PATTEE FATALITY
INVESTIGATION REPORT
SHIP ISLAND FIRE

CHIEF INVESTIGATOR

PATTEE FATALITY INVESTIGATION REPORT

Table of Contents

I. PRELIMINARY STATEMENT

On Thursday, July 26, 1979 at approximately 1500, [redacted] fire management officer on the Ashton Ranger District, Targhee National Forest, was killed on the Ship Island Fire, Salmon National Forest.

[redacted], fire management officer, Council Ranger District, Payette National Forest, had taken positions on a helispot preselected by them as both a vantage point for observing the fire and a safety escape area. The helispot was a rock promontory near the bottom of the upper reaches of Tumble Creek drainage canyon.

At about 1400 Pattee and Camp, from their vantage point on the helispot, observed a spot fire across the creek. Pattee advised both the Targhee and Lolo crews which were conducting holding actions at the bottom of Tumble Creek to move to the spot fire. Within 10 minutes, as the fire rapidly increased in size and intensity, Pattee directed the 2 crews to move to designated safe areas.

[redacted] then gathered the scattered personal gear of the Targhee and Lolo crews, plus some other support gear consisting of cargo nets, pumps, saw boxes and food, and placed it in the center of the helispot (H-10) forming a pile approximately 17 feet in diameter and 3 feet high.

At about 1415 the fire had traveled about 300 yards and overran the helispot. As the fire approached them, [redacted] took refuge in their fire shelters on the upslope slide of the helispot, above the personal gear.

As the fire burned quickly around the helispot, it ignited the personal gear, creating an intense fire within 12 to 15 feet of Pattee and Camp.

[redacted] survived in his shelter for approximately 45 minutes before succumbing to smoke and hot air inhalation.

[redacted] survived in his shelter by changing his location on the helispot 3 times over a 2-hour period.

The Regional Office was notified of the fatality and in turn notified the Washington Office. The Regional Office investigation team was formed consisting of:

[redacted] Forest Supervisor, Targhee National Forest - chief investigator
[redacted], Forest staff officer, Payette National Forest
[redacted], Colbalt District Ranger, Salmon National Forest
[redacted], Regional safety manager
[redacted], team recorder

They arrived at the Supervisor's Office in Salmon, Idaho about 1530 on Friday, July 27 and began the investigation. A brief was prepared and transmitted to all Regions and the Washington Office on July 31, 1979.

II. EVENTS PRIOR TO THE ACCIDENT

A. Location and Topography

The Ship Island Fire began from a lightning strike about 1745 on July 17, 1979, in the Middle Fork of the Salmon River Canyon near the mouth of Ship Island Creek on the Cobalt Ranger District, Salmon National Forest.

The fire originated in an area of steep, rugged terrain. Normal initial attack efforts were determined unfeasible by both the helitack foreman and smokejumpers who made aerial observations of the fire scene within 40 minutes after the fire was reported.

Slopes of 70% to 80% are common here, making this one of the rockiest, steepest, most inaccessible locations within the Idaho Primitive Area.

B. Fuels

Fuels over the northern exposure of the Tumble Creek fire area consist of moderately dense Douglas-fir with nine bark and pinegrass as shrubs and ground cover. The area is interrupted by numerous talus rock outcroppings and slide areas.

Fuels over the southern exposure of this area are scattered mountain mahogany with bunchgrass and cheatgrass as ground cover interrupted by slide and talus rock outcroppings. The fuels surrounding the helispot where [redacted] made their stand were scattered mountain mahogany and bunchgrass.

C. Weather and Fire Danger

On Thursday, July 26, the 0630 weather forecast predicted a hot, dry day with the risk of afternoon dry thunderstorm activity (which did not materialize in the fire area on July 26). Maximum daytime temperatures were forecast at 92°F (for 4,000 ft. elevation), relative humidity at 10%, and winds from the southwest of 12-18 mph in the afternoon.


Rapids
HELISPOT
RIVER
Creek
3510
5654
6050
4173
5919
6076
7387

All indications on the day of the fatality were for critical fire weather conditions, not unusual for this area in late July.

At 1400 hours, when the fire ran up the southern exposure of Tumble Creek, wind speeds of 14-18 mph with gusts of 24 mph were recorded and reported to the fire behavior officer, as shown by the weather observation records.

III. CHRONOLOGY OF EVENTS

A. Fire Discovery and Initial Fire Strategy

The Ship Island Fire was started by lightning about 1745 on Tuesday, July 17, 1979. It was located just north of the Ship Island Creek drainage approximately ½ mile above the Middle Fork of the Salmon River in T21N, R14E, Section 1.

