

TRAINING TO MEET THE DEMANDS FOR CONFLAGRATION FIRE MANAGEMENT

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INTRODUCTION

The 1988 fire season in the northern Rocky Mountains was described as "...the most prolonged period of extreme fire danger since the disaster fires of 1910" (Tippets 1989).

More than 68,000 wildfires burned almost 5 million acres in the western United States during the fire season of 1988. On the average, 1.5 million dollars per day were spent fighting wildfires in Yellowstone National Park; during one 24-hour period in September a record 6 million dollars was spent on one fire alone (Simpson 1989).

At the end of the disastrous fire season the secretaries of Interior and Agriculture appointed an interagency team to make recommendations aimed at preventing similar fire costs and losses in the future. The report of the Fire Management Review Team (Secretaries of the Interior and Agriculture 1988) recommended the consideration of planned ignitions to complement prescribed natural fire programs. The review team also emphasized the need for training to prepare management and protection personnel to safely handle the increased prescribed burning and fuel hazard reduction workload which would result from implementing the recommendations.

Training will be critically important! As many of the seasoned fire management veterans retire and the average age and years of experience decrease in the fire management ranks, practical hands-on training to prepare younger, less experienced fire personnel may be the single most important variable affecting the safety and effectiveness of future wildland fire management programs.

During 1983 and 1984, the U.S. Fish and Wildlife Service recognized the critical importance of training. A series of escaped prescribed burns on national wildlife refuges killed refuge personnel and resulted in a host of lawsuits against the United States government by private sector landowners suffering losses and damage from the resulting wildfires. The Service undertook a project to improve training, especially for less experienced refuge personnel.

This paper describes the design, development, and application of the Service's unique basic fire training programs.

TRAINING PROGRAM DEVELOPMENT

The Service wanted the Basic Fire Management training program implemented by the fire season of the following year, 1985. The design, development, and conduct of the first series of courses was contracted to Fire Science Systems Corporation (FSS) of California and Boise, Idaho. The FSS team responsible for the training development consisted of wildland fire specialists, a wildlife biologist, and training specialists.

Job and Task Inventory and Analysis of the Fire Management Function

Fire Science Systems Corporation specialists conducted in-depth interviews with department and Service personnel. Departmental and agency policy and operating guidelines were studied. Position descriptions were reviewed. The objective was to determine the jobs and tasks which made up, or should have made up, the fire management function.

The Job and Task Inventory and Analysis defined 19 discrete job requirements making up the fire management function.

Each job was then broken down by:

1. Tasks making up that job;
2. Steps necessary to carry out and complete the tasks;
3. Standards for completing the task; and
4. Conditions under which the jobs and tasks were to be performed.

The main purposes of the job and task analysis were:

1. To identify the skills/knowledge requirements necessary to safely and effectively carry out jobs and tasks;
2. To define the training requirements necessary for safe and effective job performance by refuge system personnel.

The Job and Task Inventory and Analysis served other purposes also. The jobs and tasks were the basis for developing a refuge fire management organization, and for developing job descriptions. Performance standards and evaluations could be based on job and task standards.

The Job and Task Inventory and Analysis indicated that the priority needs for training existed at three levels:

Level I Training for refuge personnel in basic prescribed fire, firefighting, and fire safety;

Level II Training for fire supervisors ("Overhead");

Level III Training for fire managers such as fire management officers.

The development of Level I training, a course titled *Basic Fire Management* was the principle goal of the contract and project described in this paper.

Steering Committee for the Training Development Project

A steering committee representing the Service at the Washington office, regional office, and refuge level, including the Service fire management staff at the Boise Interagency Fire Center was chartered. The committee guided the design and development of the Job and Task Analysis and the basic fire management training program as carried out by the contractor.

DESIGN OF THE COURSE, *BASIC FIRE MANAGEMENT*

Basic Fire Management was developed to meet a need for basic instruction in wildland fire behavior, planning and application of prescribed fire, basic initial attack fire suppression (principles, strategies, and tactics), fire team interaction and operation, and smoke management principles and techniques as identified in the job and task analysis.

