FIRE CONTROL NOTES

SUMMER 1971 ● VOL. 32, NO. 3
U.S. DEPARTMENT OF AGRICULTURE ● FOREST SERVICE

FIRE CONTROL NOTES

An international quarterly periodical devoted to forest fire control

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Cover—The Little Sioux Fire, Boundary Waters Canoe Area, Superior N.F., Minnesota, made 80 percent of its run on May 16, 1971. The fire consumed approximately 15,000 acres of balsam, spruce, jack pine, and aspen before it was controlled. Frost and snow helped speed mop-up on May 19th. (Photographed by Charles Curtis of the Duluth *News Tribune.*)

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Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, 20 cents a copy, or by subscription at the rate of 75 cents per year, domestic, or $1.00, foreign. Postage stamps will not be accepted in payment.

All fire protection agencies must work to place prevention in its rightful place as an equal partner with suppression. This is the only way that the protection program can keep up with increasing fire risks and hazards.

Advocate of a Strong Program

Over 99 percent of all wildfires in Pennsylvania are caused by people. Since the Commonwealth has 12 million people and 17 million acres of forest land, the justification and need for a strong program of fire prevention is apparent.

Pennsylvania has consistently been an advocate of a strong fire prevention program and began intensive educational activity in problem areas during the 1930's. When the Smokey Program began, the Keystone State welcomed Smokey and has continually promoted the program at a high level.

In recent years the Division of Forest Protection has felt the need for involving more people over a longer period of the year in fire prevention. Fire Prevention Days and Fire Prevention Weeks did not give the all-important impression that fire prevention is really a full-time responsibility.

During 1969 a plan for a massive, year-long, Statewide Wildfire Prevention Program was developed.

The secret to such a plan is to get as many people as possible interested in it. In late fall 1969 State Forester Cobb gave his full support to the plan. He in turn received the approval of Secretary Goddard, the head of the Penn. Department of Environmental Resources.

Governor Participates

The kickoff for the year's program was the official signing of the "Make 1970 Wildfire Prevention Year" Proclamation by the Governor. The proclamation was issued in February 1970 and got good Statewide publicity. During the ceremonies in the Governor's Office the Governor became a Fire Warden and received a Smokey bronze relief shield (fig. 1). State Forester Cobb presented the Governor with a Smokey wrist watch.

Getting the Governor involved automatically involved all of the other Agencies of State government:

1. The Wildfire Prevention message was put on the biweekly salary check statements for 106,000 Commonwealth employees for 12 pay periods.
2. The message was carried in the 605,000 copies of the June issue of the Pennsylvania Liquor Control Board Price List.
3. 25,000 copies of an insert published in an issue of Pennsylvania Forests Magazine were purchased. A copy was sent to all Volunteer Fire Wardens (3,800), Volunteer Fire Companies (2,400), Railroads (400 copies) and interested organizations and individuals throughout the State (fig. 2).
4. Each car in the State Motor Pool (300) was equipped with a fresh Fire Prevention Litterbag each week.
5. A postage meter slug was used with the slogan "Make 1970 Wildfire Prevention Year" on the Department's postage machine.

In addition, all mail from the

E. F. McNamara is chief of the Div. of Forest Protection, Bur. of Forest., Penn. Dep. Environmental Resourc.

Figure 1—Governor Shafer received Smokey wall plaque from Fire Protection Chief McNamara.

Division of Forest Protection carried the message on the outside of every envelope and also on the stationery used for correspondence. Many of the Districts followed this practice also.

USDA Cooperates

The Supervisor's Office on the Allegheny National Forest joined in the Program and also stamped official mail with the slogan.

During this same year, Pennsylvania purchased and distributed over 1½ million individual pieces of CFFP and allied educational materials and processed almost 20,000 individual requests for Junior Forest Ranger Kits.

Results Were Encouraging

What were the results of this massive Prevention effort? During 1970, 719 forest fires that burned 4,190 acres were recorded. This was the third lowest incidence of fires and second lowest area burned since 1913.

During 1969 there were 1,735 fires reported and 16,508 acres burned. This was an above average year for the State (table 1).

Since weather plays such a vital role in fire protection, a comparison of Fire Danger class and fire occurrence during 1969 and 1970 will provide some insight into the weather conditions during the two years.

Heavy snows over much of the State in 1970 contributed to a reduction in fire occurrence during March of 1970.

Difficult to Measure

The results of a Fire Prevention Program are difficult to measure. No satisfactory method of evaluating the many variables involved have yet been developed. There is, however, a

Table 1.—*Average Per Year Fire Statistics*

Period	No. of Fires	Area Burned	Av. Per Fire
1955-59[1]	983	28,832 acres	24.2 acres
1960-64	1,623	30,453 acres	18.7 acres
1965-69	1,334	12,167 acres	8.9 acres

[1] Lowest 5-year period in fire occurrence in Pennsylvania history. Fire incidence began upward trend in State in '60's. Similar trend noticed Nationwide.

Table 2.—*Comparison of fire danger and fire occurrence*

Month	1969 Days Class 3[1] or Above		1969 Forest Fires		1970 Days Class 3 or Above		1970 Forest Fires	
January	53		5		1		0	
February	38		11		34		6	
March	186		308		61		20	
April	198	452[2]	729	1429[2]	212	377[2]	379	606[2]
May	68		392		104		207	
June	12		41		3		19	
July	2		19		1		1	
August	5		16		4		16	
September	27		12		13		7	
October	120		170		28		11	
November	61	206[2]	19	202[2]	42	112[2]	34	64[2]
December	25		13		42		19	
		658		1631		489		670
Totals	795		1735		545		719	

[1] Total days of Fire Danger Class 3 units or above based on Spread Index at one or more of 14 Fire Danger Stations throughout the State. The maximum number for any one month would be 14 multiplied by days in month.

