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# United States Department of the Interior

NATIONAL PARK SERVICE

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Y14(MAR-MR)

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## Memorandum

To: Rick Gale, Fire Management Specialist, BIFC

From: Chris Andress, Chief, RMVP, MAR

Subject: Fire Shelter Deployment Work Group Report

Enclosed is subject document. Our work group recommends agency-wide circulation for comment, and if found appropriate, transmittal to the inter-agency fire community.

Our Thanks to the NPS, BIFC staff for their support, and to you for your guidance, direction and encouragement.

## FIRE SHELTER DEPLOYMENT

### I. INTRODUCTION

On August 21, 1989 a work group was assembled in Boise, Idaho at the NPS Branch of Fire Management to review fire shelter deployments that occurred over the past few fire seasons.

The work group was comprised of:

Chris Andress, Group Leader  
Chief, RM&VP, Mid-Atlantic Regional Office

Alan Cox, Incident Commander, Type III  
Big Bend National Park

Kevin Dempsey, Safety Officer  
Whiskeytown National Recreation Area

John Lissoway, Fire Behavior Analyst  
Bandelier National Monument

Phil Young, Safety Officer  
Southwest Regional Office

The following fire shelter deployment incidents and reviews were analyzed:

Brewer Fire, June 23, 1988  
Canyon Creek Fire (Table Mountain), September 9, 1988  
Canyon Creek Fire (Elk Zone), September 6, 1988  
Clover Fire, July 14, 1988  
Crank Fire, August 30, 1987  
Grizzly Fire, August 30, 1987  
Hamm Fire, September 4, 1987  
Jump Off Fire, August 17, 1986  
Madison Fire, July 27, 1988  
Moose Creek Complex, August 28, 1988  
Paper Fire, September 4, 1987  
Storm Creek Fire, September 3, 1988  
Fire Shelter Deployment Review of 1988  
1985 Fire Entrapment Incident Review

The primary purpose of the work group was to analyze the past few seasons fire shelter deployment incidents with the objective of determining any common occurrences, or reasons, and develop corrective recommendations to prevent or minimize such deployments in the future.

Methodology consisted of study of the shelter deployment reports in an effort to identify trends or commonalities in events and

circumstances leading up to the deployment. The group discussed individual findings and reached consensus on the major commonalities and subsequent recommendations.

It should be noted that some of the incident reports reviewed were either sanitized, incomplete, or too brief to extract needed information. Inconsistent investigative and reporting procedures made it difficult, or impossible, to analyze the incidents in a strictly systematic method. This problem is dealt with later on in this report. Therefore, in an effort to maintain objectivity and fairness, the language of this report is more conditional than the Group would have preferred.

## II. MAJOR COMMON FACTORS IDENTIFIED IN FIRE SHELTER DEPLOYMENTS

### OBSERVATION:

#### FIRE BEHAVIOR/WEATHER: THE EXTREME BECOMES COMMON

In 8 of the 12 deployments reviewed, unusual fire behavior and/or weather played a major role, in that entrapment of the crews occurred so quickly that escape routes (when identified) were cut off. In all cases, overhead personnel had been briefed on the unusual conditions before the crews were sent on the line. It appears that overhead did not give adequate heed to the weather and fire behavior predictions when preparing their Incident Action Plans. Given stated conditions, some crews were placed at undue risk with assignments that were not achievable.

### RECOMMENDATIONS:

1. Fire overhead give special attention to the unusually explosive and erratic fire behavior of the past five years and be especially conservative in making line assignments. Caution is the key, and it is appropriate for safety considerations to be a much greater than normal determinant in developing tactics and strategies.\*
2. Emphasize severe fire behavior in Safety Officer (I-401) training, utilizing sub units on crowning and blow-ups, spotting and ignition, and fire whirls and stability from the S-490 Advanced Fire Behavior Course. This should be included in the Operations Section Chief, Division Group Supervisor training courses.

### OBSERVATION:

#### COMMUNICATION BREAKDOWN

On 7 of the 12 incidents reviewed, a breakdown in the communications chain was observed. In very few instances did this involve mechanical radio problems. One half of the incidents referenced a breakdown in vital information going to and from incident management and the line. Critical incident intelligence was not routinely communicated in a timely manner to appropriate personnel.

It was noted in several instances that communication of escape routes from the crew supervisor to crew was either incomplete, unclear or non-existent.

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\* This recommendation is taken mostly verbatim from the "Investigation Report of the Brewer Fire Shelter Deployment Incident", USFS, BLM Joint Team, 1988.

Incident Action Plans were often outdated by the time they reached the line and sometimes contained misinformation.

RECOMMENDATIONS:

1. Fire situation updates from Field Observers, Situation Unit Leaders, Fire Behavior Analysts, Safety Officers, and Division Supervisors need to be accomplished on the incident command frequency, and retransmitted on tactical nets.

2. It is essential that information flows freely between overhead and line regarding current and changing incident conditions. It is critical that Division Supervisors update resources of changing conditions on their division and remain as active on-line/on-site managers.

3. Division Supervisors need to ensure that safety factors are covered with their personnel in all operational briefings. They need to stress the location of escape routes, safety zones for shelter deployments, and flagging routes to those areas by a method known to all.

OBSERVATION:

ESCAPE ROUTES AND SAFETY ZONES NOT IDENTIFIED AND  
COMMUNICATED

The review revealed that in one half of the pre-deployment situations, the line supervisor failed to recognize that safety zones and escape routes were not identified. This violation of a time-tested guideline can seriously jeopardize the trust relationship between line overhead and personnel who depend on their sound judgement.

