

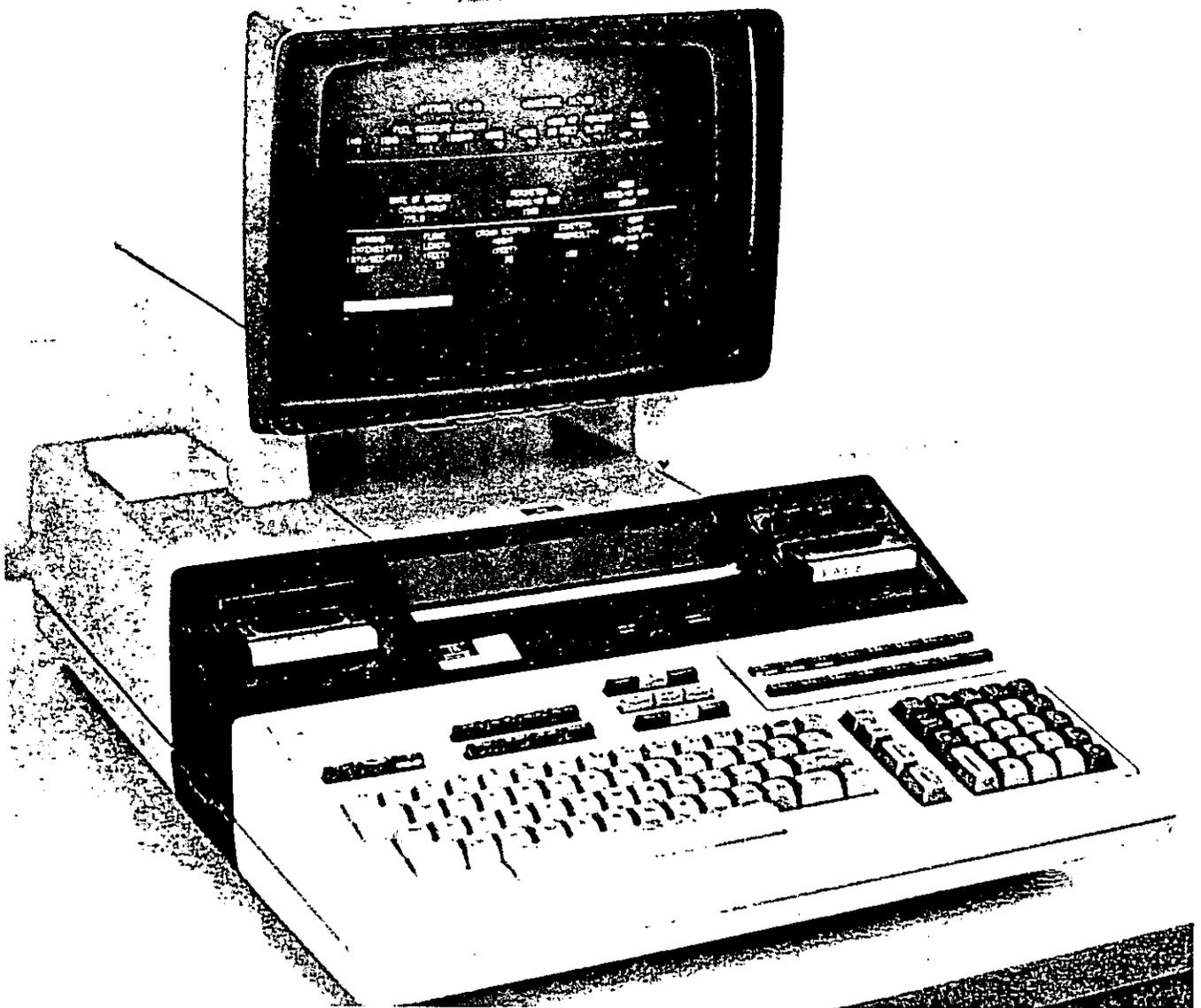
United States
Department of
Agriculture

Forest Service



Fall 1981
Volume 42, No. 4

Fire Management Notes



Fire Management Notes

An international quarterly periodical devoted to
forest fire management

United States
Department of
Agriculture
Forest Service



Fall 1981
Volume 42, No. 4

Contents

- 3 The Fire Management Electronic Age
Fred McBride
- 6 Selecting Fire Prevention Program Objectives: One
Aspect of Effective Program Planning and
Evaluation
G. Richard Wetherill
- 8 Determining the Role of Fire in Young Upland
Hardwood Stands
Jimmy C. Huntley
- 9 Cooperative Effort Improves Fire Shelter
Arthur H. Jukkala
- 11 FIRESCOPE
Robert L. Irwin
- 13 Recent Fire Publications
- 14 A Cost-Saving Concept for an Old Problem in Florida
Jim Whitson
- 15 Mobilized Fire Simulator in Wyoming
Michael H. Gagen

Fire Management Notes is published by the Forest Service of the United States Department of Agriculture, Washington, D.C. The Secretary of Agriculture has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through September 30, 1984.

Subscriptions may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The subscription rate is \$7.50 per year domestic or \$9.40 per year foreign. Single copy cost is \$2.00 domestic and \$2.50 foreign.

NOTE—The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader. Such use does not constitute an official endorsement of any product or service by the U.S. Department of Agriculture.

Send suggestions and articles to Chief, Forest Service (Attn: Fire Management Notes), P.O. Box 2417, U.S. Department of Agriculture, Washington, DC 20013.

John R. Block, Secretary
U.S. Department of Agriculture

R. Max Peterson, Chief
Forest Service

L.A. Amicarella, Director
Cooperative Fire Protection

Francis R. Russ,
General Manager

Cover: A graphics computer terminal used by the fire dispatcher at USDI, Bureau of Land Management's Vale District office, Vale, Oreg.

The Fire Management Electronic Age

Fred McBride

Chief, Branch of Fire Management, USDI Bureau of Land Management, Washington, D.C.