During 1969 there were 218 fires per 100 Class 3 day units.

During 1970 there were 132 fires per 100 Class 3 day units.

April 1970 was the only month during the two years when all days recorded a Class 3 situation at one or more stations.

[2] Days in normal fire danger periods.

definite reduction in fire occurrence when measured against Fire Danger Class (table 2).

We know that the time, effort, and investment have been worthwhile. Many unsolicited letters were received from Fire Chiefs and members of Volunteer Fire Companies complimenting us on the program and stating that grass fires were at the lowest point ever in their respective areas. One Fire Chief also credited our Prevention Program with a 30-pecent reduction in structural fires.

Community leaders from many of rural areas wrote or telephoned our offices to tell us how much they supported our Program.

The effects of the "Make 1970 Wildfire Prevention Year" will carry over into 1971 and future years. And our 1971 Program is in full swing.

What's Success?

The secret to a successful Fire Prevention Program is getting people involved. People do want to help–you must tell them what you want them to do.

You will find also that, while the primary objective of your program may be fire prevention, there are many other benefits helping the total conservation program. △

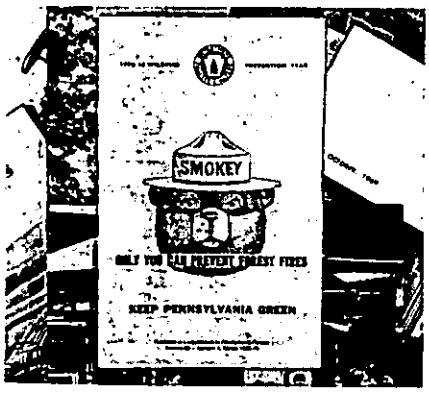


Figure 2—This reprint of a fire-prevention article was sent to various interested State groups.

Pieces of Paper Protect You: Specifications

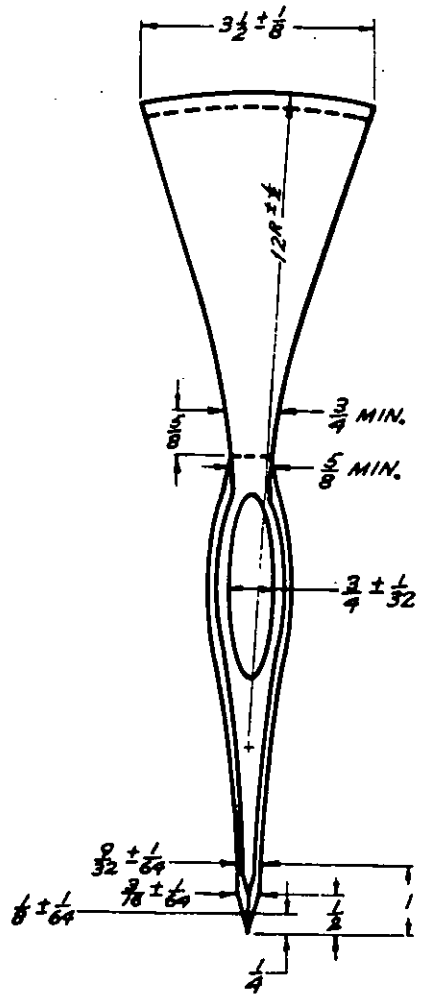
B. J. Graves

The Forest Service uses equipment designed specially for fire control operations.

A document called a specification defines for the manufacturer the acceptable standards for all this equipment. Standardization just for the sake of conformity, however, is not worthwhile and can do more harm than good. There have to be other reasons for a specification. These reasons, *all* of which must apply in any one instance, follow:

1. Other available specifications or standards are inadequate.
2. The item is going to be standardized Service wide, usually for the following reasons:
   a. Economy by central purchasing through the Federal Supply Service.
   b. Training simplification.
   c. Quality insurance.
   d. Interchangeability of parts or sub-assemblies.
3. The item covered will be purchased on a recurring basis, over a relatively long period of time. (Items that are purchased infrequently or over a short period of time should be covered by a bid specification.)

Forester B. J. Graves works with equipment and specifications in the Aeronautics and Equipment Branch of the W. O. Div. of Fire Control.



This schematic drawing of the head of the pulaski is taken from the pulaski specification.

Importance Has Grown

Started in the 1930's, when standards of design and performance were first formally documented, the Forest Service's Fire Control specifications now number about 100. Compared to the nearly 5,000 Federal Specifications and many more Military Specifications, Fire Control's are few. However, they do account for a large expenditure of Fire Control money — about $5,000,000 annually.

Specifications other than those of the Forest Service play an

important role in Forest Service specifications not only as procurement documents but also as references. The pulaski specification, for example, includes such applicable documents as Federal Specifications and Standards for handles, NN-H-93, and for test methods for metals, FED-STD-151. Military and civilian standards are used for pulaski testing, MIL-STD-105D and ASTM[1]-STDS for instance.

Developing a Specification

Equipment development centers at Missoula and San Dimas and the Beltsville Electronic Center prepare most Fire Control specifications; although, some specifications to be adopted Service-wide are prepared in Forest Service Regions. Once a project at one of these centers develops a piece of equipment to the point where a demand for purchasing it for Service-wide use is likely, a formal specification is prepared: Engineers, researchers, and other specialists provide the technical data, and a specification expert prepares the information formally as a specification.

Before final acceptance by the Service, however, the specification is subjected to a thorough review by GSA, manufacturers, Fire Control field representatives, and the Washington Office Division of Engineering. These reviewers often suggest changes in the document to improve the product or reduce its cost. The W.O. Division of Fire Control gives the final review and has the responsibility for accepting the specification. W.O. Fire Control also assigns a Service-wide number to it. For a new specification, an "interim number" is assigned. Interim status is indicated by "00" preceding the prime number, for example, 5100-0093.[2] The interim designation is in effect until the document has been used and proven sound. In the case of the number example given above, the permanent number would be 5100-93. The W.O. Division of Administrative Services is responsible for printing, distributing, and maintaining a supply of the specification.