Long Tom Lookout turned in the first smoke report at 1808 to the Salmon National Forest fire dispatcher. The fire dispatcher notified the Cobalt Ranger District who requested that the Indianola helitack unit take initial attack action. The helicopter and Alouette Lama arrived at the fire at approximately 1900 that evening. [redacted] the helicopter manager from Indianola, and 3 crewmen were on board.

The fire at that time was reported to be 15 acres and burning intensely. [redacted] reported that due to the fire intensity and its position on the slope and the steep topography that the fire should not be manned at that time because it presented a safety hazard to the crew. The helicopter, returned to Indianola.

At this time, there were 3 potential project fires burning on the Cobalt Ranger District. The fire dispatcher had ordered 16 jumpers from the Missoula jumper base anticipating that they would be used as reinforcements on one of these 3 fires. The jumper aircraft arrived at the Ship Island Fire at 2014. They circled the fire and dropped streamers but reported that they could not jump and recommended not manning the fire.

Early Wednesday morning, July 18, 1979, Forest Supervisor [redacted] Cobalt District Ranger [redacted], and [redacted] District fire management officer flew and mapped the fire from the air. By 0830 of that morning an escaped fire situation analysis had been completed listing the following alternatives:

1. Implement control action necessary to hold the fire to its present size. This was estimated to be about 50 acres.

2. Select a favorable control perimeter utilizing defensible terrain features. Attack the fire with full control action necessary to hold the fire at this point. Estimated fire size under this alternative would have been, at control time, approximately 400 acres.

3. Monitor the fire closely to determine the point that control action will be necessary. Fire may or may not reach this point. Control action may vary from full to partial in order to protect special or unique features such as Ship Island Lake. Estimated size at control time under this alternative would have been approximately 1,000 acres.

4. Allow the fire to play its natural ecological role. Continuously monitor the fire to predict the seasonal extent of the burned area. Monitoring should include the analysis of current energy release components as indicators of the possible occurrence of unacceptible resource damage. These should be compared to predicted energy release components to evaluate the feasibility of continuing with this alternative. Estimated size under this alternative would have been approximately 4,500 acres.

Special note: all alternatives include keeping the fire on the east side of the Middle Fork of the Salmon River.

Alternative 4 was selected for the following reasons:

a. Low suppression costs.
b. High wildlife benefits.
c. High wilderness values.
d. Greater fire crew safety.
e. The naturalness of fire was more in keeping with wilderness management objectives.

The importance of establishing a fire monitoring and public safety program was emphasized. Plans were developed subsequent to the completion of the escaped fire analysis.

The monitoring plan included stationing an observer on the old Stoddard Creek Lookout, located on the west side of the Middle Fork of the Salmon River. An observer, [redacted] wildlife biologist on the Salmon National Forest, manned the lookout on Thursday, July 19, at 1700.

The Stoddard Lookout reported that 1/10 of an inch of rain had fallen on the fire area during the night of Saturday, July 21. This triggered another review of the escape fire situation analysis by [redacted] This analysis considered the observed fire behavior since July 17, potential movement of the fire and resource loss, suppression costs and smoke which was affecting detection of new starts. The analysis concluded with the decision to take a flanking action on the northern and southern borders of the fire.

B. Fire Suppression and Reinforcement

A division boss, and 5 well qualified fire fighters were placed by helicopter on the southern border of the fire along Ship Island Creek. Twenty-four smokejumpers from McCall and Boise were ordered for the northern boundary of the fire. All crews were to be spiked on the fire for a period of at least three days beginning July 21, 1979.

A small overhead team was ordered from the Regional Office. This team was to direct the activities of the 30 people on the fire. Their objective was to keep the fire out of Ship Island Creek and flanking the fire on the northern boundary, force it into the higher elevations, or control it if possible.

The mini-overhead team gathered in Salmon on Sunday, July 22, 1979 at approximately 2000. The team met with Forest Supervisor [redacted] Fire Staff Officer [redacted] and District Ranger [redacted] to be briefed on the fire and to discuss strategy and tactics. The group decided to continue with the strategy to force the fire into the higher elevations. The mini-overhead team consisted of [redacted] as fire boss, [redacted] as the fire behavior officer, and [redacted] performing a dual function of service and plans chief.

By 0840 on Monday, July 23, the team had reconned the fire and set up a base camp at the old Stoddard Lookout. Bob Olsen, sector boss, and his crew had been successful in keeping the fire out of Ship Island Creek on the southern flank of the fire. However, the jumpers on the north flank had not been successful in fire lining the north ridge of Parrot Creek and burning out during the night.

