

# FIRE CONTROL NOTES

## A Quarterly Periodical Devoted to the TECHNIQUE OF FOREST FIRE CONTROL

The value of this publication will be determined by what Federal, State, and other public agencies, and private companies and individuals contribute out of their experience and research. The types of articles and notes that will be published will deal with fire research or fire control management: Theory, relationships, prevention, equipment, detection, communication, transportation, cooperation, planning, organization, training, fire fighting, methods of reporting, and statistical systems. Space limitations require that articles be kept as brief as the nature of the subject matter will permit.

FIRE CONTROL NOTES is issued by the Forest Service of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by the direction of the Secretary of Agriculture as administrative information required for the proper transaction of the public business. The printing of this publication has been approved by the Director of the Bureau of the Budget (May 17, 1948).

Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., 15 cents a copy, or by subscription at the rate of 50 cents per year. Postage stamps will not be accepted in payment.

Forest Service, Washington, D. C.

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## “HOT SHOT” CREWS

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Scouting revealed that the head of the Burma Fire of 1949, Cleveland National Forest, was spreading rapidly uphill through medium to heavy brush and would reach the rim of an adjacent watershed unless checked on a small ridge  $\frac{1}{4}$  mile from the top. One “hot shot” crew under Foreman George McLarty, San Bernardino National Forest, had been working the northern flank from the bottom and would reach the top too late to effect the check. The Cleveland “hot shot” crew Foreman, Leon Ballou, and 4 men were flown via helicopter from the southern flank of the fire to the ridge at the head of the fire. The 5 men hurriedly cut a line in front of the fire, backfired it out and started a direct attack on the fire edge down the south flank to meet the rest of the crew. The crew on the northern flank meanwhile had pushed through and tied to the northern end of the fired out line. Although numerous spots occurred and the crews lost the south flank twice because of whirlwinds, they closed the gap and effected control on a 280-acre fire that would probably have more than tripled its size within 4 hours unless the check had been made and the lines tied together.

Since these crews are trained to subsist on the line with bare essentials, a sustained push taking advantage of lulls in fire intensity is possible. This was demonstrated by the San Bernardino “hot shot” crew on the Agua Tibia Fire of 1950.

Lightning started this fire in very steep to precipitious terrain covered with medium to extremely heavy 80-year-old brush and scrub oak. The east flank of the fire had slopped over the planned control ridge approximately  $\frac{1}{2}$  mile from the top of the main divide. Helicopter scouting at 10:30 a. m. revealed that if the slop-over could be controlled the lines being constructed from the top and bottom along the flank would probably control that side of the fire.

Foreman McLarty was flown by helicopter around the slop-over and he then jumped about 6 feet to the ground inside the burn above the slop-over. He subsequently cleared a landing spot and 4 additional men were flown in to begin work on the line. Meanwhile, the rest of the crew were started down the ridge top along an old trail. Helicopter coverage guided the crew to their destination where they split forces and started around the slop-over. Although this action was completed within  $1\frac{1}{2}$  hours after the initial scouting, the slop-over had spread to a perimeter of approximately 65 chains on a very steep rocky slope in medium to heavy brush oak type.

McLarty and his whole crew worked until dark. They were sent food, lights, and blankets by helicopter. The crew was fed and rested in relays until a “scratch” line was constructed around the slop-over about 11:00 p. m. Early the following morning, the crew was again serviced by helicopter and the fire line finished and mop-up started.

Stubborn aggressiveness on the part of this crew prevented the fire from crossing the drainage and establishing a new head on even more precipitous terrain.

These two examples illustrate the flexibility of "hot shot" crew action. Similar action has been taken many times during the past 4 years. Control possibilities such as these would have been impractical without well organized, trained, and conditioned crews.

One of the "hot shot" crews has been based during the fire season on the Cleveland National Forest. The following notes, although concerned primarily with the Cleveland "hot shot" organization and operational procedures, are representative for "hot shot" crews in the California Region.