The development center originating the specification retains custodial responsibility for it and keeps it updated.

Specifications Save Money

In 1968 the estimated cost of specification maintenance at the Missoula Center was $750 per document. This is much less than the annual average of $2,700 per document for other Federal specifications.

This expense, in any case, has an excellent cost-benefit ratio. GSA estimates that buying from a Federal procurement document, as opposed to buying brand-name-or-equal, saves the Government an average of $25,000 per year for the equipment each document represents. Almost 10 dollars are saved to every 1 spent.

Assurance Needed

The Forest Service requires assurance *after* the contract is awarded that the manufacturer is producing an item according to the specification. This is covered in the inspection and test section. In some cases, however, the Forest Service wants assurance that the manufacturer is capable of producing an item meeting all requirements *before* the contract is awarded. This type of assurance is determined by prequalification testing and is made when any *one* of the following conditions exists:

1. Testing after award of the contract would unduly delay delivery of the item.
2. Repetitive testing would be expensive (quality control).
3. The tests would require expensive or complicated testing equipment not readily available.
4. Performance results as well as technical requirements in the specification would determine acceptability of the item contracted for.

Prequalification testing is done at the development centers (see article on simulator, p. 7). Manufacturers submit samples of their product made according to a particular specification. These samples are tested, and all those meeting the specification are placed on a "qualified products" list. The manufacturer of a qualified product is then eligible to bid on a GSA contract.

Prequalification specifications are kept to a minimum since the testing is often time-consuming and can develop into a major job. Only 15 percent of the Forest Service specifications are of this type. Some of the more complicated prequalification testing is done on: Fire retardants, hose, fireline trenchers, portable pumps, and spark arresters.

People Are Needed, Too

The Fire Control specification program is dynamic. New specifications are written as equipment is developed; revisions are made to keep the document current; and those documents no longer needed are rescinded.

Specifications are as good as the information feedback from users of fire control equipment. Employee suggestions and equipment performance reports are vital to the success of the Forest Service specification program. △

[1] American Society for Testing Metals.

[2] 93 is the prime number. 5100 is the function number; it means "Fire Control."

New Compact Simulator Provides New Versatility

Herman E. Ball

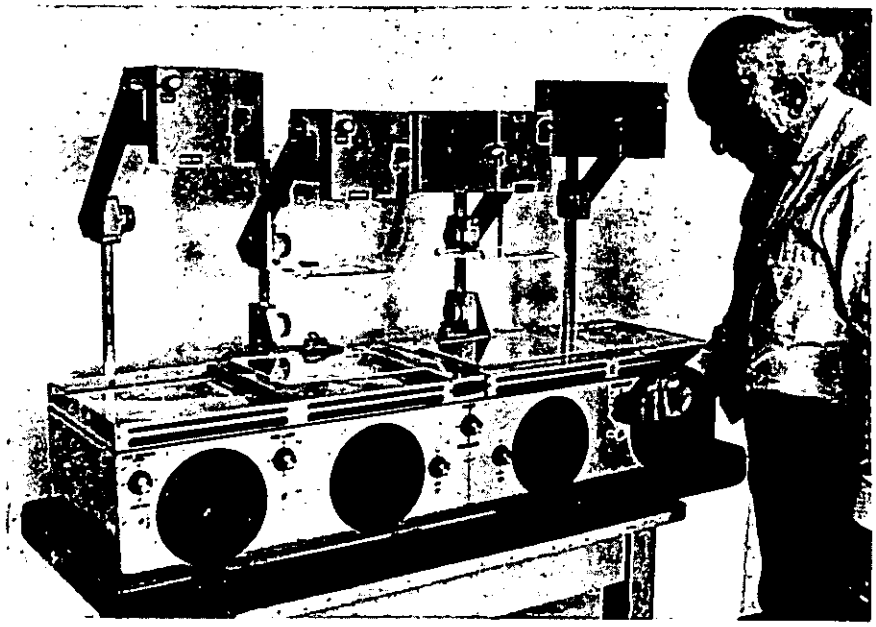


Figure 1—The new compact simulator set up and ready for action.

The new compact simulator is now a production model that will be delivered to 76 customers throughout the United States and Canada early this summer. This is the latest model in forest fire simulators (fig. 1). It culminates 3 years of research and development work aimed at providing field units with an inexpensive, highly portable, initial attack training simulator.

To begin with, an extensive survey was made of fire control people all over the country to determine what features were most wanted in a portable simulator. Results of the survey were used to develop and test a prototype simulator similar to the one discussed here. Specifications were drawn up and prequalification testing, made (see article on specifications, p. 5). After demonstrating the prototype to potential customers, a consolidated order was taken and a contract let with Scott Engineering Sciences of Pompano Beach, Fla., for 76 machines.

H. E. Ball is a forester at the Forest Service Electronic Center, Beltsville, Md.

Many Features

Its many features make the new compact simulator a very versatile machine that can handle a variety of training situations, yet it is simple enough for one man to operate. It employs the rear screen projection technique in which the operators are on one side of the screen and the trainees, on the other. This technique tolerates more light in the training area than do the front projection methods employed by some of the earlier simulators.

One of the outstanding features of this machine, from the operator's standpoint, is that the direction of art work on all working stages is directly coordinated with its appearance on the screen: forward and to the right on the working stage is up and to the right as the operator sees it on the screen. Adjustable and reversable discs are used to simulate smoke and fire motion. The motion can be projected in any direction and directional changes to simulate wind shifts are easily made during an exercise.