Several documents reported that safety zones selected were too small in size for conditions. Areas were sometimes located in, or on aspects facing, the highest wind conditions which exposed personnel to undue risk. Another finding pointed out the absence of timely and effective scouting by air or ground to assist the line supervisor. This could have made a significant difference in the outcome/impact on where and when deployment occurred.

RECOMMENDATIONS:

1. Re-emphasize the Standard Order and Watch Out Situation regarding escape routes and safety zones in appropriate training sessions, incident briefings, and Incident Action Plans.

2. Impress on line supervisors that shelters should never replace well-defined escape routes. Escape routes, insofar as possible, should be pre-located and listed in appropriate ICS-204 and be a part of division briefings (specific to that division) and operations ~~division~~ <sup>section</sup>. This was included as a recommendation in the USFS 1988 Northern Region Fire Review.

OBSERVATION:

THERE IS A NEED TO GET BACK TO BASICS

In all of the reports studied, the review team either quoted by number, or alluded to violations of "The Ten Standard Fire-fighting Orders," and or the 18 "Watchout" situations. Weather, fire behavior, escape routes, and communications citations top the list. However, with the exception of the Watchout "taking a nap near the fire line," all 10 Fire Orders and 17 of the 18 Watchout situations were cited as contributing factors to deployment. The cited lapses were applicable to both overhead and crews.

RECOMMENDATIONS:

This group's recommendations are well covered in the USFS 1988 Northern Region Fire Review:

1. GET BACK TO BASICS! All fire-fighters review the Orders and Situations daily when fighting fire, ESPECIALLY PERSONNEL IN SUPERVISORY POSITIONS.
2. All fire line overhead should annually review incidents which resulted in shelter deployments. Reviews should be interagency and mandatory at fire team meetings. IH Crew Superintendents meetings, etc.
3. Fire teams should use the 10 standard orders when building Incident Action Plans to minimize the probability of deployment situations.
4. During briefings and strategy meetings, Fire Behavior Analysts and Safety Officers should refer to the appropriate 10 Standard Orders and the 18 Situations That Shout Watchout.

OBSERVATION:

EXPERIENCE AND TRAINING DEFICIENCIES

One-third of the deployments reviewed contained references to the lack of key experienced fire line personnel. There was an identifiable lack of experience, and or presence, by Field Observers and on site Safety Assistants. References regarding the lack of experienced Division Supervisors, Strike Team Leaders, and Crew Bosses were also noted.

Note: It was noted in Group discussion that there remains a serious deficiency in the training of Strike Team Leaders and Division Supervisors in strategy and tactics.

RECOMMENDATIONS:

1. Training opportunities need to be accelerated and supported by

agency management. Trainee assignment requirements need to be tightened to require trainees to operate in full performance conditions before having their "ticket punched." Trainee assignments should be limited to an incident of sufficient complexity to warrant a Type II or above team with a training officer assigned to validate the training experience.

2. Annual refresher training is recommended to include shelter deployment and "what if" exercises (using extreme wind/smoke/heat conditions) for realistic experiences.

3. Require all current and prospective Strike Team Leaders and Division Supervisors to attend strategy and tactics training. Safety modules also need to be stressed during this course. Funding should be sought to attempt to have this available in 1990.

### III. OTHER TOPICS FOR CONSIDERATION

Although not prominent in the incident review data, the work group discussed other topics related to the prevention of deployments, and strongly recommends the following:

1. Creation of a type III crew category. This category would consist of military, job corps, AD crews, and regular Agency crews with little or no fire experience. These crews should be exclusively assigned non hot line duties.
2. Creation of a standardized deployment incident review process, including form(s), qualifications for investigators and interagency involvement. The review process should be incorporated in NPS-18.
3. Build into the red card system performance accountability with teeth. Such a mechanism would provide for, after due process, the suspension or revocation of a red card as well as possible demotion in red card rating. A system similar to the NPS-9 provisions for suspension or revocation of law enforcement commissions might be used as a starting point for performance.
4. Reaffirm the role of the fire shelter as that of a tool for use as a **last resort**.
5. Fire planners should prepare their plans as if fire shelters are non-existent.

DONE

#### IV. CONCLUSION

The twelve shelter deployments reviewed by this group included one from 1986 and the remainder from 1987 and 1988. Total deployments involved 337 fire-fighters. It is frightening to consider the possible fate of these 337 lives had not the shelter been available. However, the greater question must be asked: "How did these people get into the position where it became necessary for them to deploy shelters?"

This group takes strong exception to the practice of differentiating between the terms "precautionary" and "entrapment" deployments. We contend that a deployment is indeed a deployment; which occurs when fire-fighters and/or supervisors feel endangered by fire with no place to go. We believe "precautionary" is largely an after-the-fact label applied only when the deployment did not receive someone's definition of "enough heat." Fire shelter reviews should focus on the circumstances that led to deployment - not whether or not the shelters should have been deployed.

Although this report is based on a small sample, the deployments studied suggest human error, in one form or another, as being the overwhelming factor leading to deployments. Indeed weather, severe drought and uncommon fire behavior are factors. However, these conditions are or were either known or predicted, and therefore the utilization and application of this sort of information rests with the person in the field and at command. If indeed the human factor premise is true, then the problems are correctable or at least controllable. This work group hopes the ideas presented herein can be used as a starting point from which the necessary adjustments to our fire-fighting methods can be made.