The graphics computer terminal at the fire dispatcher's side begins to hum (*see cover*). A map is printed and a lightning storm is pinpointed in the NW quadrant. Five hundred cloud-to-ground lightning events have been received in the past 45 minutes. Each strike is evident by a small cross which accurately locates it on the map. The dispatcher homes the light cursor on the graphics display terminal to identify the primary interest area, hits a key, and the terminal begins humming once more. First a new enlarged map appears with roads and towns and lightning strike locations identified; next the associated fire weather appears listing the temperature, relative humidity, wind speed, and fuel moisture from the nearest remote automated weather station (*fig. 1*). The weather information provided is the hourly weather for the last 24 hours. Finally with one more touch of the terminal keys, the fire behavior predictions appear. Now, in a matter of minutes the dispatcher knows the probability of a specific lightning event causing a fire, how the fire will behave if it does start, and what the acreage will be at the end of the first hour if a fire starts.

This summer, the USDI Bureau of Land Management (BLM) will test an electronic system for fire suppression in Vale, Oreg., that will make the above scenario a reality. Using existing lightning de-

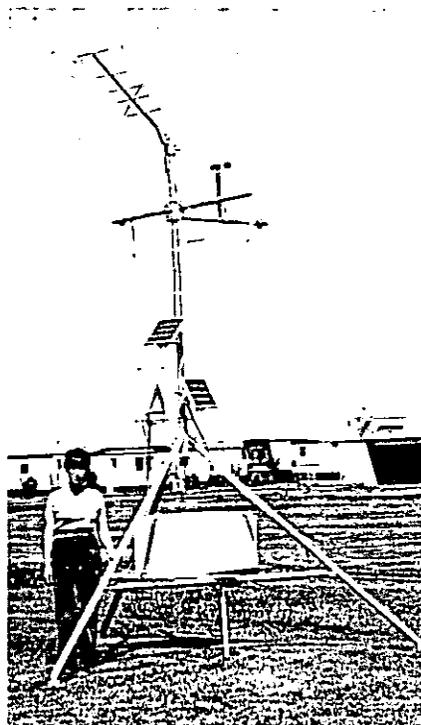


Figure 1.—A remote automatic weather station at the Boise Interagency Fire Center, Boise, Idaho.

tection equipment (*fig. 2*), remote automated weather equipment, and existing computer fire behavior models, the new system will provide local fire managers with the information necessary to make accurate judgments on how to respond to a potential fire threat.

Lightning-caused fires have always been a factor in the natural process that modifies the vegetative cover. During the pre-European period, in what is now the United States, fires took their natural

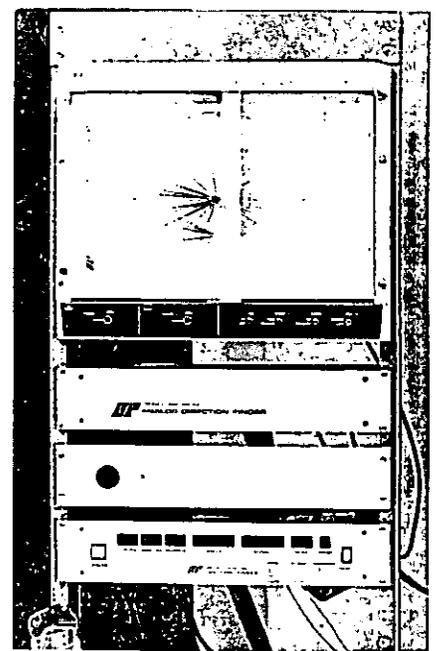


Figure 2.—Lightning direction-finder equipment in dispatcher's office.

course and altered the plant communities on hundreds of thousands of acres annually. Europeans settling the country before 1900 allowed wild fires to run their natural courses and also used fire as a tool to clear the land and as a weapon of war. However, a series of devastating fires in the late 1800's and the early 1900's killed many people and destroyed property on millions of acres. From 1910 until 1970 everyone in the fire community worked on better and more sophisticated methods of suppressing fires. Since the early 1970's, however, there has been a

resurgence of scientists who say that fire is an essential part of the ecological sequence and espouse its use to properly manage the natural system.

Fire began to be applied by human beings on a limited basis through the use of controlled burns. These burns were tightly controlled, ignited under the most favorable conditions, and were usually very small in size. It was evident these fires would never provide the large vegetative changes that were once part of the natural scene. Fire people, with limited knowledge, were unwilling to allow fires to become large. Meanwhile, more and more grasslands were being converted to pinyon-juniper stands as these hardy conifers invaded the open areas. Sagebrush thrived on areas that once had been tall grasses. Park-like stands of timber became clogged with fallen trees and thick stands of undesirable tree species.

In 1974, as part of an effort to improve fire suppression capability, BLM launched a campaign to detect more of the lightning fires. The objective was to detect the fires before they became conflagrations. This effort was directed toward the control of fires while they were still small. By 1978, BLM had a basic lightning detection system in place. This system covered the entire western United States and Alaska (fig. 3). Lightning data were being sent to every BLM office in a near real-time operation. Other agencies were being provided with the information on a request basis.

The amount and accuracy of the information the lightning system provided was astounding. The demand for the information was overwhelming. Air traffic controllers wanted the information to reroute large jet airliners around severe lightning storms; electric companies wanted the information to identify areas of probable storm

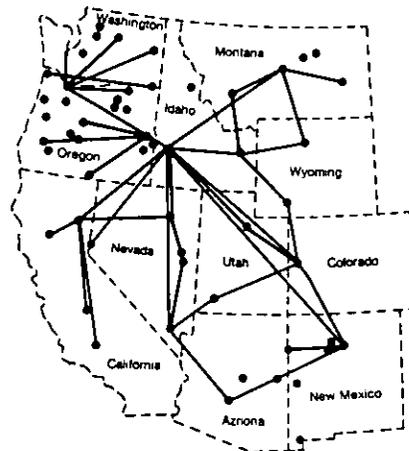


Figure 3.—Locations of lightning detection equipment in the western United States.

damage. The military wanted the information so they could prepare for power failures. The Severe Storm Laboratory of the National Weather Service also wanted the information to forecast severe storms and confirm severe storm conditions. Meanwhile, the fire suppression organization was receiving more information than it could efficiently handle. The number of interested users far exceeded the distribution capability. The number of lightning events far exceeded the capability of the organization to react. Something needed to be done if the system was going to be a viable fire tool.