Basic Fire Management was aimed at refuge personnel with little previous training, but who had some responsibilities for prescribed burning and for initial attack fire suppression.

Basic job requirements defined by the Job and Task Inventory and Analysis for refuge personnel is shown sequentially in Figure 1. The structure of the course, *Basic Fire Management*, is shown in Figure 2.

Subjects were identified which were basic and prerequisite to prescribed burning and fire suppression (for example, fire behavior). Lesson plans for these subjects were related to both specialty areas (Figures 1 and 2).

Another series of subjects was identified which had post-burn application to both specialty areas (for example, mop-up and patrol) and lesson plans relating to both areas were developed (Figures 1 and 2).

The sequential flow of training emphasis is shown in Figure 3. In order to minimize time away from the job as well as travel and other costs, some 25-30 hours of prerequisite subjects were completed (with testing) at the student's home location. Prework assignments also served to bring students to a common level of technical knowledge and understanding.

"Hands-on" Field Exercises

An important segment of the 36-hour classroom session was the field follow-through. Students organized by teams were given hands-on instruction and practice in tool and equipment use and safety; weather and fire behavior measurements; fire safety, including use of the fire shelter; helicopter safety; and pumps and water delivery systems. Each student team also planned, prepared for, and carried out an actual prescribed burn and their performance was evaluated by the course instructors acting as coach/evaluators.

Training materials prepared for basic fire management training included reference tests for all subjects; lesson plans for all subjects; prework unit; visual