After conferring with [redacted] smokejumper foreman, later on that day, the fire overhead team decided it was not feasible to line the fire along the north slope of Parrot Creek Ridge. A plan was then developed to delay the fire in the bottom of Tumble Creek, the next drainage to the north, and to construct a primary line on the north ridge of Tumble Creek.

Additional reinforcements were requested at this time to consist of 3 Interregional (IR) fire crews, 2 Class I division bosses, and an additional helicopter. The fire order stressed that these crews and personnel be well qualified in line construction and burning out in steep, rough topography.

On the morning of Tuesday, July 24, a smokejumper reconn team reported to the overhead team that it would be feasible to hold the fire in the bottom of Tumble Creek with pumps. The rest of the jumpers then moved down into Tumble Creek.

A helispot was located near the mouth of one fork of Tumble Creek approximately 150 yards upslope from Tumble Creek. This helispot was designated H-10. By 1030 fire crews from the Lolo and the Sawtooth National Forests were flown into Helispot 2 on the ridge north of Tumble Creek. Division Bosses, [redacted] were flown to the Stoddard Lookout base camp where they were briefed on the fire by [redacted] and [redacted] They were then flown to Helispot 2 to supervise the line construction along the ridge north of Tumble Creek.

At this point a request was made to release the jumpers and replace them with another IR crew. Since no additional IR or hotshot crews were available, the fire team agreed to utilize the Targhee Regulars. They made this decision because of the proven performance of the crew and the experience of their crew boss, [redacted] in fuels management and fire behavior.

The Targhee crew arrived at Cove Creek which was being utilized as a heliport on Wednesday, July 25, at approximately 0700. [redacted] plus ten crew members were then ferried into H-10 at the bottom of Tumble Creek. The remaining Targhee crew members were sent to the southern flank of the fire to reinforce [redacted] and his crew.

The Targhee crew's task was to begin a holding action in the bottom of Tumble Creek utilizing pumps as the fire backed down the northern facing slope of Tumble Creek. At approximately 1300, [redacted] and [redacted] flew to H-10 to brief Kyle on fire behavior, strategy, and tactics. They also wanted to make an on-site inspection of the safety zones available to the crew working there. [redacted] also participated in this briefing. By this time, all other smokejumper personnel had been ferried to the Cove Creek heliport for release to their home units.

On the afternoon of July 25, fire activity increased when the temperature inversion lifted. The same afternoon, Safety Officer [redacted] and Line Scouts [redacted] and [redacted] arrived at Stoddard Lookout. [redacted] was assigned to the southern flank of the fire while Jim Camp was directed to scout the bottom of the Tumble Creek drainage. About 1600, the fire spotted across to the west side of the Middle Fork of the Salmon River opposite the mouth of Tumble Creek. Retardant, helicopter and waterbucket, and 8 smokejumpers were utilized to contain this spot fire. This fire reached approximately 1½ acres in size.

The holding action in Tumble Creek continued and the overhead team decided to reinforce the Targhee crew with 15 members of the Lolo crew and Crew Boss [redacted] the next day.

Smoke was again a problem on Thursday morning, July 26, as another inversion had formed the previous night. The Targhee crew had been up most of the night working on the fire as it backed down the south of Tumble Creek Ridge. They gathered on H-10 sometime around 0400 to get a few hours of sleep.

At approximately 0630, a spot fire was reported across Tumble Creek. [redacted] and the Targhee crew worked about 2 hours before that spot was contained and mopped up.

[redacted] had positioned himself on H-10 to assist [redacted] in directing the crews in Tumble Creek. The Lolo crew's A.M. departure from H-2 to H-10 was delayed by late arrival of hot meals. At about 1000 they left for Tumble Creek to reinforce the Targhee crew. [redacted] and 15 Lolo crew members proceeded across the south facing slope above Tumble Creek to H-10. The 5 other members of the Lolo crew joined [redacted] at the mouth of Tumble Creek to prevent the fire from hooking around the ridge and making a run up Tumble Creek.

The Lolo crew arrived at H-10 at about noon. [redacted] assigned them a position below H-10 starting from immediately below where the spot had burned earlier that morning. [redacted] and [redacted] discussed the holding action including safety areas and the Lolo proceeded to their assigned area. Two additional pumps for the Lolo crew had been ordered but had not yet been received at H-10.