Early in 1979, the Fire Management Branch of BLM in the Washington Office, working with the Scientific Systems Development Division of the Denver Service Center and the Communications Division of the Boise Interagency Fire Center (BIFC), began an analysis of what would be required to make the lightning system the valuable tool that was indicated. It was decided that the system would:

- Require automatic graphic distribution to 52 BLM locations and a minimum capability to distribute information to 1,000 additional users.
- Provide a method to analyze the fire-starting probability of a lightning event.

- Integrate the fire weather information.
- Provide associated weather in the vicinity of the lightning activity.

To meet these design criteria, the people at BIFC decided the system would use a small dedicated computer to integrate the weather information and the lightning information and to calculate the probabilities of fire ignition and fire spread capabilities. The system would also require graphics computer terminals at each field office, and 350 remote automatic fire weather stations throughout the western United States.

By February 1981, the design had been refined to the point that we could proceed with the test of the integrated system in Vale, Oreg. The new system was named the Initial Attack Management System (IAMS). It provides:

- Lightning strike location.
- Storm movement patterns.
- Associated weather information.
- Calculated fire survival probability.
- Calculated fire behavior.

With this information the fire manager has the tools to do the job. A natural-fire-starting event can be anticipated and accurate decisions can be made on the action required.

- By determining if the ignition probability is significant in the interest area the fire manager decides whether or not to preposition suppression forces in the lightning area.
- The fire manager determines the best route to the fire prone area.
- The decision of suppression forces required is dictated by the calculated fire survival and modeled fire behavior.
- By periodically monitoring the fire weather and associated fire behavior, the fire manager can determine whether a specific

fire may be allowed to follow the more natural ecological process and thus begin to reverse the adverse impacts associated with the 60-year-old policy of immediate suppression.

These advancements in electronic monitoring equipment will enhance our fire suppression capabilities and

increase our ability to manage naturally occurring fires. Fires with a potential for disaster will be suppressed in a timely manner, which will result in savings of suppression costs of many millions of dollars. Fires that provide a natural modification of vegetation that comple-

ments resource management objectives can be allowed to proceed. Also, researchers, resource managers, climatologists, and meteorologists will be provided with a new tool to better perform their work. Thus we welcome the electronic age to fire management. ■

The Herman Nozzle—Another Approach to Foam Generation

William (Hank) Herman, Forest Inspector, Gallitzin Forest District, Penn., recently developed a nozzle to generate low pressure foam for controlling wildfires. The increased interest in low pressure foam in wildfire control is a result of the development and use of soap skim (tall oil) as a foaming wetting agent. The Texas Forest Service has successfully developed and tested equipment that delivers fire-fighting foam using soap skim and other foaming agents. Their system has been widely reported in various publications, and units are already in use.

Information on the "Texas Snow Job" was viewed with great interest by Forest Inspector Herman. Using 5 gal. of raw soap skim supplied by Michael L. Axson, Assistant State Fire Coordinator for the State of Indiana, Herman went to work. The result of his efforts is the Herman nozzle (fig. 1).

The Venturi principle is an integral part of the Herman nozzle. A constriction of flow in the nozzle, then an expansion of liquid flow, and an injection of air (using atmospheric pressure) generates the foam by mixing air with the water soap skim solution. All of the items needed to manufacture the Herman nozzle can be purchased off the shelf from plumbing supply or agricultural supply stores (fig. 2). The cost of materials in Central Pennsylvania stores is under ten dollars per nozzle.

The foam generated by the Her-

man nozzle is a little wetter than foam generated by the onboard foam generating systems. Penetration of the wetting solution is very good, and it is very similar to existing systems. Herman uses the nozzle he developed with a standard slip-on tank and pump unit. The unit is a 150-gal fiberglass tank and the pump is a Wanner model A10F8 pump. The hose is standard 3/4 in rubber booster fire hose.

As review, when using soap skim, the soap must first be diluted by one half with water. Herman suggests using warm water when mixing soap skim which is viscous and difficult to mix. After the soap skim is mixed, it should be used as a 1 or 2 percent solution in a standard slip-on tank. For a 150-gal tank 1.5 to 2 gal of the diluted soap skim is mixed in 150 gal of water, yielding the desired foaming agent.

Herman is currently testing the idea of using foam along the edge of bulldozed and dug hand line safety strips, and using this as an anchor point for burning railroad safety strips. Herman is also testing a foam nozzle which can be used with a back pack tank. The possibilities for using foam in wildfire control are many, from initial attack to mop-up.

Materials needed to fabricate a Herman nozzle are:

Quantity	Item Description
1	3/4 in plastic syphon pickup (suction type water drainer)
1	3/4 in garden hose to 3/4 inch pipe thread

2	adapter—P.V.C. Ron Vik washer strainers, 3/4 in garden hose, 20 x 20 mesh (used in Parco Back Pack Tanks)
1	3/4 in pipe thread male to 3/4 in P.V.C. sleeve
1	3/4 in hose thread to 3/4 in pipe thread double female brass adapter
1	10 in piece of 3/4 in P.V.C.

For more information, contact: William (Hank) Herman, Forest Inspector, Hollidaysburg Veterans Home, c/o D.E.R.—Bureau of Forestry, Hollidaysburg, PA 16648, (814)696-0129.

Robert Davey,
Staff Forester West,
Division of Forest Fire
Protection,
Harrisburg, Pa. ■

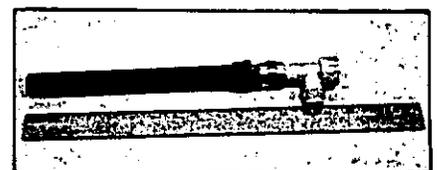


Figure 1.—The Herman nozzle.

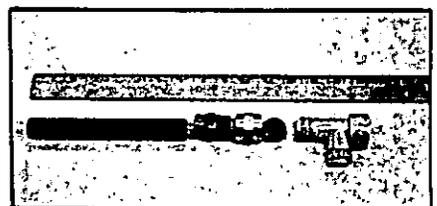


Figure 2.—A disassembled Herman nozzle.

Selecting Fire Prevention Program Objectives: One Aspect of Effective Program Planning and Evaluation

G. Richard Wetherill

*Sociologist, Southern Forest Experiment Station,
USDA Forest Service, Starkville, Miss.*

One problem plaguing fire prevention personnel is that a prevented fire is no fire at all; it is a "non-event" and is difficult to measure. Fire prevention personnel need a system of measurable objectives that will adequately reflect their progress in reducing wildfires.