Figure 1- Operational Requirements at the Refuge Level

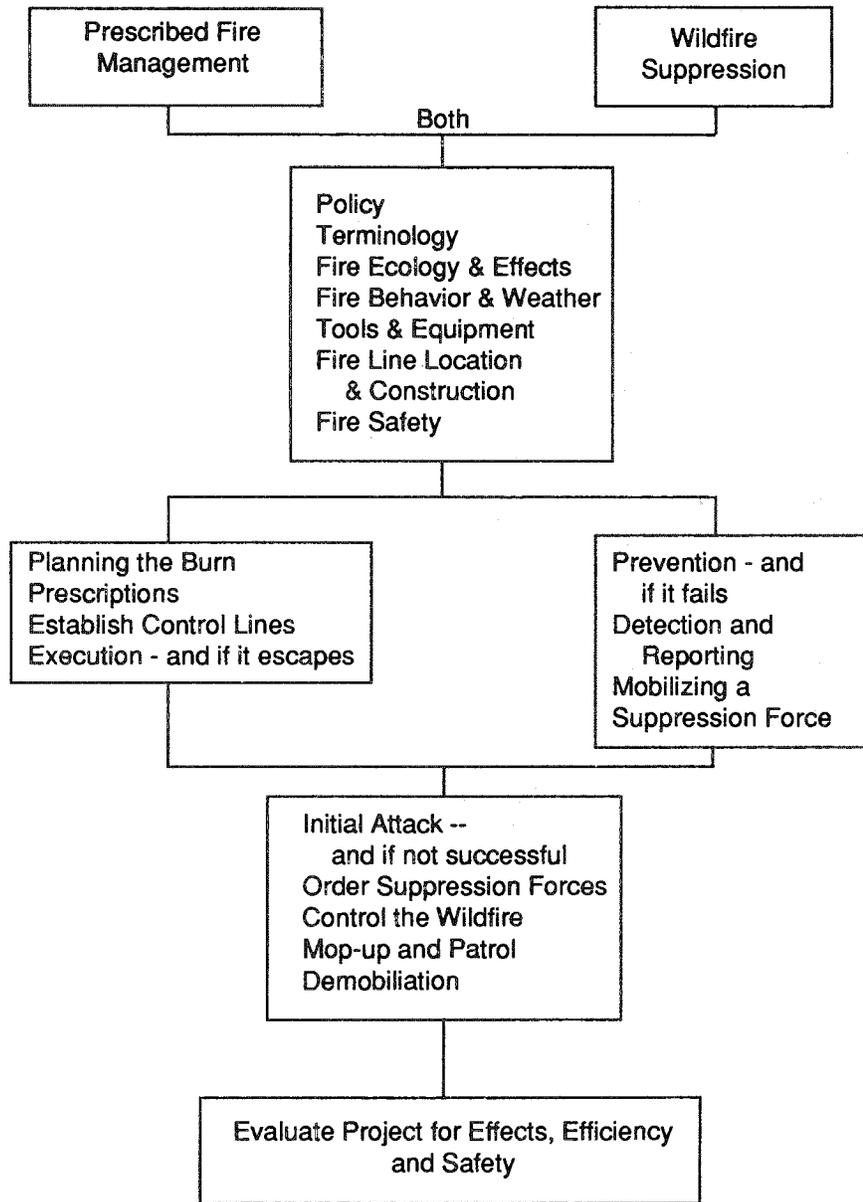
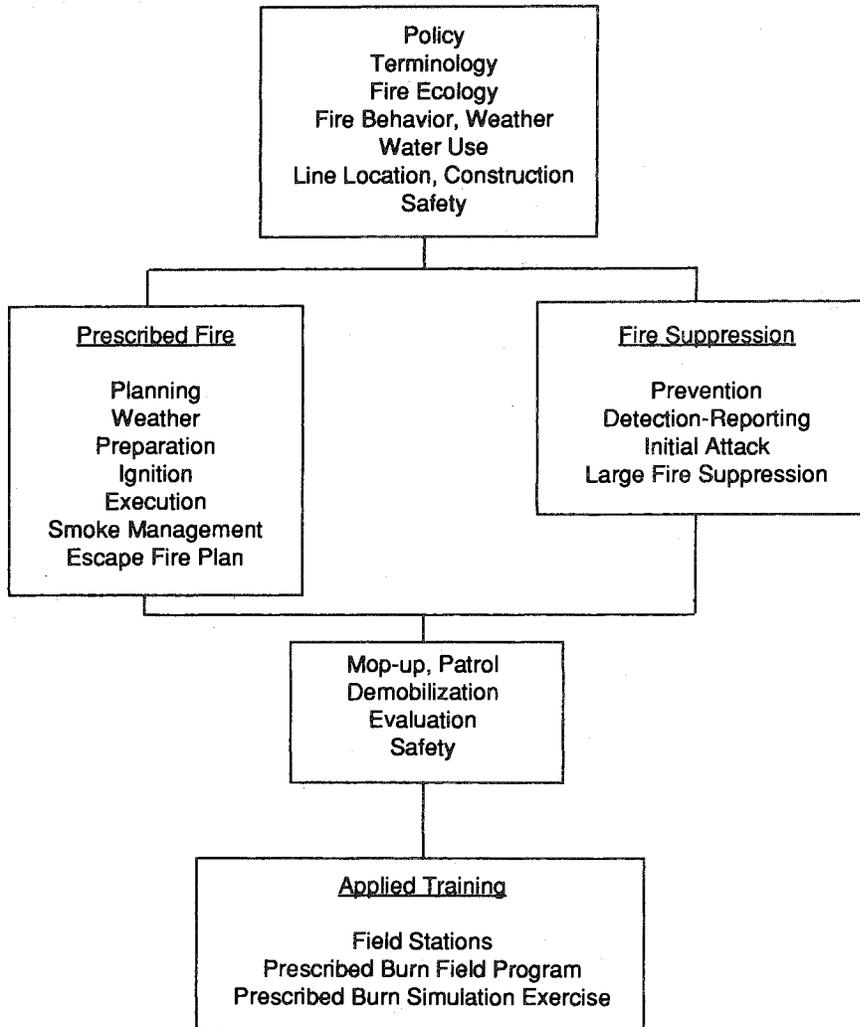