Shortly after those pumps arrived, at approximately 1400, a spot fire was reported across Tumble Creek in the vicinity of the earlier spot fire. [redacted] immediately directed both crews to proceed to that spot. Within minutes, he indicated to the fire overhead team that the spot fire could not be contained. He then had directed the crews to their safety zones. Within 15 minutes the fire had overrun H-10.

The Lolo and the Targhee crews had proceeded to escape zones formed by talus rockslides. The Targhee crew was located in a rockslide in the old burn on the south side of Tumble Creek across from H-10. The Lolo crew had gone to a rockslide below and to the west of H-10. Within 2 hours the fire had almost completely consumed the Tumble Creek drainage.

Prior to this time, Forest Supervisor [redacted] had requested that a Class I team be assigned to the Salmon as a fire strategy group to look at future options and to be prepared to assume the fire if it escaped from the Tumble Creek drainage. This group assembled in Salmon on July 24 to be briefed by Supervisor [redacted] make an aerial reconnaissance of the fire, and begin future planning. This group consisted of Fire Boss [redacted], Line Boss [redacted] Plans Chief [redacted], Service Chief [redacted], Finance Chief [redacted] and Safety Chief [redacted]. When the fire blew up in Tumble Creek and proceeded into the Roaring Creek drainage, the decision was made to assign this full overhead team to the fire. All other personnel were then evacuated from the fire, with the exception of 11 people that were left either on the fire or at Stoddard Lookout when the helicopters ran out of flying time.

IV. FIRE BEHAVIOR

A. History

Since the fire's origin on July 17, 1979, it's behavior had been influenced by extreme topography and extremely dry fuels. On July 21, 1979, .1 of an inch of rain was recorded in the fire area. At that time, direct initial attact was attempted with helitack and 24 smokejumpers.

The weather forecasts prior to July 26 were quite similar and predicted continual drying, warmer temperatures, mostly sunny days, strong afternoon winds, humidities on all parts of the fire at less than 20%.

Fuels on the slopes above Tumble Creek were as follows:

1. North Facing Slope

Douglas-fir - light to medium density stocking
Nine bark - scattered brush
Pinegrass - ground fuel scattered over area.

2. South Facing Slope Including Helispot Fatality Site

Mountain mahogany - scattered
Bunchgrass - constituted most of the ground cover
Cheatgrass - constituted some of the ground cover

All fuel sizes were reportedly very dry including the larger ground fuels on the north slope.

Topography as shown on the oblique photos is extremely adverse, rugged and steep. Cliffs and bluffs are common.

B. July 26, 1979

On Thursday, July 26, the 0700 weather forecast (see Appendix - Exhibit A) indicated another hot, dry day with the risk of afternoon dry thunderstorm activity (this did not materialize in the fire area on this day). Maximum daytime temperatures were forecast at 92° F. The relative humidity at 10%. The winds predicted from the SW at 12-18 mph in the afternoon.

Weather readings were taken by the fatality victim, [redacted] at Tumble Creek on hourly intervals from 1000 to 1300 on the 26th. [redacted] personal written observations are as follows (due point and relative humidity were calculated later):

LOCATION & OBSERVER	TIME	DRY BULB	WET BULB	DEW POINT	REL. HUMIDI
TUMBLE CR. (Pattee)	1000	70	52	37	30
"	1100	78	52	27	15
"	1200	81	54	30	16
"	1300	84	56	34	16

Winds were not measured carefully by [redacted] They were estimated as "gusts to 5" or "steady with a slight inversion". Evidently the winds up until 1300 were blowing slightly up-canyon but not with great velocity (see Appendix - Exhibit A). At 1400, on the ridgetop north of Tumble Creek, wind-speeds of 14-18 mph with gusts of 24 mph were recorded and reported to the fire behavior officer.

C. Fire Behavior Forecasting

[redacted] a qualified fire behavior officer was assigned to the fire on Monday, July 23, 1979.

Each day, morning and afternoon, special spot forecasts were received specifically for the Ship Island Fire. From each morning forecast, a written daily fire behavior forecast was prepared. These were carefully, numbered and documented in an accepted FBO forecast format (see Appendix - Exhibit B). [redacted] forecasts were very descriptive, professional, and complete. He was unable to hand individual copies to line overhead since they were not in direct physical contact most of the time. He did, however, contact line overhead by radio each morning and provide them with the essentials of the fire weather and fire behavior forecast for the day.