For this discussion, "goals" and "objectives" are not words that should be used interchangeably; technically, goal is the much broader concept. Goals are general, long-range, and difficult to measure, whereas objectives are more specific statements of what is intended, in terms that make measurement more feasible.

A diagram of a process for establishing objectives is shown in figure 1. Programs begin with a stated recognition of needs. Individual, organizational, and community needs are placed in parallel channels. For example, needs to be considered in planning a program might be: clearing forest undergrowth, managing agency resources more effectively, and maintaining or enhancing scenic beauty. These needs are then filtered to screen for institutional purposes, feasibility, and interests of the clientele. Ultimately, by this process the goals that emerge offer specific direction for establishing measurable objectives. Therefore, program goals are met through the attainment of several program objectives. If progress toward a pro-

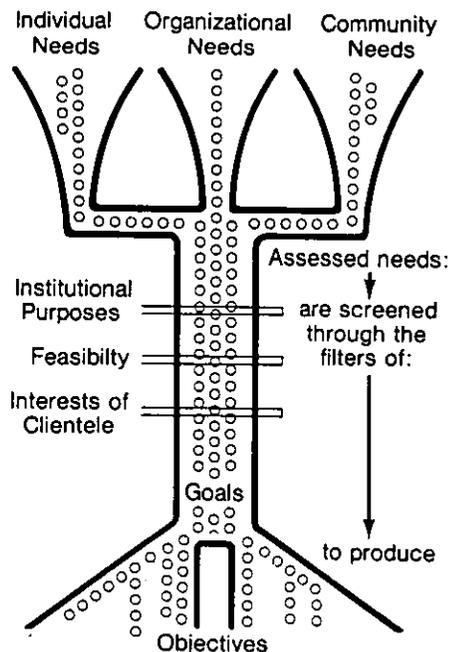


Figure 1.—A diagram of a process for establishing program objectives.

gram goal such as "prevent forest fires" cannot be measured, then the best option lies within the realm of measuring specific objectives used to attain the overall goal.

Objectives are specifically achievable efforts. To adequately document progress toward the objectives, specific desired behavioral outcomes must be stated. For instance, consider an actual public information program for children ages 6 through 15. The goal of the program is to tell young people how the Forest Service functions,

to explain the costs and hazards of wildfires, and to describe the impact of fires on community, schools, and the environment. Seven objectives can be stated for the single overall goal of providing information:

1. Encourage young people to be more careful with fire, especially during fire season.
2. Make them aware of the cost of wildfires and how it affects the public.
3. Explain the Forest Service position on prescribed burning.
4. Explain how the Forest Service operates—budget, organization, etc.
5. Explain fire dispatching, suppression, equipment, crews, etc.
6. Encourage the reporting of fires or smokes.
7. Explain how the public can help the Forest Service stop incendiary fires.

These "process objectives" can be easily measured in terms of whether they were presented in the program.

Most program objectives should be "product-oriented." In other words, they should identify specific behavioral or attitudinal changes the program is designed to accomplish. Specific objectives might be worded as in the following:

At the end of the program, participants will know how to:

1. Properly build and extinguish a campfire.
2. Report a fire.
3. Define litter.
4. Define vandalism.
5. Identify the reasons why some fires are good and some are bad.
6. Differentiate between incendiary and prescribed fires.
7. Prevent carelessness with fire (e.g., playing with matches, throwing away lighted cigarettes, etc.).

While progress toward product-oriented objectives is somewhat harder to measure than progress toward process-oriented ones, the product-oriented objectives often yield tangible proof of program effectiveness. Simple tests can be constructed to measure progress. The discrepancy between planned outcomes (objectives) and actual outcomes can then be examined to see which parts of the program are succeeding and which are falling short.

Good objectives are not hard to select. It is necessary, however, to state them specifically enough to

allow evaluation. Information about programs, progress toward goals, and program directions are important factors to consider in planning, developing, and conducting prevention programs. Specifying objectives of fire prevention programs in measurable terms will contribute to meeting them.

Literature Cited

Knowles, M. S. *The modern practice of adult education: androgogy versus pedagogy*. New York: Association Press; 1970. 147p. ■

Need Help With Fuels Appraisal?

“The Activity Fuel Appraisal Process: Instructions and Examples” (General Technical Report, RM-83) is a recent publication by Stanley N. Hirsch, David L. Radloff, Walter C. Schopfer, Marvin L. Wolfe, and Richard F. Yancik.

How many times have you, as a Forest Manager, been faced with the tricky decisions regarding how to best handle slash and other residues? To remove these activity fuels (fuels created by man’s activities, such as logging, road building, etc.), your choices range from prescribed burning to crushing or hauling from the site.

Uncertainties generally complicate these decisions. A wildfire may never occur in the given area; or if one does, the ignition source and location, the specific weather at the time, the resulting fire behavior, and the final size at which the fire is controlled, are all uncertain.

This publication presents a procedure that considers important uncertainties in evaluating alternative fuel treatments, and gives a hazard index for each treatment expressed as probable acres burned. The resulting decision tree utilizes fire and weather records

and fuel and fire behavior models.

The manager supplies estimates for (1) fire occurrence rate, (2) fireline intensity, (3) fire spotting behavior, and (4) fire size. Tracking these data through the procedure, the manager arrives at potential acres burned for each treatment (including a “do nothing” option) and is equipped to choose the treatment that best fits the management plan.

Resource manager, administrators, and landowners responsible for managing forested lands will find this paper valuable in selecting the best treatments for activity fuels to decrease fire hazard and meet resource goals.

This publication is available from Rocky Mountain Forest and Range Experiment Station, Publications Distribution, Drawer A, 240 West Prospect Street, Fort Collins, CO 80526. ■

Determining the Role of Fire in Young Upland Hardwood Stands

Jimmy C. Huntley

Wildlife Biologist, Silviculture Laboratory, Southern Forest Experiment Station, USDA Forest Service, Sewanee, Tenn.

