

Prescribed Fire and Fire Suppression Training in the U.S. Fish and Wildlife Service for the Year 2010¹

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Abstract: The Fish and Wildlife Service, U.S. Department of the Interior, uses prescribed fire for habitat improvement on over 400 National Wildlife Refuges across the United States. Wildfire is a problem on some refuges. Escaped fires have resulted in fatalities and the loss of millions of dollars in natural and man-made resources. The Service recognized the critical need for training in fire behavior, fire suppression and fire safety. A unique training and training development contract and program are described through which nearly 300 National Refuge System employees have been trained to safely carry out unique prescribed fire and fire suppression jobs. A cost savings of nearly \$12,000 per trained employee may have resulted from this unique Service approach when compared with traditional training programs.

The U.S. Fish and Wildlife Service uses prescribed fire for hazard reduction, habitat enhancement, and food production on most of the 400 plus National Wildlife Refuges across the United States. Wildfire is a problem on some Refuges. Traditionally, refuge system personnel have had little or no formal training in wildland fire behavior, initial attack fire suppression, and fire safety.

Escaped prescribed fires over the last 10 years have resulted in fatalities and the loss of millions of dollars of natural and man-made resources. One escaped prescribed fire on a North Carolina Refuge that burned onto private land resulted in a series of lawsuits costing the Government nearly \$3.5 million. The Service recognized the critical need for the development and presentation of training programs designed to help fire practitioner personnel understand and apply the principles and processes of wildland fire behavior, fire suppression and fire safety. Refuges could not always afford both the expense and the time off the job necessary for refuge personnel to complete the extensive series of suppression courses (S-courses) and other multiagency training available in some areas each year. Travel restrictions were increasing and training budgets were decreasing. The Service had very few people qualified to teach fire courses. Because of the unique nature of refuge locations, management objectives and problems, training had to be tailored to meet specific U.S. Fish and Wildlife Service needs.

TRAINING AND PROGRAM DEVELOPMENT BY CONTRACT

In 1984 the Service contracted the development and conducted the first series of courses to the Fire Science Systems Corporation (FSS)³. The FSS team responsible for the training development consisted of wildland fire

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³Mention of company name is for information only and does not imply endorsement by the sponsoring organizations.

specialists, a wildlife biologist and training specialists.

JOB AND TASK INVENTORY AND ANALYSIS

FSS Corporation specialists conducted an indepth analysis of jobs and component tasks of those jobs, which made up or should have made up the Fire Management Function of the U.S. Fish and Wildlife Service.

The Inventory and analysis of jobs covered those performed by personnel permanently or only occasionally assigned to fire management jobs on Refuges within the National Refuge System.

The job and task inventory and analysis defined 19 discreet 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.
4. Conditions under which the jobs and task were to be performed.

The primary purpose of the job and task analysis was:

1. To identify the skills/knowledge requirements necessary to safely and effectively carry out jobs and tasks.
2. To define the training requirements of Refuge System personnel to perform effectively and safely their job assignments.

The Job and Task Inventory and Analysis served other purposes also: for example, aids to developing a Refuge fire management organization, job descriptions, performance evaluations, among others.

The job and task inventory and analysis indicated the priority needs for training existed at three levels:

- Level I Basic Prescribed Fire, Firefighting, and Fire Safety training.
- Level II Fire Supervisory ("Overhead") training.
- Level III Fire Management Specialist training.

The development of "Level I Training," a course titled "Basic Fire Management" was the principal goal of the contract and project.

SERVICE STEERING COMMITTEE

By October 1984, a Fish and Wildlife Service (FWS) Steering Committee on training development was formed. The Committee consisted of 10 members representing:

- FWS Washington Office
- FWS Fire Coordinator's Office located at the Boise Interagency Fire Center
- Regional Fire Management Coordinators
- Refuge Managers
- Refuge Fire Management Officers
- Training Branch, Bureau of Land Management, Boise Interagency Fire Center
- Fire Science Systems Corporation. Contractors

The first meeting was held at the Boise Interagency Fire Center in October 1984.

The main purpose of the meeting was to:

1. Review and recommend changes in "The Job and Task Inventory and Analysis of the Fire Management Function: prepared by the contractors.
2. Review the design of the new course, Basic Fire Management.

The Steering Committee gave the contractors the "go ahead" to finalize the first training session for the Klamath Basin National Wildlife Refuge in December 1984.

THE DESIGN OF BASIC FIRE MANAGEMENT TRAINING

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
- Initial attack
- Fire safety
- Team participation and operation
- Smoke management principles and techniques

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

The basic rationale underlying training requirements as defined by the Job and Task Inventory and Analysis and Refuge personnel is shown sequentially in Figure 1.

The structure of Basic Fire Management training is shown in Figure 2.