Figure 2 - The Structure of Basic Fire Management

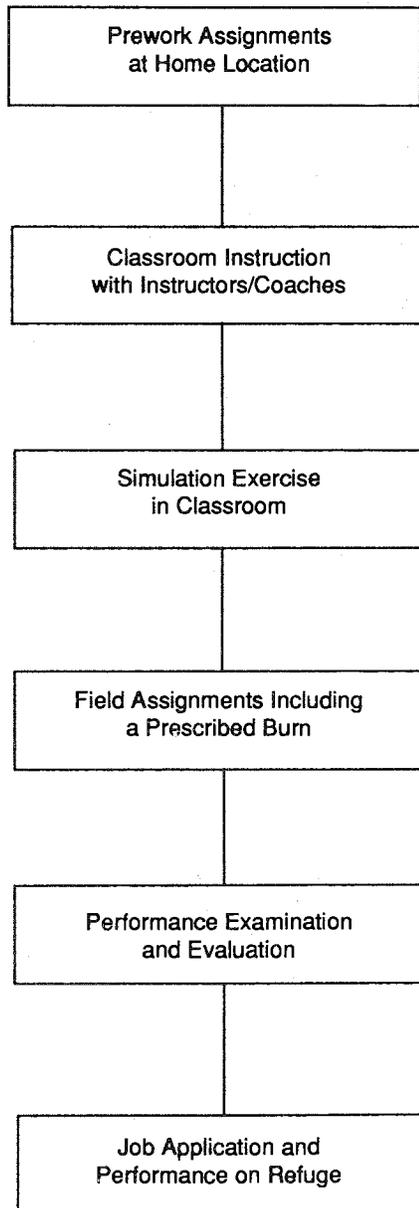


aids including 35mm slides, video footage, and instructional tapes; student notebooks; instructor notebooks; and “how-to” handouts.

Unique Features of the Service Training Program

1. For the first time, the U.S. Fish and Wildlife Service has developed an educational program combining prescribed fire with initial-attack fire suppression, based on fire behavior principles all integrated with policy, safety, and management/supervisory principles and practices.

Figure 3 - Sequential Flow of Fire Management Training and Application



2. This adult education program was:
 - a. Nontraditional. The Service developed the program to meet its unique management and safety requirements. "Canned" traditional training courses were not used.
 - b. On-the-job performance-oriented focusing on safer and better jobs.
 - c. Success oriented building in fail-safe operational and safety principles and techniques related to refuge conditions.
3. Students completed the equivalent of 160 hours of training in just 36 hours of formal classroom work off the job through at-home study assignments; use of teams, team leaders, and coaches; classroom work directly combined with field application; live training burns in the field; interactive prescribed burning and initial attack simulation problems; and special evening team assignments.

The principles and techniques applied here were part of synergetic education, an educational and training process developed and copyrighted by Fire Science Systems Corporation, the contractors for the training development project.

4. The fire education program was especially appealing to interface cooperators because it was basic, required minimal time in formal classroom work, and emphasized cooperative principles and action.
5. Well over 400 refuge employees across the refuge system, and cooperators, have been educated in fire behavior, suppression, prescribed burning, and fire safety.

The Service's basic fire management program satisfies and exceeds the requirements of the required courses for a national interagency firefighter.

6. Thirteen fire management specialists were trained as instructors and coaches and became the "Cadre" to carry on the program and to further refine and adapt it.
7. Team operational and supervisory/managerial skills were taught to students. Refuge personnel learned the importance of team decision-making in fire operations, and that a qualified maintenance worker on a refuge could be a fire incident commander, supervising a refuge manager.
8. Safety awareness and how to apply safety principles on the job has resulted in a few minor injuries and no serious injuries or fatalities during prescribed burns or fire suppression assignments since the program began in 1984.

Evaluation of the Training Program

Each student was asked to evaluate the program. Ninety-seven percent of all students completing the training said:

- a. objectives were met "quite to extremely well;"
- b. they would recommend the course to others;
- c. the course "fits their needs; is practical, usable on the job"

SUMMARY

The fire season of 1988, with the recommendations of the Fire Management Policy Review Team, will result in greater emphasis on prescribed burning programs among federal and state resource management and protection agencies as well as local and private organizations dealing with wildland fire management.

Successful prescribed burns frequently require high-intensity, high-energy fires to achieve burn objectives.

The weather, fuel and topographical conditions combined with ignition patterns, and their interaction, which produce and influence high energy fires, are difficult to plan for, predict, and manage. Therefore, well-designed training programs may be the single most important variable in preparing future fire management personnel to safely and effectively plan and carry out prescribed burning and fuel hazard reduction programs.

LITERATURE CITED

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