Various harvesting methods have often failed to adequately regenerate oak forests on good hardwood sites, so a study was established on the Southern Cumberland Plateau to determine if fire had played a major role in the establishment of existing oak stands. More specifically, the objective of the study was to determine if the fire affected species composition and dominance in young hardwood stands that developed after clearcutting.

Three stands—4-, 5-, and 6 years old—were prescribed burned. Pre-burn and postburn data were collected to determine species density, frequency, composition, and dominance. The successional changes of one unburned 5-year-old stand were also monitored.

Data 2 to 4 years later showed that an oak component is present in the burned and unburned stands, but that oak does not dominate as in the original stands. Yellow-poplar is substantially more abundant in the new stands.

The single prescribed burns had large initial effects on stand density and structure but long-term effects appear minimal. After burning, changes in species composition occurred but they were small and oaks were not appreciably favored (*fig. 1*). Small

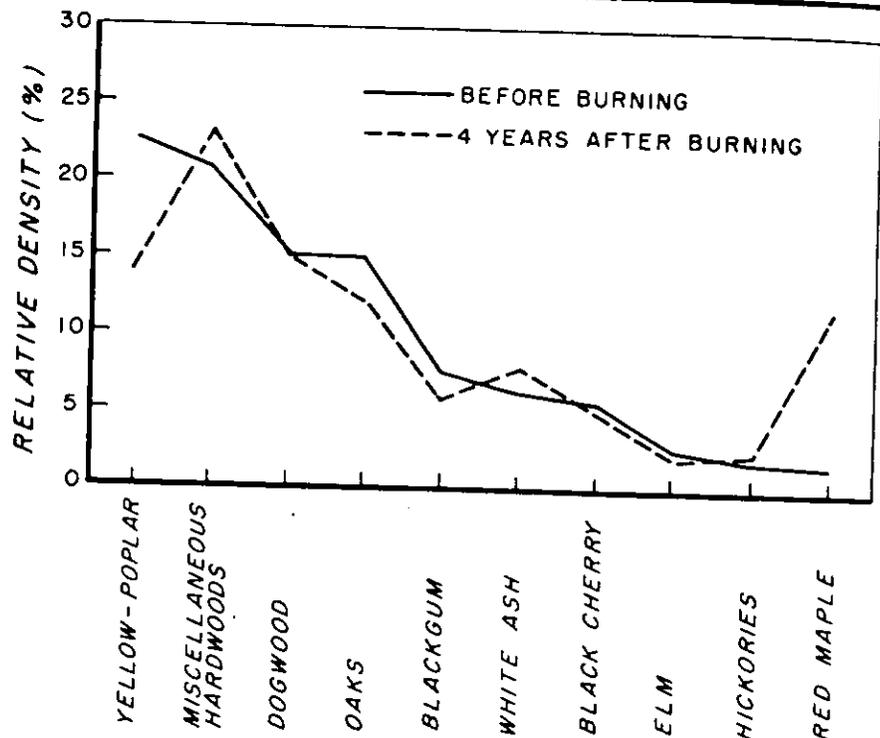


Figure 1.—The relative density of woody stems, greater than 1.4m in height, before and after burning of 5-year-old hardwood stand.

changes in species composition of a young stand may be amplified as the stand matures and some species now dominant become relegated to the understory or midstory. Presently, many species appear in sufficient density to dominate the ultimate stands.

The fires increased wildlife food availability by increasing the

amount of woody and herbaceous vegetation near the forest floor. The greatest detrimental impacts of burning were loss of 4 to 6 years' growth and possible lowering of timber quality. When hardwood stands are burned at very young ages and complete topkill occurs, the loss of growth and stem quality will be minimal. ■

Cooperative Effort Improves Fire Shelter

Arthur H. Jukkala

Equipment Specialist, Equipment Development Center, USDA Forest Service, Missoula, Mont.

For years the fire shelter has been the basic protection for firefighters caught in entrapment situations. Recently, the shelter was redesigned to increase its protective capabilities and service life. The improvements are the result of work at the Missoula Equipment Development Center (MEDC) and an employee suggestion by Mark Linane, hot shot crew foreman on

the Los Padres National Forest, Calif.

Linane suggested that the shelters be carried at the side like a canteen instead of around the waist (*fig. 1*), making them more accessible and speeding deployment. He found this method of carrying also increased shelter service life.

Concurrently, with Linane's suggestion, MEDC was being funded to determine if advances in technology had made possible material or design improvements.

Work at MEDC verified that the existing materials were the best available. One design change was made. A 6-inch skirt was added along the sides of the shelter. The skirt will help a firefighter inside the shelter keep it on the ground. The Ship Island entrapment incident on the Salmon National Forest in Idaho in 1979 in which one firefighter died indicated the need for this holddown feature.

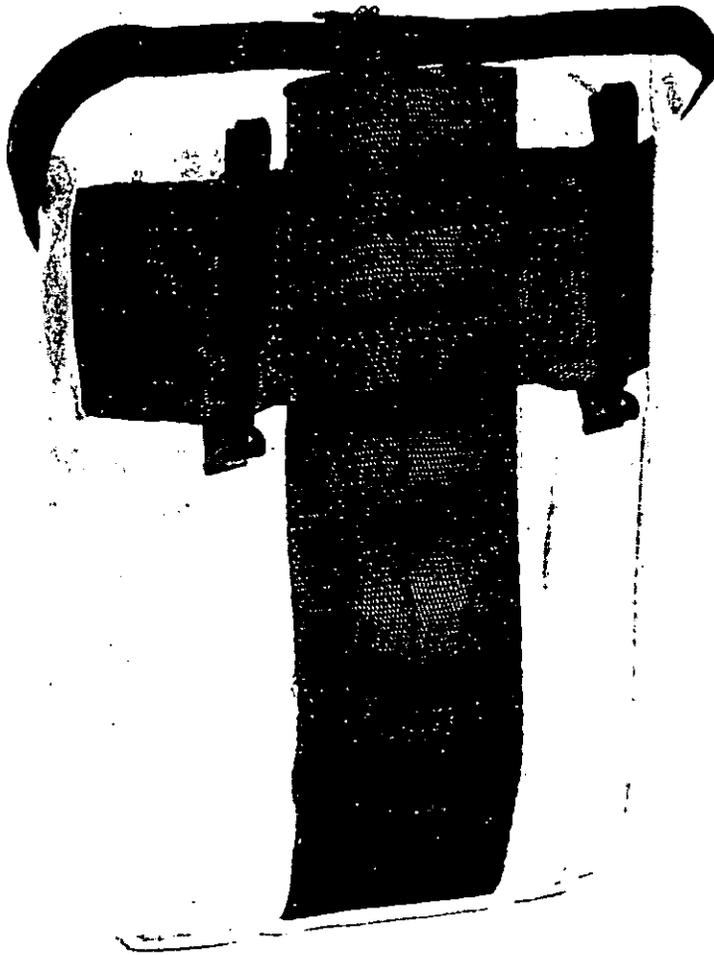
MEDC also studied different methods of folding and carrying the shelter to reduce the flexing and abrading that cut service life. A better way to fold the shelter was found. The result was a more compact shelter, so a new carrying case was needed.