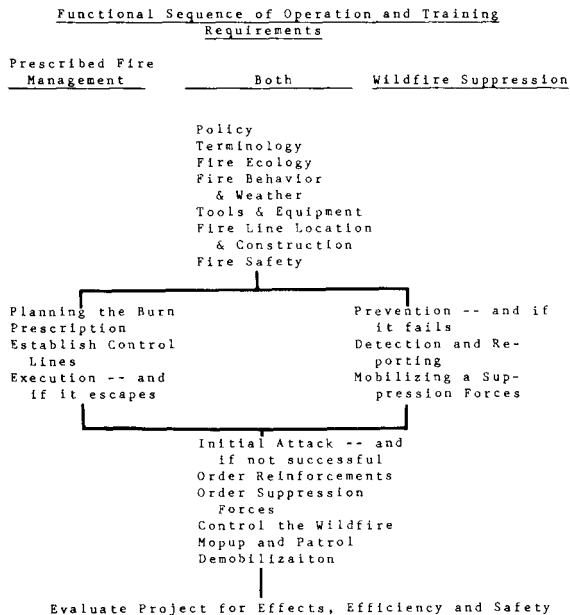


Figure 1--Relationship of Prescribed Fire and Wildfire

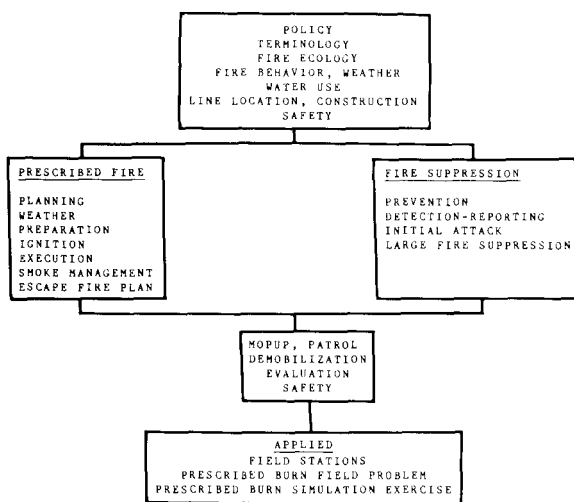


Figure 2--The Structure of Basic Fire Management Training

A series of subjects were identified which were basic and prerequisite to prescribed burning and fire suppression, e.g., fire behavior, and lesson plans for these subjects related to both specialty areas.

Another series of subjects were identified which had post-burn application to both specialty areas, e.g., mop-up and patrol, and lesson plans relating to both areas were developed.

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. Pework assignments also served to bring students to a common level of technical knowledge and understanding.

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, 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 texts for all subjects -
- Lesson plans for all subjects
- Pework unit
- Visual aids, 35 mm slides

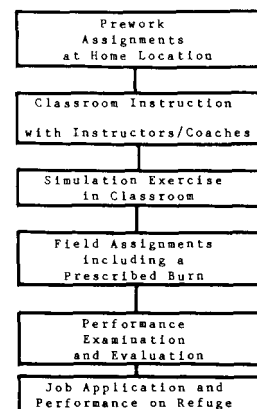


Figure 3--Sequential Flow of Training and Applications

- Student notebooks
- Instructor notebooks
- "How-to-do-it" handouts

SYNERGETIC EDUCATION

To make possible the equivalent of 140 hours of training in just 36 hours in the classroom, Fire Science Systems Corporation developed and copyrighted Synergetic Education, a system of principles, methods and techniques tailored to specific training courses to enhance the learning process and to make learning more fun and satisfying for the student. Some of the Synergetic Education processes applied to Basic Fire Management were:

1. Specially tailored prework assignments, and examinations done at student's home refuge.
2. "Hands-on" class and field exercises including a simulated and live prescribed burn.
3. Student teams with team leaders.
4. The Organization of course cadre trained as team coaches.
5. Dynamic team-cadre feedback processes applied several times a day for course quality and learning experience corrections.
6. Tutoring and evening sessions.
7. FWS instructor training and development.

THE PAYOFF TO THE U.S. FISH AND WILDLIFE SERVICE

Six course presentations were conducted nationally over the Refuge System by the FWS and the contractors during 1984, 1985 and 1986 with nearly 300 students attending.

The course was well received by the students right from the beginning. In fact there was no significant variation in Student Evaluation responses over all of the six courses. The average response percentage over all six course presentations is as follows:

- Objectives met "extremely" or "quite well" 97 pct
- Program well or precisely suited to ability to understand 85 pct
- Presentations extremely or quite interesting 79 pct
- Length of program about right: only a short or long 93 pct
- Would recommend course to others 99 pct

The traditional course-by-course approach to Fire Training would have required 330-440 hours of training over a 2-3 year period per student. The cost would have been about \$12,000 per student as calculated by the Training Branch, Bureau of Land Management, at the Boise Interagency Fire Center.

The Service's approach consisted of 20-30 hours of prework and 36 hours of class time which for the first time combined fire suppression and prescribed fire training with prerequisite technical subjects common to both. As a result of the tailored, integrated education system, the cost per student has been about \$1,000.

The National Wildfire Coordinating Group (NWCG) requires a firefighter to have completed the courses S-190, Fire Behavior and S-130, Basic Firefighter. The Service's course, Basic Fire Management exceeds the requirements of these courses and includes significant portions of 12 other S-courses.

And there are some other benefits.

1. Thirteen instructors were trained both as instructors and coaches.
2. Team operation and supervisory/managerial skills were taught students. Refuge personnel learned the importance of team decision-making in fire operations, and that a qualified maintenance worker on a Refuge could be an incident Commander, supervising a Refuge Manager.
3. Safety awareness and how to apply safety principles on the job has resulted in few minor injuries and no serious injuries or fatalities during burn or fire suppression assignments.

SUMMARY

Because of budget and travel restrictions, National Refuge System personnel are authorized minimal time away from the job, and because of the unique locations and management objectives of Refuges, the U.S. Fish and Wildlife Service developed a unique Basic Fire Management training program.

Other Federal Agencies and State Agencies will be facing the same requirements and restrictions during the next 15 years and into

the next century. The challenge will be to design training programs that minimize travel, time away from the job, expenses, satisfy the requirements of Fire Qualification Systems, and make use of creative training methodology which make possible the equivalent of at least 2 hours of skills acquisition for each hour spent in formal training sessions.

REFERENCE

Murphy, James L.; Steven, Gordon J. 1984. Job and task inventory and analysis of the fire management function of the U.S. Fish and Wildlife Service, 250 p., from U.S. Fish and Wildlife Service, August.