

FIRE SHELTER DEPLOYMENT INVESTIGATION
Battle Mountain Fire
July 21, 1987

Investigation Team

Ansie Lee	USFS, R-2 Regional Office - Denver, Colorado (Team Leader)
Al Eraddock	USFS, Black Hills National Forest - Custer, South Dakota
Chuck Calkins	USDI-BLM, Wyoming State Office - Cheyenne, Wyoming
Rich Homann	SDDF, Lead District - Lead, South Dakota

NARRATIVE

On July 21, 1987, the Pine Ridge Job Corps crew consisting of 20 Job Corpsmembers and 2 Crew Bosses [REDACTED] were assigned to the day shift of the Battle Mountain fire. This fire was on South Dakota State Game, Fish and Parks lands near Hot Springs, South Dakota, and under the jurisdiction of the South Dakota Division of Forestry.

The crew, after a short oral briefing on the day's assignment, left camp at about 6:30 a.m. on July 21 and proceeded to Division B. At approximately 7:00 a.m., the crew was met at the assigned drop-off point by Division Supervisor Craig Warren. Crew Bosses Chambers and Raben briefed the crew on the day's assignment.

The morning and early afternoon hours were spent building and improving hand lines on the east side (west-facing slope) of the canyon assigned. During the afternoon, Division Supervisor [REDACTED] took over management of the division to which the Pine Ridge crew was assigned. The crew continued to work downhill to the west in the canyon.

Fire activity was down-canyon from the crew and consisted of the fire moving slowly downslope, particularly on the west side of the canyon (east-facing slope). Fire behavior activity through the day could best be described as creeping downslope with occasional flare-ups when individual short juniper trees torched out.

Ground fuels in the area consisted of pine needles and patchy grass clumps, low scattered shrubs, and 6-12 tall juniper trees. Scattered patches of scrub ponderosa pine also were spread through the canyon. All fuels could best be described as dry and patchy.

The canyon itself was V-shaped with steep rocky sides. About one-third of the way down each slope was a limestone bluff about 20-30 feet tall which posed a major blockage to crew movement.

General area fire weather on the 21st was predicted to be: daytime high temperature of 88 degrees F. and low RH of 35-45%. Winds were predicted from the SE 10-12. There were 2 spot weather forecasts obtained from Cheyenne Weather Service during the day--one at 5:45 a.m. and the second at 10:00 p.m. The southern Black Hills BI was 25. No fire weather measurements were taken during the day. However, Planning Section Chief [REDACTED] noticed a temperature reading in the City of Hot Springs of 97 degrees in the middle of the afternoon. This was nine degrees higher than the high temperature forecast for the day. The City of Hot Springs is approximately 3-5 miles from the fire at an elevation of 500 feet below the fire area.

At approximately 1545, the Pine Ridge crew was split up. Crew Boss [REDACTED] with six crew members went over to the east side of the canyon to lay hose down the west-facing fire line. In this function, they were working closely with an engine company engaged in mop-up on the top of the ridge. When information on

the fire buildup came, they were at or close to the ridge top. They therefore had ample time to escape the fire's path, moving further east away from the canyon.

At approximately 1600, [REDACTED] Strike Team Leader on an adjacent area, took up a position on a ridgetop on the eastern rim of the canyon the Pine Ridge crew was working in. He had agreed with [REDACTED] that someone needed to watch the canyon and be prepared to warn crews if fire behavior in the canyon began to worsen.

At approximately 1740, [REDACTED] advised [REDACTED] that heat was building up in the canyon and he should begin to move the Pine Ridge crew out of the bottom. [REDACTED] advised [REDACTED] not to move the crew up their primary escape route to the east as he was afraid a fire run would occur shortly up that sunny slope.

At about 1745, [REDACTED] Strike Team Leader [REDACTED], who was assigned to the division about 1100, and [REDACTED] began walking the 14-person Job Corps crew up the slope to the west to their secondary safe zone which was a rocky area two-thirds of the way up the slope. As the crew climbed to the rocky area, the fire made a run up the west-facing slope with high intensity. Flame heights were obviously over 30 feet tall as pine trees were charred completely to their top.

At about 1758, the crew arrived at the rocky area and attempted to begin climbing up the limestone bluff. The fire became violent on the east-facing slope below the crew, causing juniper trees directly above the rocky area the crew was in to ignite. At this point the decision was made by [REDACTED] to deploy shelters after all crew persons were reassembled in the rocky area. There was not sufficient flat area for the entire crew to deploy their shelters in the normal manner. Instead, most of the crew deployed into crevices in the rocks, pulling the shelters over them. While most of the crew deployed individually, there were instances where two and three people deployed in some of the larger crevices. The investigation team did not determine the exact number of each. They did determine that the crew as a whole utilized the natural protection of the rocks in combination with the shelters to accomplish a successful deployment (no burns or other injuries--no fatalities).

At approximately 1806, [REDACTED] got back on the radio and said he and the crew appeared to be okay, the burn had passed over, and he and other overhead were making a head count. At about 1814, [REDACTED] reported all persons accounted for, no injuries or burns, and they were climbing out to the west.