Two background scene projectors projecting identical scenes allow the operator to do art work during an exercise without distracting trainees. A dissolver makes the illumination transition between scene projectors so smooth, it is difficult to detect. Hose lays, fire lines, roads, helispots, etc. are clearly projected through an overlay on the background scene, and these can be manipulated in response to the trainee's actions. By means of a char plate located above the scene, fire can be gradually replaced with burned-over area. Another plate allows the operator to change the composition of smoke from light to dark and back.

Portability

The total weight of the unit in its aluminum, dust and moisture proof container is 176 pounds (fig. 2). It comes complete with extension cords, spare lamps, tool kit, and maintenance manual. It is easy to set up and take down, and it is packed well

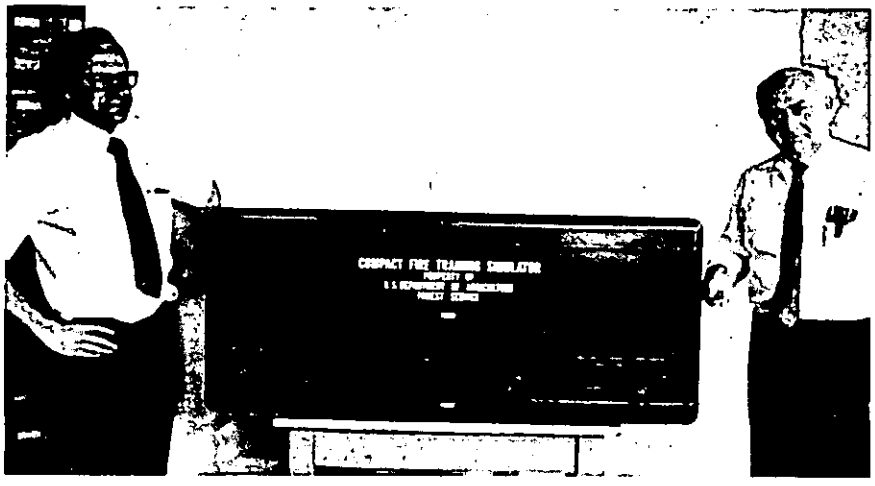


Figure 2—The simulator packed up and ready to travel.

enough in its container to withstand the treatment a portable unit is normally exposed to.

Though the simulator is designed primarily for initial attack training, its use need not be limited to this. Complemented with the proper communications and sound equipment, it can be used for the more complex command-type fire problems. It may also be used in training for structural fires, timber sale layouts, avalanche control, road layouts, recreation planning, multiple use, aesthetic considerations, and watershed rehabilitation project planning. With a little imagination the compact simulator can be used in other areas where visual simulation is desirable.

The new compact simulator shown and discussed here includes only the optics and projection equipment used for visual simulation. The field survey mentioned earlier indicated such a variety of requirements in audio equipment that no attempt has been made to come up with a standard package. The selection of audio systems and other accessories has been left to individual tastes.

Here's Where To Write

A publication available from the Forest Service Electronics Center, Bldg. 419, ARC, Beltsville, Md. 20705, list recommended components with prices and sources for an audio system, a screen, and other accessories that can be used with the new compact simulator. △

Fires Burn Trees... And Other Things

From a publication of the Int. Assn. of Fire Chiefs

Fires set a new record in 1970 in the United States with losses reaching an all time high of $2,263,918,000.

This was a 16-percent increase over the 1969 loss of $1.952,022,000 and was the first time in history that fire losses exceeded $2 billion for any year.

Fire losses in December alone were $224,025,000, up more than 41 percent from the November total of $158,486,000 and nearly 25-percent higher than the December 1969 loss of $179,430,000.

Included in the December 1970 total is the multi million-dollar fire loss at the Humble Oil refinery in Linden, N. J.

The estimated fire losses include an allowance for uninsured and unreported losses. . . . △

Smoke Dispersal Determines When to Burn

A system for regulating burning of logging slash based on smoke dispersal conditions was completed and placed into effect in 1969 by all fire control agencies in western Oregon and was continued in 1970. It gives foresters guidelines for slash burning based on weather conditions and the proximity to major population centers. The system was developed jointly by the Pacific Southwest Forest and Range Experiment Station and the Pacific Northwest Region of the Forest Service with the cooperation of the Oregon State Forestry Department, Oregon Forest Protection Association, Bureau of Land Management, and the Bureau of Indian Affairs.

Under this system unlimited burning is permitted when winds will carry the smoke directly away from the more heavily populated areas. If winds are variable or toward a designated "smoke sensitive" area, burning is limited by factors such as distance from the area, anticipated elevation of smoke layer, and the depth of air currents through which the smoke will mix.

The Oregon Department of Environmental Quality has entered into a Memorandum of Agreement with the above agencies to implement this cooperative slash smoke management plan to minimize slash smoke accumulation in designated areas of high population density. The Forest Service's Northern Region has initiated a similar system. △

Films To Fight Fires By

A new Forest Service training film, "Sector Boss," was distributed to field offices during 1970. The film places emphasis on the sector boss as the key man in the middle of the line overhead organization. The film's purpose is to strengthen leadership, tactical performance, and cost consciousness of overhead engaged in fire suppression. The 16mm. color and sound movie runs approximately 30 minutes.

Another fire training film, "Nine Out of Ten", was released about April 1971. This 30-minute film shows 10 essentials for improving fire prevention in action and is aimed at improving the prevention performance of field forces.

"May Day" is the latest fire training film produced by the Northeastern State Foresters in cooperation with the USDA Forest Service. Its theme is the efficient use of heavy equipment on fires, and it is designed to motivate and inform. This training package includes automated slide-tapes providing specific training on selected heavy equipment.

How Do You Get a Film?

Prints of these films may be obtained for free loan from any Forest Service Regional Office and from many cooperating State film libraries. For additional information on borrowing or purchasing prints, write to USDA Office of Information, Motion Picture Service, Washington D.C. 20250. △

Region 3 word and symbol fire prevention poster, "Use Your Ashtray".