With the help of Linane's experience, MEDC designed a new case. It has five advantages over the old one:

- It requires less material.
- It clips on to any belt and can be carried vertically or horizontally (*fig. 2*).
- It allows more rapid shelter deployment.
- The new carrier allows better folding which reduces wear and tear and increases shelter service life.



Figure 1.—The improved shelter is more compact.



- The carrier will attach to fireline gear carrier being developed at MEDC.

The improved shelter is a good example of how field and equipment development people can work together to improve firefighting equipment. ■

Figure 2.—Clips on the new carrier allow the shelter to be carried vertically or horizontally.

Thirteen Prescribed Fire Situations That Shout Watch Out!

1. *You are burning with a plan that has not been approved by the appropriate line officer.*
2. *You are not a qualified burning boss but have been told to go ahead and burn.*
3. *The objective of the burn is not clear.*
4. *There are areas of special concern within the burn that cannot be burned.*
5. *Private land or structures adjoin the burn.*
6. *You are uncomfortable with the prescription.*
7. *You have not requested spot weather forecasts.*
8. *You decide a test fire is unnecessary.*
9. *You decide all your people are old hands and no briefing is necessary.*
10. *Escape probability is small so you don't bother with escape planning.*
11. *You, or the firing boss, are beginning to lose control of your torch people.*
12. *Mop-up and patrol instructions are not specific or understood by the mop-up boss.*
13. *You haven't lost one in a long time and are starting to feel smug.*

John Maupin, Fire Staff Officer, Ochoco National Forest, USDA Forest Service, Prineville, Oreg. ■

FIRESCOPE

Robert L. Irwin

FIRESCOPE Program Manager, Forest Fire Laboratory, USDA Forest Service, Riverside, Calif.

Wildfires are a part of every southern California summer. The drying heat and winds, combined with the activities of millions of people, make it virtually impossible to prevent them.

These fires must be hit hard and fast—stopped before they burn into populated areas and threaten lives and property. City, county, State, and Federal agencies spend hundreds of millions of dollars each year for firefighters and equipment, but it became clear a little over a decade ago that the availability of large numbers of firefighters and their advanced firefighting machines was not enough.

In 13 days of September and October 1970, fires in southern California burned over half a million acres, destroyed 772 homes and other structures, and took the lives of 16 people.

In 1971, Congress authorized the U.S. Department of Agriculture's Forest Service to design a system to help the California fire services improve their coordination and effectiveness in multijurisdictional fires and other major emergencies.

The result was FIRESCOPE (Firefighting Resources of Southern California Organized for Potential Emergencies), a cooperative development program involving Federal, State, and local fire services. After a decade of design, development, and implementation, the program is proving that the

southern California multiagency firefighting complex is greater than the sum of its parts.

FIRESCOPE's development started in 1972 with a 5-year design effort, actively supported by the California Department of Forestry and the Office of Emergency Services, the Los Angeles City and County Fire Departments, the Ventura and Santa Barbara County Fire Departments, and the U.S. Department of Agriculture's Forest Service.

In 1977, the partner agencies began the difficult process of developing and implementing the design recommendations under real world conditions. The design was built around four fundamental principles:

- 1) Commonality and uniformity among cooperating agencies improves performance.
- 2) Rapid, accurate, and complete information is essential in an effective management system during a crisis.
- 3) Individual incident control procedures that are designed to complement and support regional coordination systems will improve overall crisis management.
- 4) Modern technologies can be integrated to improve fire service effectiveness.

These principles were translated into three major components and a

group of supporting technologies.

The Incident Command System (ICS) provides a common emergency management organization structure for the agencies that must work together in a crisis. This includes common terminology, uniform procedures, and improved communications techniques. ICS can be expanded efficiently from a first-response, single-agency incident to a major, multiagency response situation. In 1980, ICS was used by more than 120 agencies over a 16-day period on 28 critical fires involving both urban and wildland areas.

The Multi-Agency Coordination System (MACS) integrates the collection, processing, and dissemination of information to improve coordination at the top management levels of agencies involved in the management of a crisis. The system provides a comprehensive picture of the seven-county area, with particular emphasis on the availability of emergency response forces and determining priorities among several incidents that may be competing for scarce firefighting resources (*fig. 1*)

MACS is designed to overcome three specific problem areas often found in other management coordination systems. First, it is integrated with ICS so that all information flowing to or from incident sites are in the same format and reporting procedures are the same,



Figure 1.—City, county, State, and Federal fire emergency organizations work together to determine priorities and effectively use limited firefighting resources.

regardless of agency or jurisdiction. Second, it includes all of the fire services in southern California. There are more than 250 departments and agencies from Federal, State, county, and local governments in the seven-county area of southern California. Larger agencies are most directly involved, but even fire districts and volunteer departments are included through the State's Master Mutual Aid System. Third, MACS operates continuously to provide 24-hour support for any incident that may become more than a single agency can handle.

The Fire Information Management System (FIMS) uses a high-capacity mini-computer, several computer programs, and a comprehensive data base. The system is linked to 28 agencies, providing almost immediate status reports on all fire service resources, conditions of existing incidents, fire behavior predictions for wildland fires, and management communications not covered by standard reports.

Portable computer terminals are available at incident command posts to speed two-way transfer of orders and reports. Records of incident actions are stored in the

computer and can be retrieved by participating agencies for annual and other periodic summaries and for cost accounting.

