

S.A. POLICE DEPARTMENT
EMERGENCY FIRE SERVICES

Circ.No. 7/3/2

"BURNING OFF"

The burning of fire breaks on roads, farm properties and township allotments, plays an important part in fire prevention and protection.

Scrub and stubble burning is an accepted practice in farmland development and management.

Well planned "burning off" operations are excellent training exercises for fire fighting teams.

"Burning off" has the advantage of economy over other clearing methods but it is by far the most hazardous.

The following article sets out basic principles and proven methods which, if followed by all concerned, would topple "Burning Off Out of Control" from its premier position on the list of causes of bushfires.

PRELIMINARY ARRANGEMENTS FOR BURNING OFF:

1. Inspect area and adjoining risks.
2. Obtain Meteorological Bureau weather forecast, especially winds.
3. Check relevant provisions of Bush Fires Act and local regulations with Council Clerk. Obtain permit, or exemption, if required.
4. Give adequate advice on intention to burn to Council Clerk, nearest Fire Control Officer, EFS Brigade and adjoining neighbours.
5. Prepare breaks around area in accordance with Bush Fires Act.

EQUIPMENT:

Equipment is similar to that required for fire control. Hand tools, (rakes, hoes, shovels, rake-hoes, slashers, etc.) knapsack pumps, beaters, power-pump tankers, fire torch, mechanical plant, radio, loud-hailers - and ample supplies of water.

TEAMS:

Basically, the Act requires four (4) men to be present during burning off operations, (with certain exceptions), however, the number of men and equipment required to do a burning off job is, in practice, determined by the rate at which the burn is carried out, i.e. by the extent of the lighted front or perimeter (fire line).

The burn should never be permitted to have a fire line which cannot be readily extinguished or contained by the available men and equipment. Where a crew of four men with knapsacks and hand tools could safely handle an acre of grass in one hour, three trucks and fifteen men could possibly handle 10 acres.

Four-man Team:

- No. 1 takes charge, has choice of knapsack, hand tool or torch, etc.
- No. 1 - Torch-man.
No. 2 - Wetting down and controlling fire line.
No. 3 - Backing up No. 2 and preliminary mop-up.
No. 4 - Mop-up - fire watch, maintains water supplies.

Have ample water on the job - tanks, drums, buckets, for quick refill of knapsacks.

Truck Team: (for larger grass burns, or scrub burns) -

Fire Boss should not commit himself to working duty and would be best equipped with light 4 x 4 vehicle and 2-way radio or loud-hailer to direct operations.

- 3 x Pump-tankers, preferably with 2-way radio.
15 x men (3 men per vehicle - driver : pump operator : nozzleman, plus 6 hand tool or knapsack men)

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TEAMS - continued:

Truck Duties:

- No. 1 - Wetting down (hazard protection) and controlling fire line.
- No. 2 - Backing-up No. 1 and preliminary mop-up.
- No. 3 - Reserve emergency - maintains full water tank.

Relief Duties:

- No. 2 - Takes over No. 1 duties when No. 1 empty.
- No. 3 - Moves up to No. 2 duties.
- No. 1 - Refills and takes over No. 3 duties.

If any delay in refilling - extinguish fire line and await return of full tanker.

Both Field Teams - Foot and Truck - may be supplemented with additional men or trucks, according to the task.

BASIC TASKS WITH BURNING OFF OPERATIONS:

After preliminary arrangements and regulation break preparations.

1. Wetting down, or clearing, to protect hazards.
2. Lighting.
3. Fire Line Control (knapsacks, hand tools or pump-tankers).
4. Follow-up and preliminary mop-up.
5. Emergency Stand-by (at least 1 tanker or knapsack - full).
6. Spotters - Fire watch lookout.
7. Communications.
8. Traffic control (or warning) when near highways.
9. Final mop-up and re-kindle patrol.

FINAL PREPARATIONS:

Wind:

Note direction and strength of wind.

Plan of Operation : Briefing of Crews:

Have a definite method of operation.