SYMBOLS for Prevention Signs

Franklin O. Carroll

Symbols are supplementing some worded fire prevention posters in Region 3. For the past year, the region has been using newly-developed fire prevention posters containing both words and symbols. Symbols may soon replace some of those posters entirely.

The symbol poster has two major advantages. It can be made large enough to be visible along high-speed roads, and the symbol carries a complete fire prevention message.

The principal disadvantage is the need to teach the public the meaning of each symbol. We are in the public education stage now, using the combination word-symbol posters.

Because the people in Region 3 are constantly exposed to the word-symbol posters, they will understand symbol-only posters much sooner than people from outside the Region. For this reason, roads supporting local traffic will have symbol-only posters by 1972, while major roads and highways will require word-symbol posters until the symbols are recognized nationwide. △

Forester, Div. of Fire Control, Region 3, Albuquerque, N.M.

Exhaust Particles

How Many Fires Do They Start?

J. L. Hickman

This article is excerpted from Floyd D. Maxwell and Charles Mohler's "Interim Report No. 1. Exhaust Particle Ignition Characteristics." The report deals mainly with plans for study.

For many years firefighters and research scientists have suspected that many fires are ignited by exhaust particles from locomotives. However, only a few such fires have been positively identified.

In an effort to find out if many fires are started by exhaust particles, the San Dimas Equipment Development Center and the Pacific Southwest Forest and Range Experiment Station, Riverside, Calif., are jointly conducting a project to study ignition characteristics of exhaust particles.

Ignition Characteristics: How Particles Burn

Knowledge of where and how an exhaust particle is formed will be essential to be able to predict its ignition characteristics. In addition, other characteristics of the particle will have to be defined: How it is ejected from the engine, how it contacts the forest fuel, and how the state of the forest fuel affects it.

Areas of Study

There are two main areas of research that will probably be the most difficult. One is concerned with how these particles are formed and what they are made of. The other is concerned with the aerodynamics and thermo-chemical processes of the particles after they leave the exhaust pipe.

Immediate study in this project will be concentrated in:

Collecting controlled particle samples and beginning the testing of them; 1. continuing chemical analyses of the particles, and 2. determining particle trajectories and continuing their analysis.

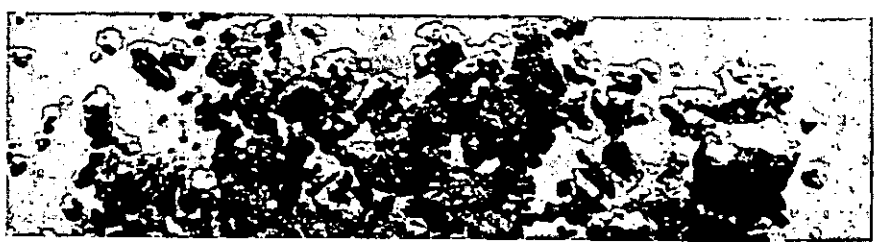
Equipment has been developed to simulate exhaust emissions. It can produce exhaust particles up to ½-inch dimensions and can operate at temperatures up to 1800° F. This equipment will be used to demonstrate possible particle trajectories, to demonstrate the hazardous effects of combinations of particles and forest fuel conditions, and to help establish conditions for further study.

Some Work Has Been Done

Maxwell and Mohler have revealed two factors that appear to vary significantly from previous assumptions—the amount of liquid diesel fuel contained in the particles and the behavior of that fuel in some particles. Laboratory experiments revealed liquid fuel content as high as 30 percent of the total weight of some samples. Boiling of the liquids occurred at approximately 375° F. and ignition occurred at approximately 750° F., much less than the temperature of the exhaust. Flaming combustion continued for more than 30 seconds after ignition in a number of cases. Therefore, it would appear that a particle can undergo cycles of flaming and glowing combustion even longer than 30 seconds after leaving the engine as part of the exhaust. The authors have yet to determine what condition forest fuels must be in to be ignited.

A Beginning

The questions have been asked, methods of study have been determined, and work has begun. Maxwell and Mohler will report on the progress of this study in the future. △



Forester J. L. Hickman works with equipment development in the Aeronautics and Equipment Branch of W. O. Div. of Fire Control.

Simulator Training Is Refined In Florida

Florida Division of Forestry, Fire Control Bureau

The first forest fire simulators were constructed for the Forest Service, and, perhaps because of severe mountain fire problems in the National Forests, most early simulation dealt with the handling of masses of men and overall fire strategy. In the fire-plagued South, however, the emphasis does not necessarily have to be on major fires. On any major fire there is usually an abundance of skilled, experienced supervision. One of the big training needs in the South is to improve the inexperienced ranger in his initial attack efforts on the other 95 percent of the fires. These same tactics are applicable to a segment of a project fire.

Initial Attack Emphasized

Florida has been concentrating on initial attack training for several years in an attempt to cope with a turnover problem within firefighter ranks. In simulations, some typical items were stressed: selecting the proper apprach to the fire, scouting the fire, packing equipment in safe places, calling for help early when appropriate, and selecting a suppression tactic appropriate to the occasion. This last item gave us a lot of trouble.

We now believe that a solution is in sight. And like most worthwhile things, the answer is no single key or breakthrough but several things adding up to a new answer.

We decided to compile the Florida Division of Forestry's "Suppression Papers." This series of papers was begun in 1968 in an effort to collect and assemble all that was currently known about suppressing wildfires in the State of Florida. These papers were written by some of our most experienced and succcessful firefighters. These men set up fire situations containing varied inputs on weather, fuel, and fire behavior. The "Suppression Papers" are the result of the work of these men and represent their average answers of appropriate tactics.