Each afternoon, at about 1500 hours, he provided line overhead with an update of any additional, pertinent information. The fire boss and plans chief were each thoroughly briefed as information became available. In addition, [redacted] had people (including [redacted]) on the line at several locations with belt weather kits reporting observations. On July 26, regular hourly observations were being taken at Stoddard Lookout, H-2, and in Tumble Creek (by Pattee). A recording weather station and a time-lapse camera were in operation at Stoddard.

Fire Boss [redacted] and Fire Behavior Officer [redacted] visited [redacted] and his crew during the afternoon of July 25. This was done to brief [redacted] and assure his understanding of the fire behavior conditions and the need to agree on designated safe areas for he and his crew.

[redacted] fire behavior forecast for July 26, 1979 (see Appendix - Exhibit B) emphasized continuing dry, critical weather conditions including the high probability of upslope afternoon winds in Tumble Creek. He predicted afternoon fire runs in Tumble Creek and probable spotting across the creek. He also predicted that the spot fires would probably make rapid runs up the south aspect which included the location of H-10, the fatality site.

The occurrence of the first spot fire under the inversion at 0630 hours and following the active fire behavior during the night, should have signaled extreme caution to the overhead and crews. However, the Lolo crew and the safety officer traversed the south facing slope of Tumble Creek at midday with apparent full knowledge of [redacted] forecast and predicted fire behavior. His forecast turned out to be quite accurate. It provided a very definite early warning to the situation that developed at 1400 hours.

V. SUPPRESSION EFFORT AND ACCIDENT SEQUENCE ON JULY 26, 1979

A. Events - Early Morning Until 1200 Hours

Kyle [redacted] and 10 men of the Targhee regular crew had been in the Tumble Creek Canyon since Tuesday, July 24, 1979. On July 25, Jim Camp, line scout, joined [redacted]. Their objective was to hold the Ship Island Fire from crossing Tumble Creek. The tactic was to put the fire out as it backed down the north facing slope toward the creek using hoses, pumps, and water application equipment.

During the night of July 25 and the early morning of July 26, the crew had worked hard and diligently to keep the fire from crossing Tumble Creek. Burning conditions were quite favorable during the night hours.

The crew slept and rested from about 0400 until 0600. At 0630, a spot fire started on the north side of the creek. This was quickly extinguished, but gave a prelude of events to come. The holding action resumed with the favorable conditions of the temperature inversion and slightly rising humidity.

During the evening of July 25, the fire overhead in consultation with Supervisor [redacted] and his Class I advisory team agreed to increase the forces in Tumble Creek with 2 organized crews and attempt to hold the fire at Tumble Creek. Concurrently with this decision was the decision to continue with the line building in preparation for possible burning out on the next ridge to the north above Tumble Creek. This was a backup strategy in case the direct attack in Tumble Creek failed.

The Lolo crew, under the leadership of Crew Boss [redacted], was directed to join [redacted] in Tumble Creek. Their 2-hour hike from H-2 to H-10 in Tumble Creek was delayed by the late arrival of hot meals. The Lolo crew left H-2 at about 1000 hours and arrived at H-10 at approximately 1200 hours. (It is important to note that the route chosen by this crew to H-10 took them right across the very exposed, south facing slope. This is a direct violation of Standard Fire Fighting Orders No. 3 and No. 4 - walking downhill into a canyon with fire below you). Their personal gear and additional water handling equipment was ferried to H-10 during the morning.

On July 25, Fire Boss [redacted] and Fire Behavior Officer [redacted] had met with [redacted] at H-10 to review the plan strategy, the predicted fire behavior, and designated safe areas. At this time, [redacted] was told he was in charge of the Tumble Creek holding action. It is unclear about the relationship between [redacted] and Division Boss [redacted] and the Fire Boss [redacted]s. (No written instructions were being prepared or issued on the fire due to the inaccessibility of various parts of the organization. All instructions were being verbally made over the radio or in face to face contact.)

During the morning of July 26, Fire Behavior Officer [redacted] relayed the details of the spot weather forecast and his fire behavior forecast to the overhead on the fire. We assume that [redacted] received this forecast. It was typical of other forecasts which predicted probable spotting as the inversion lifted and the fuels were heated in late afternoon. Insufficient attention may have been given to this forecast by the overhead.

