay be inevitable, water, to which salt has been added (at a rate of half a teaspoon to two tumblers), is the best drink.)

Note.—All gang vehicles and others used during burning and firefighting should carry a complete approved First Aid Kit which should include—

A good quantity of wide bandages and a packet of common salt.

4. Vehicle Safety Measures

Certain measures are necessary to safeguard vehicles during controlled burning operations.

(a) Parked Vehicles.

More often than not vehicles will be parked for a greater part of the time and so should be:—

- (i) Parked facing in such a way that they can move directly out of the area on a known, safe route.
- (ii) Left with the ignition key in the lock.
- (iii) Parked on a cleared or previously burnt area.
- (iv) Parked so that other vehicles may pass easily and safely.
- (v) If a man is left with the vehicle he should know the outline of the whole operation—what other members of the gang are doing, any rendezvous with the others, and any communications schedules.

(b) Driving through Fire and Smoke.

Should it become necessary to drive through a burning area or one heavily covered with smoke, the following should be observed:—

- (i) Drive at a speed commensurate to safety.
- (ii) Keep cab windows wound up.
- (iii) Switch on lights and blow horn occasionally.
- (iv) Avoid having inflammable material exposed on the truck.
- (v) If men are travelling on the truck tray they should have water available—either powered pumper and tank or knapsack sprays.