Other existing technology, all linked to the computer, expands the amount of information available and improves the integration of all system components. It includes infrared sensing and air-to-ground telemetry, automated weather stations, and several types of communications hardware. In addition, a single, comprehensive mapping process is used.

The FIRESCOPE effort has been a voluntary one. No legal or fiscal mandates exist to require membership or association. Within this voluntary framework, agencies have pursued a development and implementation effort that is huge in scope, complex in nature, and unique in its accomplishments.

Several factors have contributed to the success of the program, among them sound design and a strong commitment by participating agencies. However, one element has combined the design and agency support into a realistic system. That element is the multi-agency Decision Process.

The Decision Process is based on the theory that organizations that

work together continuously are, in effect, forming another organization that will function more effectively if certain accepted management concepts are followed. Within the new organization's structure, each element of the FIRESCOPE program is tested, discussed, and accepted or rejected.

Since no agency is forced to adopt any element, those that are implemented have passed some hard tests of practicality and feasibility. Also, the process moves elements completely through the development cycle, from conception to application, involving the end users at each step. This is a unique departure from the usual forms of technology transfer and tends to build a deeper sense of commitment to the system.

A major disadvantage of the process is that it tends to be slow and frustrating. Almost every element is new and untried, so agreement to any procedure requires participants to alter old policies. The program has changed the ways agencies relate to one another, and it has changed the ways people work. Changes are traumatic in any organizational environment, and FIRESCOPE agencies have not been immune to the pressures created by their own changes. Nonetheless, the program has moved forward at a steady pace, and the accomplishments are worthy of note.

One of the best measurements of FIRESCOPE's success is the potential applicability of many of its elements to other geographical areas and to disasters other than fire. In addition, certain elements are applicable to emergencies involving both rural and urban areas, mobilizing their forces to aid each other.

ICS, for example, has proven to be widely applicable in California and with some revisions has become a national model to improve multiagency effectiveness. The sys-

tem has been applied successfully to both wildland and urban fires (including high-rise building fires), to floods, and to hazardous materials accidents. Property and suppression cost savings of several million dollars have already been attributed to ICS in southern California.

Another model worthy of national examination is the Multi-Agency Coordination System. MACS is the first coordination system that actively involves all fire services in a major geographic area, integrating them at all four levels of government—Federal, State, county, and local.

The third element with national potential is the mapping process

adopted by FIREScope involving high- and low-level aerial photography and computers. Other mapping programs have been simplified, and nearly \$5 million in duplicated efforts has been eliminated. The USDI Geological Survey is adopting several significant parts of the process.

The USDA Forest Service has independently set up a program to promote technology transfer of the appropriate FIREScope elements to other Federal and State organizations with wildland fire protection responsibilities. The project is called FIRETIP (*Fire Management Notes, Vol. 42, No. 3, Summer 1981*) and is now staffed to provide technical assistance in the ac-

tual transfer of FIREScope-related technologies.

In southern California and elsewhere in the country, more and more emergencies require these service organizations to work together. Incidents ranging from the Three Mile Island nuclear accident in Pennsylvania to the MGM Grand Hotel fire in Las Vegas demonstrate the need for an effective response system.

FIREScope has proved that multiagency coordination in emergencies is possible and successful. It has potential applications in emergencies of almost any type and potential benefits that are only beginning to be realized. ■

Recent Fire Publications

- Alexander, M. E.; Euler, D. L. Role of fire in the uncut boreal mixed wood forest. In: Boreal Mixed wood Symposium; 1980 September 16-18; Thunder Bay, ON. Sault Ste. Marie, ON: Canadian Forest Service, Great Lakes For. Res. Cent.; 1980: 42-64.
- Banks, S. W. The fireworks controversy: A weekend in flames. *Western Fire Journal* 33(10): 23-26; 1981.
- George, Charles W.; Johnson, Cecilia W. Evaluation of Megatard 2700: A proposed new fire retardant system. Gen. Tech. Rep. INT-112. Ogden: UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest Range and Experiment Station; 1981. 22 p.
- George, Charles W. Fire retardants and aerial delivery systems—performance and use. *Aerial Applicator* 19(8): 4-5; 1981.
- Hauck, Charles A. Some applications of upper air data to fire management in the southern Appalachians. In: Second Conference on Mountain Meteorology; 1981 November 9-12; Steamboat Springs, CO. Steamboat Springs, CO: American Meteorological Society; 1981: 40.
- Lovell, John. CDF and PG&E team up to combat powerline hazards. *Western Fire Journal* 33(10): 38-40; 1981.
- Moore, John D. Revised interest in short term fire retardants. *Aerial Applicator* 19(8): 6-7; 1981.
- Ramsey, G. S.; Higgins, D. G. Canadian Forest Fire Statistics: Part I, 1978; Part II, 1979. Information Report PI-X-9. Chalk River, ON: Petawawa National Forestry Institute; 1981. 52 p.
- Stocks, B. J. Black spruce crown fuel weights in northern Ontario. *Can. J. For.* 10: 498-501; 1980.
- Taylor, Dale L.; Herndon, Alan. Impact of 22 years of fire on understory hardwood shrubs in slash pine communities within Everglades National Park. Report T-640. Homestead, FL: U.S. Department of Interior, National Park Service, Everglades National Park Service, Everglades National Park; 1981. 26 p.
- U.S. Department of Agriculture, Forest Service. Four E's of railroad fire prevention. In: Annual Report. Northeast Forest Fire Supervisors' Meeting; 1980 June 23-26; Saratoga Springs, NY. Broomall, PA: Northeastern Forest Experiment Station, U.S. Department of Agriculture, Forest Service; 1981. 107 p.
- Weaver, Robert W. Fire fighting from the air—an update. *Aerial Applicator* 19(8): 8-11; 1981. ■

A Cost-Saving Concept for an Old Problem in Florida

Jim Whitson

Forester, Florida Division of Forestry, Tallahassee, Fla. Whitson is currently assigned to FIRETIP project, Boise Interagency Fire Center, USDA Forest Service, Boise, Idaho.

The Florida Division of Forestry is searching for new answers to an age-old problem—the muck, or peat, fire. Over the years many suppression techniques have been used, all labor intensive. With today's economy, however, such methods are prohibitively expensive.