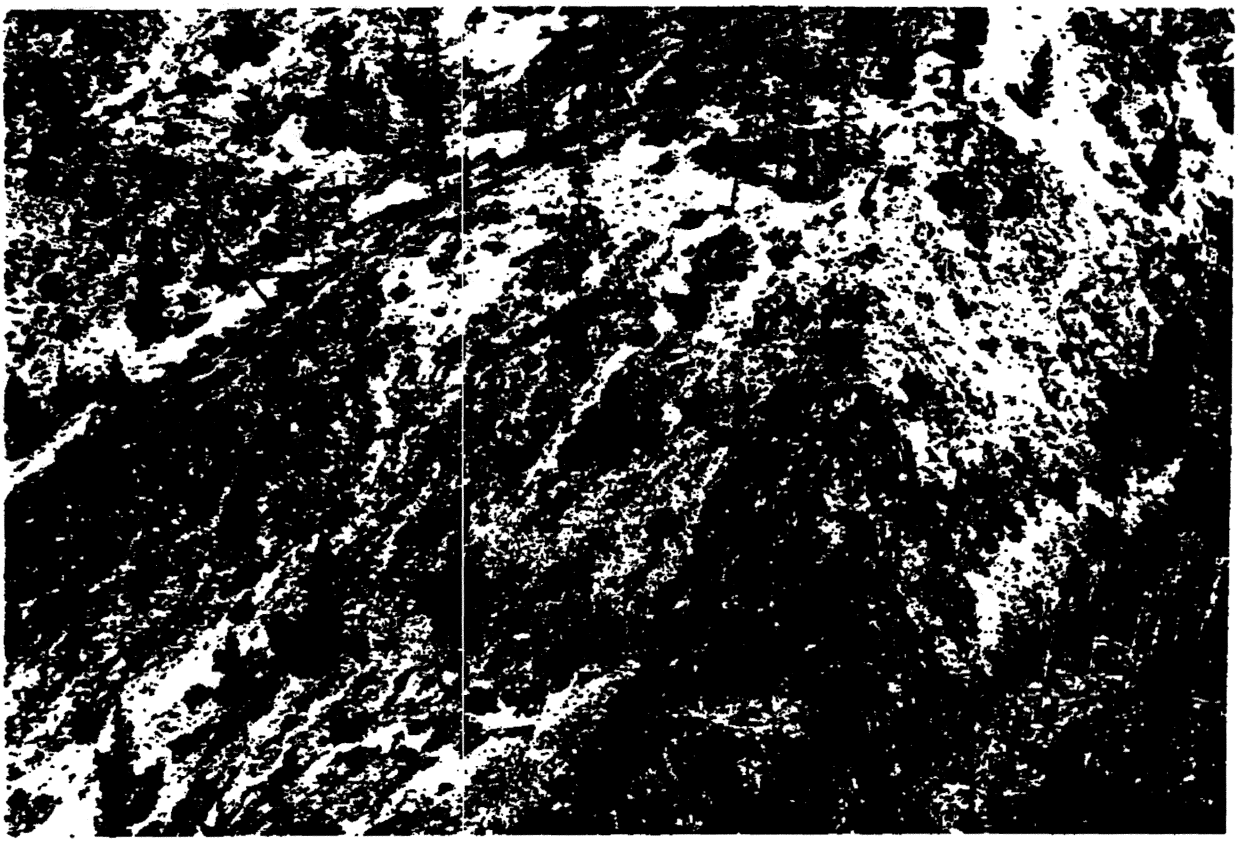
Events - 1200 Hours Through Evacuation of Personnel