Make sure everyone knows the plan, his duty, emergency action and pre-arranged signals - "Emergency" - "Stop Lighting" - "Assistance Needed" etc.

(A blackboard and chalk on the job are useful for this purpose)

Siting of Trucks and Men:

This is decided by the allocation of the basic tasks (above) and dependent upon wind, fuel, topography, adjacent risks, experience and ability of team members.

Stand-by:

All hands and gear checked and in position before lighting up.

STRIP BURNING METHOD:

By using a "strip" burning method it is possible to control the direction and rate of burning to meet wind, fuel and team strength conditions. The same principle of operation applies to the four man foot team as to the truck and foot crew combinations and may be used in open country or for "road" burning.

Single Line Lighting - (One Torchman) : (See Diagram 1)

Torchman commences lighting about three feet in from lee (downwind) edge of paddock. If wind is from direct North, then preferably South East corner - but if wind from North East then commence South West corner, etc. If land has slope, burn down hill wherever practicable. If burning uphill against wind and wind drops, the rate of spread of fire will increase sharply and it may be advisable to extinguish fire immediately, re-site team and commence burning from top. Burning up a steep incline, even against wind, is dangerous.

When Torchman has lighted about half chain, the intensity and rate of burn can be assessed by the Fire Boss. From this initial "test" strip, the Fire Boss decides:-

- (a) Dangerous : Extinguish immediately and postpone burning.
- (b) Moderate : Proceed slowly with every caution.
- (c) Slow : Proceed at normal rate for safe burning.

STRIP BURNING METHOD - continued:

On the Fire Boss deciding it is all right to continue, he also decides the safe length of fire line and instructs the Torchman to return on the second leg of the strip. The Torchman immediately returns (towards the East) lighting up about two (2) yards upwind and parallel to the existing fire line and burnt strip. (Diagram 2)

The Western flank of the burn is extinguished by No. 2 - backed up by No. 3. The Torchman continues the lighting up pattern of working to and fro gradually extending the depth of the fire line as he gains the advantage of the ever widening burnt strip.

No. 2 backed up by No. 3, continues to extinguish and hold the western flank so that the team at all times has only the one front or fire line to control. Providing undue water is not used in quenching the western flank, there is no problem in cleaning up this edge in the subsequent burning.

The same pattern of lighting, viz. that of limiting the length of fire line and lighting up in progressive "tacks" from flank to flank can be used by the four man foot team or truck and foot crew combinations. (Diagram 3)

Preferably, burn all strips against wind (upwind), to minimise risk. Burning downwind should be undertaken only when all conditions are safe and adequate strips have been burnt on the lee side.

The danger from burning with the wind, even after a "safe" break has been achieved, is that the rapid large burn will frequently cause "willy-willys" which will carry burning material well into adjoining risks. This is not bad luck -- it is bad management !!

"Stepped" Line Lighting - (Two or More Torchmen) : (Diagram 4)

This method of speeding up lighting should be used only by well trained and equipped teams, when fuel is slow burning, under safe conditions.

Using two or more torchmen. No. 1 commences lighting. When No. 1 has covered a reasonable distance, say half a chain, No. 2 commences several yards upwind from point where No. 1 started. Both men then proceed at same speed so that No. 2 does not catch up and his burn runs into the break burnt by No. 1. Any additional torchmen would take part similarly to No. 2, commencing at intervals to suit safe rate of burn.

Truck or knapsack men should work with No. 2 or highest number torchman, extinguishing the windward edge of the burn whilst the torchmen continue in the westerly direction, therefore putting in a strip the full length of the paddock at the same time, limiting the fire perimeter. When the western boundary is reached, work same pattern west to east taking out a wider strip providing there is no wind change.

Using the Strip Method means you have only one fire front to contend with.

EMERGENCY ALARM: (Repeated 3-blasts on horn or whistle - use of Red Flag, etc.)

Extinguish immediately and re-consider action or re-site teams if:

- (1) Wind changes considerably.
- (2) Burn escapes.
- (3) To attend a call to another fire.
- (4) If smoke obscures adjacent risks too heavily.
- (5) Water supplies low or team work breaks down.