The crew was met at the drop point by National Guard vehicles and [REDACTED], who made a quick check of their condition and provided them with drinking water. The crew was then brought into camp where 4-6 EMT's and an ambulance from Hot Springs were waiting. These EMT's inspected each individual and determined that all were healthy.

On July 22, 1987, 19 of the 20 Job Corpsmembers went back on the day shift doing fire mop-up. One individual preferred not to take a fire assignment and worked with the kitchen crew.

POSITIVE ACTIONS

1. Adequate escape routes (primary and secondary) were identified and made known.
2. Lookout was established in ideal location and with person who was experienced to identify "pending" conditions, not just be reactive.
3. Safe islands identified which matched various escape routes.
4. Communications between Squads, Crews, Strike Team Leader, Division Supervisor and Lookout established and continually used.
5. Decisive action taken when conditions deteriorated and posed threat to escape.
6. Control of Crews continuously maintained.
7. Shelter deployment used only after all other forms of escape failed.
8. Crews well trained and familiar with fire shelter use, deployment techniques and valves. Recent Butte and Shelter video tapes made this possible. Crews had been individually trained and had practiced shelter deployment.
9. All fire shelters were in good condition. All shelters were old style belt shelters.
10. Fire camp had contingency plan to call in EMT's and ambulance in case of multiple injuries.
11. The availability of 3 overhead with 14 person unseasoned crew insured control when deployment became necessary.
12. The Incident Command General Staff personnel were fully qualified. [REDACTED] is an Operations Section Chief and [REDACTED] is a Planning Section Chief.

NEGATIVE ACTIONS

1. Lack of regular weather monitoring, requesting spot forecasts and dissemination of this information to field crews.
2. Lack of Fire Behavior Predictions based upon weather, terrain and fuels.
3. The first General Control Objective identified by the fire team was "life-safety". There is real question whether the values to be protected by the fireline across the canyon justified the risk to "life-safety".
4. Concerns were expressed by Crew Members, Crew Boss, Strike Team Leader, and Division Supervisor that the Job to be done in the canyon was dangerous and maybe too dangerous (unsafe). Each level may have been overconfident in the next level "knowing what they were doing" and not wanting to criticize or second guess. As a result each level failed to communicate their concerns with other levels and therefore the decision to proceed was never really questioned.
5. The Command and General Staff who were not totally aware of conditions on any specific area were expecting input if assignments were not in compliance with objectives, 10 Standard Orders and 13 Situations. No such information was forthcoming.
6. Strategy and tactics used were not based on fact that crews available were inexperienced and not highly skilled (Type II or III). Tried for too much with too little.
7. As identified by the shelter deployment team the following "10 Standard Orders" were not adequately followed: #1, 3, 7 and 10.

Communication between forces on the line was excellent but as negative action items 4 and 5 indicate, they did not pass on their concerns about the assignment.
8. As identified by the Shelter Deployment Team, the following 13 situations were not adequately followed: 1, 3, 4, and 6.
9. During deployment, the plastic wrapper on one shelter stretched with heat when the pull tab was pulled and was difficult to open. Crew members with gloves on had difficulty opening plastic wrapper.
10. The Incident Commanders assigned on July 21, were [REDACTED] and [REDACTED]. Neither man is a qualified Incident Commander. [REDACTED] highest red card rating is Division Group Supervisor. [REDACTED] highest red card rating is Division Group Supervisor.

COMMENDATIONS

1. The leadership and control of Job Corps crew members provided by [REDACTED] and [REDACTED] directly resulted in the safety of all personnel involved in a very dangerous and traumatic life threatening situation.
2. [REDACTED] willingness and skill as a lookout in this dangerous situation contributed directly to the safe escape of this crew. He not only identified conditions as they occurred but he anticipated conditions that would put crews in jeopardy before they happened.
3. The performance, knowledge and teamwork displayed by each and every Job Corpsmember reflects the outstanding training program that is being conducted by the Pine Ridge Job Corps Center Staff.

CONCLUSION

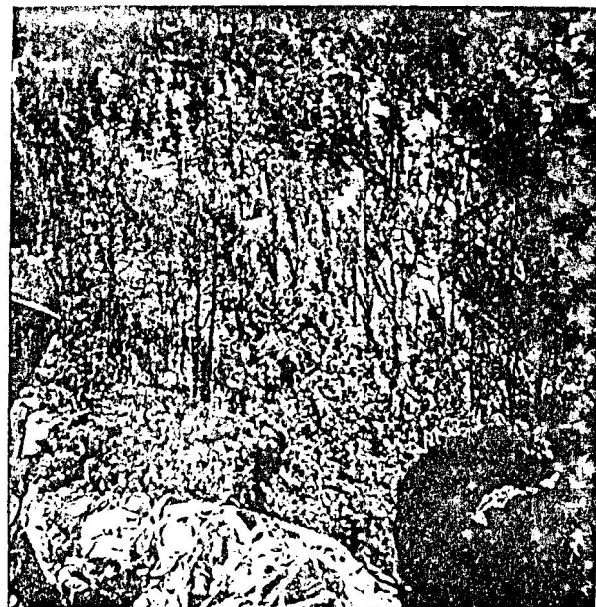
The fire shelter deployment done on the Battle Mountain Fire on July 21, 1987, was a necessary and justified action taken only after planned methods of escape were cut off. The deployment was carried out in a proper manner in accordance with standard training instructions.