Two Important Considerations

Two important considerations were recognized. First, the proper tactic depended largely on spotting (fig. 1) which was directly related to (a) relative humidity, (b) wind velocity, and (c) buildup. Secondly, we realized that for this purpose a "fuel type" was not a botanical feature but was only how the fire burned. In this concept, a pine plantation might be either a grass fire or a dense pine fire depending on what was happening. Likewise, a turkey oak scrub fire could be a grass fire or a blowy-leaf fire by our definitions.

We then made up several specific tactical charts (fig. 2). A set of rough charts was field tested on 180 fires during the winter of 1969-70 and found to be 66-pecent correct the first time. These charts will be refined in 1970-71.

How the Problem Is Played

In our system, the student in the simulator looks at the customary aerial or panoramic view but, at the same time, sees a second, close-up projection of the fuel type involved in the corner of the screen (fig. 3). Weather conditions are stated and the umpire has matching tactical charts from the "Sup-

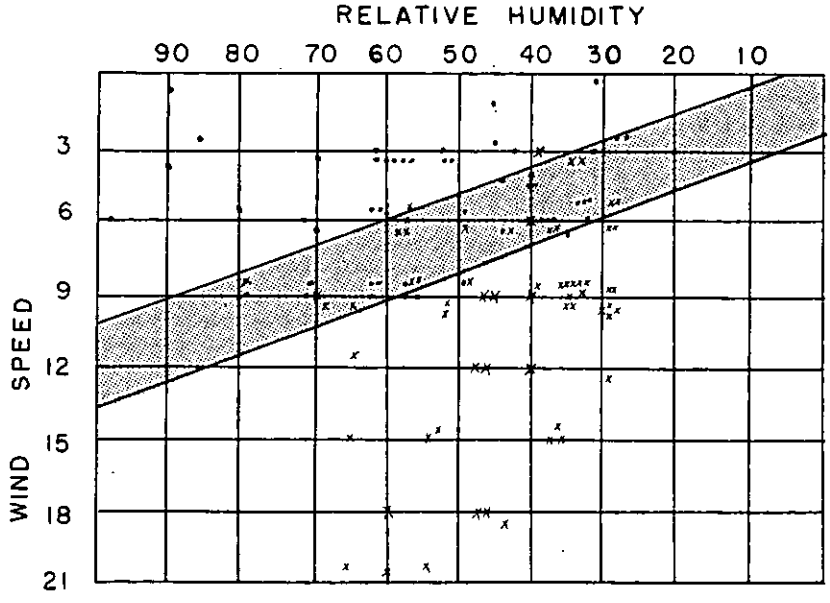


Figure 1—Spotting of wildfires in Florida as a function of windspeed and relative humidity.

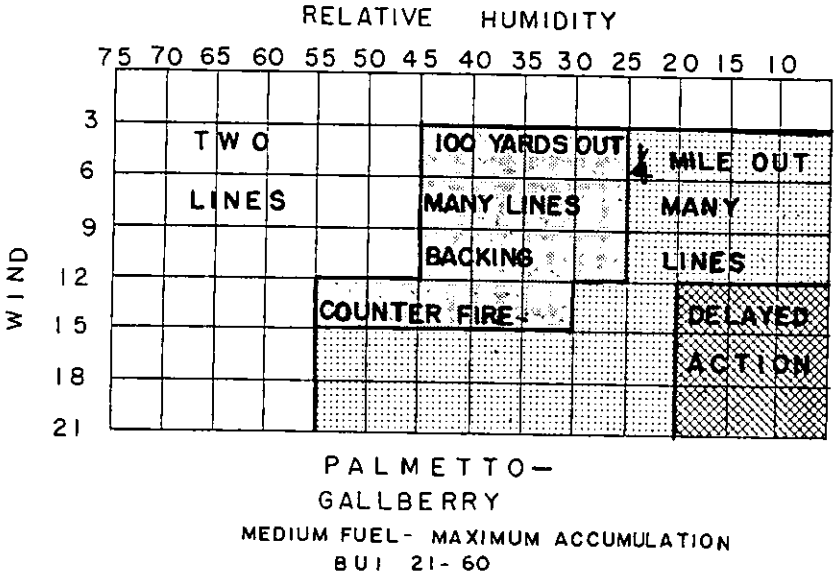


Figure 2—This is a tactical chart. It shows fire suppression activity based upon windspeed, relative humidity, and fuel type and condition.

pression Papers" in his hand. As soon as the weather conditions are stated, all role-players immediately recognize the situation as either a Category A (no spotting), Category B (short spotting), or Category C (long spotting), and the problem is played accordingly.

Overly conservative students' responses are criticized for wasting timber and time. Such inadequate tactics usually result in the fire escaping across control lines. Reasonable responses meet with success.

Problems often arise when simulators are sent on the road without Division supervision. There is a regrettable tendency on the part of some simulator operators to "put down" the trainee.

Figure 3—Student viewing customary panoramic view of the fire location, showing barriers and forest types. The new, second view, in the lower left corner, shows the fuel type involved in the problem.

Fight Fires by the Book

The Florida Division of Forestry hopes to print a manual of standard tactics for specific fuel types and weather conditions in Florida, complete with color photographs of fuels which have been typed according to fire behavior. Included in the manual will be problem formats and guides for simulation. Fighting fire "by the book" is not as far off as it has been. △