SCRUB BURNING - (Standing or Rolled):

The action of controlling a scrub burn is similar to the operation of containing a bushfire and is a task for pump-tankers as well as hand tools.

Good breaks, weather information, constant patrols and radio are essential for safety. You can choose the conditions for lighting - you have no choice in the ensuing weather conditions.

SCRUB BURNING - continued:

Divide large areas by breaks and patch burn.

It is not practicable to extinguish scrub by 9.00pm on the day of lighting and this is not required by law, as is the case with stubble - but four men should be in attendance from time of lighting until completely extinguished unless an exemption, in writing, has been issued.

Much scrub burning is carried out in South Australia during the 'Conditional Period' autumn. "Fire Banned" days can occur after the scrub has been lighted. On "Banned" days, it is an offence to light or maintain any fire in the open air.

It is impracticable to extinguish most scrub burns at short notice, however, the persons responsible should discontinue lighting and should make every endeavour to render their burn safe, especially the perimeter, should a "Ban" be declared.

The general safety principles of procedure for grass burning can be applied to scrub burning. In particular, the practice of lighting up a small test strip and then deciding whether to extinguish and postpone or proceed, is essential.

USEFUL TIPS:

1. One Boss - strict discipline.
2. All hands know plan of operation and individual job.
3. All "take post" before lighting up.
4. Early season burning - less risk - longest protection.
5. Knapsacks and handtools on fire line save truck water.
6. Reliable Spotters - watch open country, not the burn.
7. Rake fuel away from hazards - trees, posts, stumps - saves mop-up.
8. Burn away from hazards, not towards.
9. Use spray or fog to quieten fire near hazards - more penetrating.
10. Post traffic warning and control men on highway - radios useful.
11. Have pre-arranged control and danger signals (see page 3).
12. Anticipate change of wind - check with Meteorological Bureau.
13. Patrol until safe - all night, if necessary.
14. Comply with law - insure against Public Risk.
15. Work to safe rate of burn - NOT to the clock.

GRASSLAND FIRE DANGER METER:

Mr A.G. McArthur of the Forestry and Timber Bureau, Canberra has designed a handy pocket-size computer to enable fire controllers to assess quickly the rates of spread during a going fire or when planning a burning off operation. Contact EFS Headquarters, should you require one of these simple calculators - free of cost.

SUMMARY OF RULES FOR BURNING OFF (From Bush Fires Act):

Fire Breaks: Stubble - Clear for at least 12 feet or plough for at least 6 feet on all sides. Scrub - Clear for at least 12 feet on all sides.

Notification: Stubble - At least 6 hours and not more than 48 hours to neighbours, nearest Fire Control Officer and District Clerk.

Scrub - Same as for stubble and 14 days notice must be given to the Council if the area to be burnt exceeds 500 acres.

Assistance: Stubble - At least four men able and available to assist must be in attendance until fire is completely extinguished.

Scrub - Same as for stubble.

Lighting: Stubble - The fire must be lit from the leeward side before it is lit from the windward side. Scrub - Same as for stubble.

Times: Stubble - The fire must not be lit before 12 noon and must be extinguished before 9.00pm. Scrub - Must not be lit before 12 noon.

Sundays - Burning off is not permitted (Sec. 59)

Fire Ban Days: No person shall light, maintain or permit to remain alight any fire in the open. (Sec. 65)

Fire Control Officer may direct that a person shall not burn Stubble or Scrub if he considers it is not safe to do so. (Sec. 89).

"Scrub" means trees, bushes and underwood of all kinds and sizes, whether dead or alive, whether standing or not, whether severed or not. (Sec. 6). "Stubble" means stubble, hay, straw, grass and herbage, whether alive or dead and whether standing or not. (Sec. 6).

For "Stubble" burning rules, see Section 49 and "Scrub" burning rules, see Section 54 of the Bush Fires Act, 1960.

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