APPENDIX

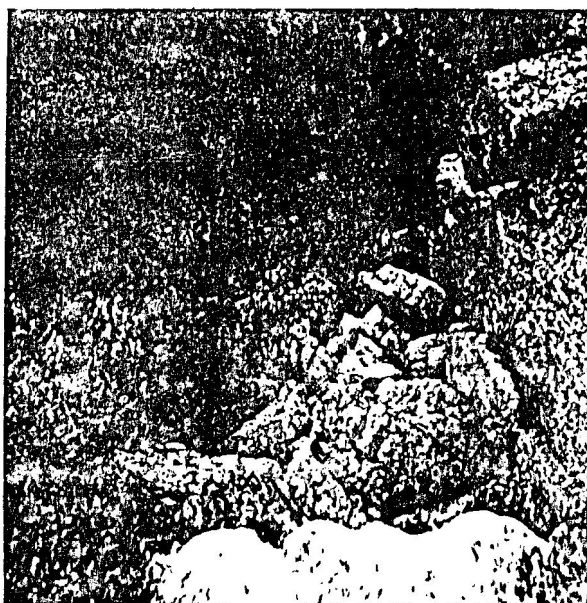
- I. Map of Area
- II. Radio Communications Log
- III. List of Pine Ridge Corpsmembers and Staff
- IV. Fire Organization Chart
- V. Incident General Central Objectives



5. Burned area around rock out crop.



6. Looking down - note fire line; crew in bottom of canyon when evacuation call received.



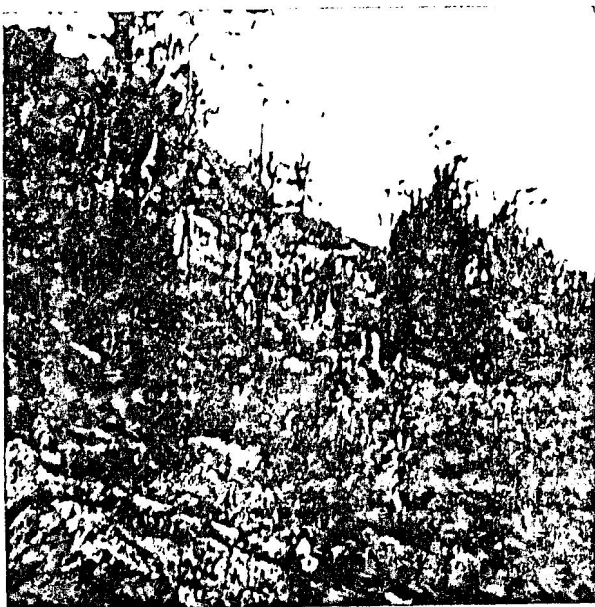
7. Route fire fighters took to rock outcrop



1. View of rock outcrop from top of ridge, fire line here (on top).



2. View of rock outcrop showing canyon.



3. Looking up to top of ridge from rock outcrop (reverse of previous pictures).



4. Rock outcrop showing crevices where most deployment occurred.

INCIDENT OBJECTIVES		1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
ICS 202		Battle Mountain	7/21/87	1110
4. OPERATIONAL PERIOD (DATE/TIME)				
7/21 1800 to 7/22 0600				
5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)				
1. Life - safety				
2. Protect property.				
3. Hold all lines.				
4. Burn out line where needed (esp west side of the canyon in Div E)				
6. WEATHER FORECAST FOR OPERATIONAL PERIOD				
Partly cloudy 50% chance of thunderstorms until early morning. Strong gusty winds Temp low 56-63° RH 70%				
Surface winds SE 8-12 mph Over 10000ft. winds SE 15-20 m.p.h.				
7. GENERAL SAFETY MESSAGE				
Take special safety precautions in steep terrain in some cases				
8. ATTACHMENTS (✓ IF ATTACHED)				
<input type="checkbox"/> ORGANIZATION LIST (ICS 203)	<input type="checkbox"/> MEDICAL PLAN (ICS 206)	<input type="checkbox"/> _____		
<input checked="" type="checkbox"/> DIVISION ASSIGNMENT LISTS (ICS 204)	<input checked="" type="checkbox"/> INCIDENT MAP	<input type="checkbox"/> _____		
<input type="checkbox"/> COMMUNICATIONS PLAN (ICS 205)	<input type="checkbox"/> TRAFFIC PLAN	<input type="checkbox"/> _____		
202 ICS 300	9. PREPARED BY (PLANNING SECTION CHIEF)		10. APPROVED BY (INCIDENT COMMANDER)	

BATTLE MOUNTAIN FIRE SHELTER DEPLOYMENT
APPENDIX I

Fire Run up west facing slope
(about 1745)

Fire Run up East facing Slope
(About 1748)

Abandoned
Shelter

DEPLOYMENT SITE

PINE LINE
(approximate)

Burned Areas as
of 0800 7/21/87