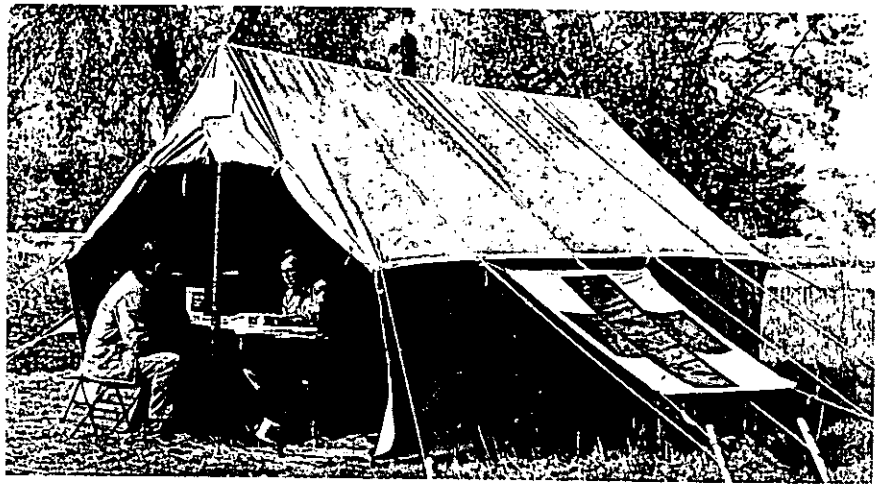
You Can Measure Salt Content Of Retardants

The effectiveness of long term fire retardants increases with the concentration of the active fire-inhibiting salt. With an increased number of in line types of mixing operations in service, it becomes very important to have quality control at each retardant base to assure maximum retardant effectiveness. Simple field procedures and calibration curves for determining the salt content of retardant solutions now in use have been developed at the Northern Forest Fire Laboratory, Missoula, Mont. You can get research notes describing these procedures by writing:

Intermountain Forest and Range Experiment Station
Northern Forest Fire Laboratory
Drawer 7
Missoula, Mont. 59801

Field First Aid Station

Richard L. Marsalis and
Ray G. Beasley



Field first aid station, note first aid symbol on tent lines for easy identification from the air.

The standard first aid kits are not designed for treating the large numbers of people who may need first aid in natural disasters, civil disorders, or on Class D and E wildfires.

The largest kit available, providing materials to treat about 30 people, is mainly useful for treating cuts and burns but not many other common ailments such as upset stomach, flu, bee stings, poison oak, and colds. Because of these limitations, firefighters have often been transported long distances to be treated by a physician, when the ailment might have been corrected at the work site had the proper first aid supplies been available.

Inconvenience and Costs Evident

The costs and inconvenience of inadequate first aid were shown in Region 1 during the severe 1967 fire season. From August 12 through September 12, there were 342 injuries. Of these, about 30 percent, 101 individuals, could have been treated with first aid. Since proper medication and supplies were not on hand, all these cases were sent to a physician at considerable expense in medical fees, lost time, and administrative costs.

In 1968 this Center was given the assignment to develop a first aid station for treating large numbers of men in the field. Station design and selection of supplies was based on information provided by various Regions, analysis of injury records, and consultation with a Department of Agriculture physician, Dr. Lee Buchanan. The U.S. Army Medical Center, Fort Sam Houston, Tex.; U.S. Army Medical R&D Center, Fort Totton, N. J.; Department of HEW; and Office of Civil Defense also contributed to the project.

While the station developed will mainly be used by Fire Control, requirements of other users were also considered. For example, the tent package may not be necessary for some fire camps, but would be a necessity if the station were used in Civil Defense and natural disasters. One of the main objectives of the project was to provide a complete first aid outfit ready to go at a moment's notice.

The Prototype

A prototype station was field tested in 1969 and 1970 in Regions 1, 2, 4, and 6. Test results indicated use of the station could effect considerable savings. For example, the station was used for 13 days on a 500-man fire in Region 2. An average of 21 men were treated each day, for a total of 273. Six of these men were sent to a physician for additional treatment.

At least 98 other men would have been sent to a physician had the first aid station not been available. Treating these 98 additional men would have cost about $450 each, for a total of nearly $45,000. Total cost of the station and its operation was estimated to be about $2,500.

Furthermore, many men were spared the wait for transportation and medical care.

Field first aid station, side flaps up.

R. L. Marsalis is a forester and R. G. Beasley, an equipment specialist. Both are at the Equipment Development Center, Missoula, Mont.

The first aid station consists of six separate units weighing a total of 500 lbs. The station is designed and equipped so the emergency medical technicians are self-sufficient and require only food from the fire camp. The outfit will fit in a station wagon, or it can be delivered by helicopter or parachute. Medication and bandages are packaged in waterproof, dustproof containers. Once a location has been selected, two men can have the station operational in about 1 hour. A brief description of the units is as follows:

Unit 1: Medical Supplies—Medication, dressings, and instruments for first aid treatment of minor injuries, stomach disorders, colds, flu, bee stings, and so on. Two emergency medical aid manuals are supplied.

Unit 2: Utility Pack—Tools and equipment for maintaining the station, including waterbag, lanterns, flashlights, tool kit, and so on. Unit 2 also includes a special emergency kit for treating patients who may have to be taken a long distance from the station.

Unit 3: Tables—Two folding field tables.

Unit 4: Litter Set—Restraints, blankets, and two litters.

Unit 5: Tentage—One 10- by 12-foot wall tent, complete with aluminum poles, stakes, and removable floor.

Unit 6: Supplemental Medical Supplies—Medication, dressings, and supplies most likely to be exhausted when the station is operated for a week or more in a 500- to 1,000-man camp.

Who Runs It?

One emergency medical technician can serve for a 300-man camp effectively, two technicians for 300 to 1,000 men. The technicians should have training well beyond advanced first aid as taught by the Red Cross. Ex-military corpsmen, combat medics, and medical technicians make excellent workers.

If men so trained are not available, the station should be manned by men who have completed a course in emergency medical care offered throughout the United States by the American Academy of Orthopedic Surgeons. This course is 3 to 4 days long and is open to all who hold an advanced Red Cross first aid card.

The field first aid station will be furnished as a complete outfit. Units will not be sold piecemeal. However, all items will be available to restock stations as supplies are depleted. In an emergency, most medications and dressings can be purchased from a local medical supply house or a large drugstore. However, the cost will be considerably higher.