The crew is composed of young men whose primary requisites are physical fitness and a will to work. Their lack of experience and conditioning are compensated by intensive training in fire line construction and use of hand tools and fire hose lays at the beginning of each season. These men are termed "fire fighters" and receive fire-fighter rates of pay while on a fire. When not engaged on fire suppression they are paid laborer wages and used on forest projects.

A subforeman or straw boss works with and has charge of from 5 to 8 fire fighters. The straw boss is an integral part of each crew and takes his days off at the same time as the crew. Two assistant foremen acts as crew bosses and are each assigned one-half the straw boss squads. One of the crew bosses is capable of assuming temporary charge of the whole crew during the absence of the foreman.

The crew is under the direct supervision of an experienced fire fighter who can act, as one foreman put it, "from general to father confessor." This foreman must be a skilled leader, fire-wise, and physically fit for very arduous work. He usually assumes the duties of sector boss on fires.

Crew members are hired only after full understanding and acceptance of the rigid rules set up. Camp routine is fashioned after that of athletic training camps with scheduled hours for meals, work, recreation, and sleep. Although some men quickly drop out of the crew because of the difficulty of the job and the rigid discipline, three have returned each year since 1947 and ten others including the foreman have been on the crew for the past 2 seasons.

Conservation, wildlife, general forestry, and training films give the reasons for the "why" and "how" of forest fire protection. The crew is given instruction in the use and care of fire line hand tools, followed by intensive work-outs on practice fire lines. Several afternoons during the first part of the season are spent on illustrative lectures, orientation, fire behavior, safety, and correct fire line construction practices. Action on early season fires is discussed on the ground with a large part of the constructive comment coming from the crew members.

After several successful attacks on early season fires, crews begin to develop an esprit de corps and an eagerness to prove their ability. Several distinctive arm patches have been designed and worn by crews hailing their identity. The competitive spirit on large fires requiring more than one crew has provided additional incentive toward better production.

The following summary of work accomplishment, although reflecting considerable more suppression time during the heavier fire season of 1950, indicates the advisability of preplanning and budgeting forces primarily for fire suppression.

*Percent of total man-hours payrolled*

Cleveland crew activities:	1949	1950
Training	12.6	6.6
Project work (nonfire)	10.7	17.1
Fire suppression	48.6	62.6
Headquarters camp maintenance and operation, cooks, and annual leave	28.1	13.7
	100	100

A sample of fire line construction rates by direct attacks on fire perimeters in Southern California vegetative types, computed from the data recorded on the ground by the Cleveland crew foreman and including rest periods, lunch time, and delays due to lost line, is given in table 1. Comparable line construction rates are difficult to evaluate since the "hot shot" crews are generally placed on lines where untrained or unorganized crews would make very little if any progress.

TABLE 1.—*A sample of fire line construction rates by the "hot shot" crew, Cleveland National Forest*

Cover type	Condition of crew	Time	Character of fire edge	Slope	Men	Fire line built	
						Total	Average per man-hour
Medium to heavy brush	Fresh	Day and night	Hot	Moderate <sup>1</sup>	<i>Number</i> 23	<i>Chains</i> 74	<i>Chains</i> 0.21
Chamise	do.	Day	do.	Steep	26	135	.86
Medium brush	do.	Night	do.	do.	28	40	.35
Heavy brush	do.	do.	Moderate hot	Moderate <sup>2</sup>	20	23	.23
Chamise	Tired	do.	do.	Steep <sup>3</sup>	12	41	.34
Chamise and brush	Fresh	Day	Hot <sup>4</sup>	do.	38	23	.30
Medium to heavy brush	Very tired	Night	do.	do.	42	65	.25

<sup>1</sup> Scattered scrub oak stems.

<sup>2</sup> Very steep  $\frac{1}{2}$  mile hike to line.

<sup>3</sup> Some mop-up, rocks, cliffs.

<sup>4</sup> Line abandoned two times because of flare-ups.

The value of a trained unit of men that can be sent into difficult sections of a fire perimeter with a high degree of certainty that control will be effected, has been demonstrated many times during the past. The ever increasing demand for "hot shots" when the going gets rough is the fire manager's endorsement of the "hot shot" program.