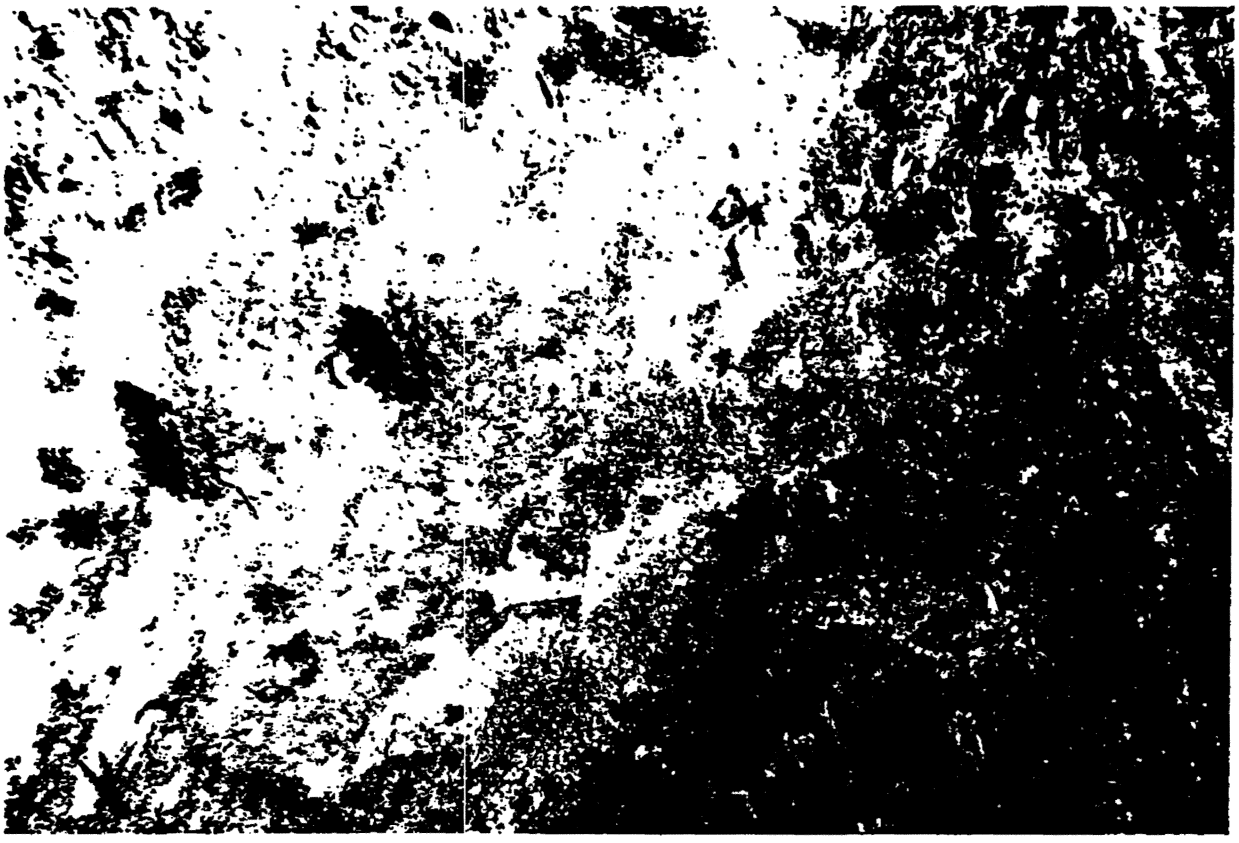
Upon arrival at H-10, [redacted] was briefed by [redacted] on the tactics and strategy for holding the fire at Tumble Creek. (Five Lolo crew members and Division [redacted] had continued to the middle fork of the river to keep the fire from hooking around at river level. Only [redacted] and 15 men hiked down into the Tumble Creek Canyon.) [redacted] quickly perceived the problems of the extreme fire behavior predicted and the difficulty of crew movement in the heavy brush along the creek. [redacted] and [redacted] agreed on the portions of the creek that would be held by the Targhee crew and the Lolo crew. Their conference resulted in the ordering of more pumps for placement in the creek.

The Targhee's holding action to date had utilized the random location of pumps in the creek and hoses radiating out from those pumps. The Targhee crew had had little time to cut trails to improve the access to potential spots on the south facing slope of Tumble Creek.