All medicines are specified by both generic name and a common brand name. None of the medications must be refrigerated or handled under Federal narcotics laws. Storage life of most items is at least 2 years.

How to Get One

Region 1 Division of Administrative Services will handle all orders, assemble the stations, and supply individual items for restocking. The first aid stations will be available about July 1971 at an estimated cost of $895 plus shipping and handling charges.

Inquiries should be directed to: USDA Forest Service, Division of Administrative Services, Missoula, Mont. 59801. Users outside the Forest Service who want to provide similar aid stations, can secure assembly instructions and packing lists from the USDA Forest Service, Equipment Development Center, Drawer G, Fort Missoula, Missoula, Mont. 59801. △

These Boys Do A Man-sized Job

Since the summer of 1960, boys from the Nevada Youth Training Center, a juvenile detention home, at Elko, Nev., have fought range fires in northern Nevada. In 1966 the fire crew picked as their symbol the falcon and became officially known as the "NYTC FALCON FIRE CREW." Through agreement, NYTC wards have been trained, equipped, and paid by the Nevada Division of Forestry as a professional firefighting force.

Because of high turnover, training must be continuous. Once a boy is accepted and placed on the fire roster he is given rugged physical training 1 hour a day, 5 days a week, throughout the fire season. The size of the work force varies from 30 to 40 boys organized into 10-man crews.

NYTC crews are used mostly for initial attack and follow-up on private land fires in Elko county, but in recent years they have been used extensively by Federal agencies. During the summers of 1965 and 1966 they assisted the BLM and Forest Service on 34 fires. △

Progress Sparks Remote-Sensing Seminars

Nationwide demonstrations of the latest techniques in airborne detection and mapping of forest fires were given in May and June by Forest Service scientists.

Seminar Series

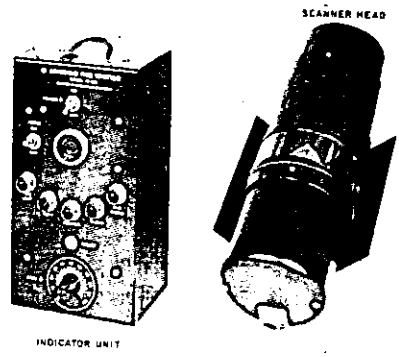
A series of fire research seminars was held at the three forest fire laboratories — Macon, Ga., May 4-6; Riverside, Calif., May 25-27; and Missoula, Mont., June 1-3. The seminars demonstrated remote-sensing devices and techniques to more than 100 fire control specialists from throughout the United States and Canada.

The seminars were made possible through outstanding progress in the development of remote-sensing systems at the Northern Forest Fire Laboratory at Missoula. An instructor team of specialists from the Fire Scan and Skyfire research projects explained and demonstrated techniques and equipment for rapid and precise locating of small fires, mapping details of large fires, and tracking and measuring lightning storms and lightning discharges. A Canadian fire scientist, who has been participating in the program, was an instructor in operations research methods for forest fire detection.

Chief Cliff Commented

"We believe," stated Chief Cliff before the seminars began, "that the technology stemming from this research has a great potential for aiding in the solution of critical forest fire problems and in reducing the severe fire losses experienced recently in several forest regions. The seminars also will facilitate application of new methods now ready and will provide fire control managers with the needed background for use of advanced aerospace fire intelligence technology expected to result from Forest Service fire research programs." △

This airborne fire spotter can be mounted easily on any light aircraft.



INFORMATION FOR CONTRIBUTORS

Please submit contributions through appropriate channels to Director, Division of Fire Control, Forest Service, U. S. Department of Agriculture, Washington, D. C. 20250. Articles should be typed in duplicate and double spaced, with no paragraphs breaking over to the next page.

The title of the article should be typed in capitals at the top of the first page, and immediately underneath it should appear the author's name, position, and organization.

Authors are encouraged to include illustrations with their copy. Illustrations, whether drawings or photographs, should have clear detail and tell a story. Only glossy prints or India ink line drawings are acceptable. Captions for illustrations should be typed in the manuscript immediately following the paragraph in which the illustration is first mentioned, the caption separated from the text by lines both above and below. Illustrations should be labeled "figures" and numbered consecutively. All diagrams should be drawn with the page proportions in mind and lettered to permit reduction. In mailing, illustrations should be placed between cardboards held together with rubber bands; don't use paper clips.

Any length article, up to 3,000 words, is welcome. Use any available editorial assistance; have a friend read your article. We will provide rewrite assistance and final review.

What do we want? Articles about communications, equipment and supplies, chemicals, fuel modification, prevention, suppression, training, and weather △

U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

OFFICIAL BUSINESS

POSTAGE & FEES PAID
United States Department of Agriculture

Smokey Reports

Public Exposure To Smokey Reaches All Time High

Public exposure to Smokey Bear and his forest fire prevention message reached an all time high during 1970. The Advertising Council, Inc., sponsor of the Smokey Bear program, reported a dollar value of $27,645,539 in traceable public service time and space in the United States. Network radio and newspapers represented the principal gains in exposure.

Search Is on For Smokey Successor

The Forest Service has begun the search for a successor to the living Smokey Bear, who celebrated his 21st birthday last spring. Smokey has resided at the National Zoo in Washington, D. C., since his rescue from a forest fire in the Lincoln National Forest of New Mexico. Ideally, Smokey's heir will be a brown-phase American black bear cub, with "wildfire-related experience," though the cub doesn't need to have been injured as Smokey was.

"Vanishing American" Adapted For Canada

The "Vanishing American," a Smokey Bear television spot released in 1969, has taken on an international flavor. This dramatic "commercial" has the camera sweeping up a tall pine tree to sound effects of 100 years of history. With the help of Foote, Cone, and Belding Advertising Agency's Toronto office, this spot announcement was fitted with a new sound track featuring Canadian historical events. The "Vanishing Canadian" was released in the spring of 1970. △