Peat deposits encompass an estimated 3,500 square miles of Florida's land surface and total in excess of 1.75 billion tons of material.¹ The deposits are located principally in the central and southern portions of the State but can be found throughout.

Of all the suppression methods tried, flooding a muck fire with water has been the best solution.

In many areas, though, there is no readily available water supply, and water must be transported by tanker trucks to the fire.

A technique now under assessment by the Division of Forestry might eliminate the need to transport water. By using equipment similar to that used to remove water during construction (i.e., dewatering equipment), a source of water can be produced on site for both direct suppression and use in suppression equipment.

This method uses a series of shallow well points penetrating the muck and connected to a header (fig. 1). A constant vacuum is pulled and as the water enters the pump, air is separated to produce a constant prime (fig. 2).

Dewatering equipment shows exciting promise for muck fire suppression in Florida, and could very well be applied in other areas where peat fires are a problem. ■

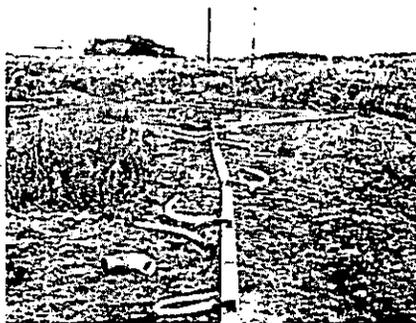


Figure 1.—Well point field and header.

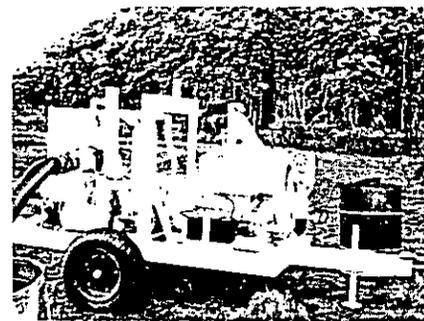


Figure 2.—Air-cooled diesel pump used with well point system. Note the air separation chamber at rear.

¹ Davis, John H. Jr., *The Peat Deposits of Florida: Their Occurrence, Development and Uses*. Florida Geological Survey Bulletin, Tallahassee, Fla. 1977.

Mobilized Fire Simulator in Wyoming

Michael H. Gagen

Assistant State Forester, Fire Management, Wyoming State Forestry Division, Cheyenne, Wyo.

The Wyoming State Forestry Division is training fire command officers in structural and wildland fire suppression using a mobile fire simulator.

Mike Gagen, Assistant State Forester, Fire Management, and Bernie Engleman, Rural Fire Training Officer, converted a Federal excess property trailer to a traveling fire simulator (*fig. 1*) with projection and sound equipment (*fig. 2*). The back was squared off, doors installed, and the screen placed so that when the back doors are open the screen is immediately behind them.

The sound system for the trainees is on a table outside and behind the trailer. This eliminates the need to fit the simulator and screen to a different room at each training location.

The trailer can be backed into any fire station or garage and be ready for operation in 10 minutes, cutting setup time from 2 to 3 hours. This has considerably reduced the service time required for reliable operation of the simulator.

Gagen reports that the total cost of outfitting the trailer with the simulator was less than \$800 and it



Figure 1.—Simulator trailer and van.

is the most valuable and popular training class in Wyoming.

For more information, contact: Michael H. Gagen, Assistant State Forester, Wyoming State Forestry Division, 1100 West 22nd Street, Cheyenne, WY 82002. ■



Figure 2.—Equipment inside fire simulator trailer.

Fire Suppression Course for Rural Fire Companies

A 4-day course in rural fire suppression has been developed through a cooperative effort of the National Association of State Foresters, the USDA Forest Service, the Pennsylvania Bureau of Forestry and the State's fire school at Lewistown, Pa. The course, which deals with forest fire behavior and

suppression and rural structural fires, will be presented as part of the Pennsylvania State Fire School's 1982 curriculum.

During the course, the students will be presented lessons on forest fire behavior, safety on the fire line, wildfire investigation, forest fire prevention, structural fire be-

havior, and suppression of building fires with rural equipment.

For more information, contact E. F. MacNamara, Chief, Division of Forest Fire Protection, Bureau of Forestry, 109 Evangelical Press Building, 3rd & Reily Streets, Harrisburg, PA 17120. ■

**United States
Department of Agriculture**

Washington, D.C.
20250

OFFICIAL BUSINESS
Penalty for Private Use, \$300

Postage and Fees Paid
U. S. Department of Agriculture
AGR-101



1981 Smokey Bear Awards

The Cooperative Forest Fire Prevention (CFFP) Executive Committee awarded Golden, Silver, and Bronze Smokey Statuettes in 1981 to persons or organizations who made outstanding contributions to the prevention of human-caused forest or range fires.

Recipients of 1981 Golden Smokey Bear awards:

- Canadian Forestry Association
- City of Torrence, California, and the Torrence Rose Float Association

Recipients of 1981 Silver Smokey statuettes:

- Marvin E. Newell, Multiregional Fire Prevention Specialist, Forest Service
- Middle Atlantic Interstate Forest Fire Protection Compact

Recipients of 1981 Bronze Smokey statuettes:

- Southwest Lincoln County Fire Prevention Cooperative, Montana
- Dick Ray, Bureau of Land Management, Oregon



Figure 1.—R. Max Peterson, Chief of the USDA Forest Service, recently presented a Golden Smokey Bear Award to the Canadian Forestry Association (CFA). The CFA, a Federation of provincial Forestry Associations, received a Golden Smokey Bear Award for its outstanding nationwide contributions to forest fire prevention. The CFA is the first Canadian body in the history of the Smokey Bear Award to receive an award. From left to right are: Dal Hull, CFA Executive Director; R. Max Peterson; Dr. D. R. Redmond, CFA President; and Smokey Bear.

- Arthur S. Bimrose, Editorial Cartoonist, *The Oregonian*, Portland, Oregon
- Paula Hanninen, South Dakota Division of Forestry
- Calvin L. Frink, Forest Fire Warden, Surry, New Hampshire
- *Wenatchee World*, Wenatchee, Washington
- Texas State Radio Network, Texas ■