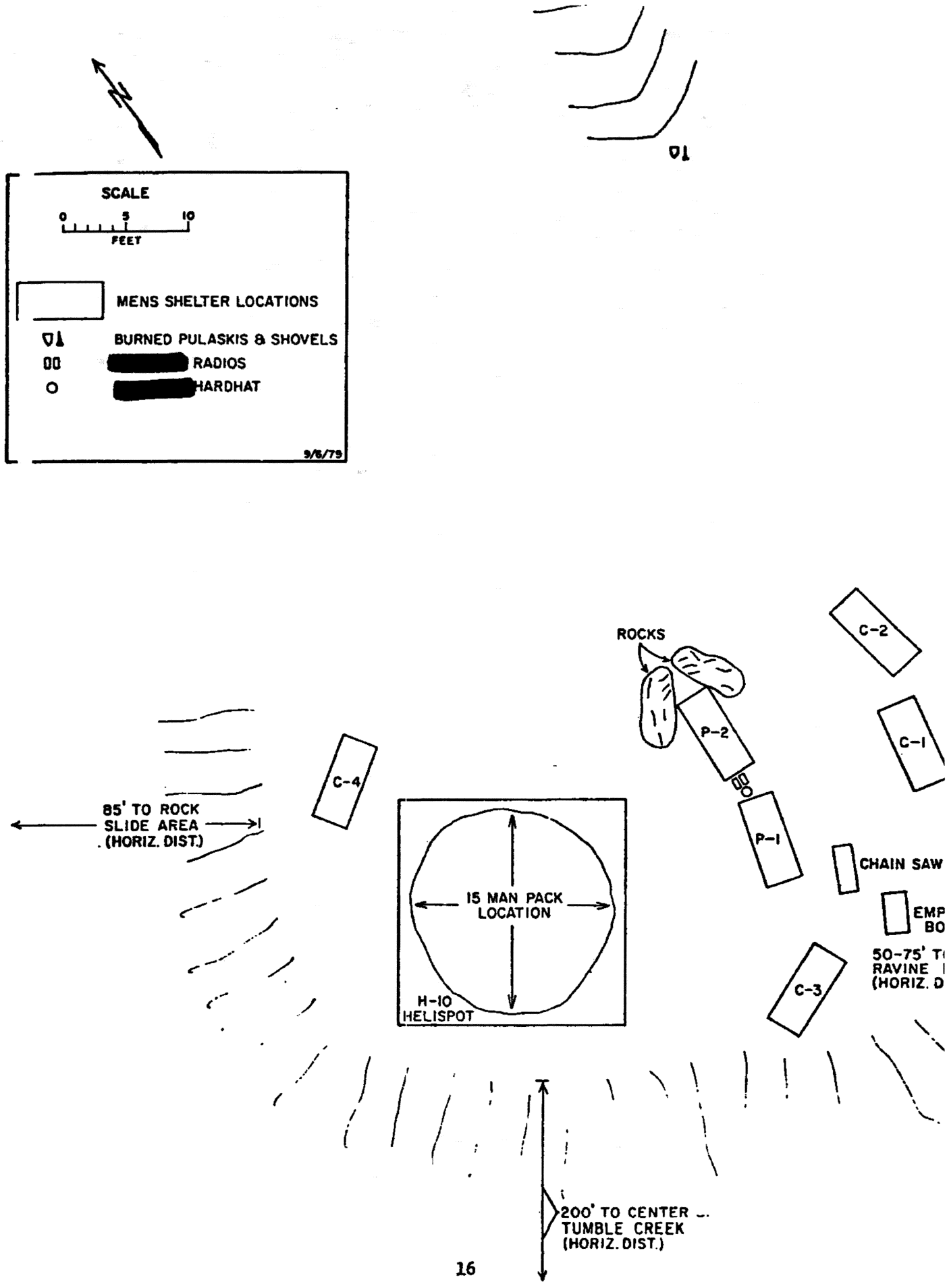
The Lolo crew moved to their lower section of creek which was about 400 yards below H-10. [redacted] instructed his crew in trail building for access and pinpointed pump locations.

At about 1400 hours, [redacted] and [redacted] from their vantage point at the helispot noticed a spot fire across the creek from the Targhee crew. This spot fire was near the canyon bottom, up-canyon from the Lolo crew, and about 300 yards below H-10.





-10 Helicopter Pad


SCALE
0 5 10
FEET
MENS SHELTER LOCATIONS
BURNED PULASKIS & SHOVELS
RADIOS
HARDHAT
9/6/79
ROCKS
C-2
C-1
P-2
P-1
C-4
C-3
CHAIN SAW
85' TO ROCK SLIDE AREA (HORIZ. DIST.)
15 MAN PACK LOCATION
H-10 HELISPOT
200' TO CENTER TUMBLE CREEK (HORIZ. DIST.)

The Targhee crew under the leadership of Squad Boss [redacted] attempted to move quickly to the spot fire. They had difficulty in moving their hose lines across the creek to the fire. At the same time, [redacted] asked the Lolo crew to assist. The additional pumps had arrived at H-10 and were still being packed to the Lolo portion of the creek. The Lolo crew had no water to apply at the spot. [redacted] gathered up his crew as they moved to the spot with their hand tools. Before either the Targhee crew or the Lolo crew could make a direct attack on the fire, [redacted] realized the fire was gaining rapidly in size and intensity. Within 10 minutes following discovery, [redacted] instructed both crews to move to designated safe areas.

The Targhee crew gathered quickly in a large rockslide on the north facing slope and across from the spot fire and down-canyon from helispot H-10. The Lolo crew gathered in a rockslide about 400 yards below H-10 and on the south facing slope. (There were numerous talus rockslides on both sides of the creek which were designated as safe areas.)

At this same time, Fire Boss [redacted] and Fire Behavior Officer [redacted] were at the Stoddard Lookout directly across the Middle Fork from Tumble Creek Canyon. As [redacted] was insuring the safety and accountability of each of the crew members on each of the 2 crews, Fire Boss [redacted] was asking [redacted] about his and Camp's location and safety. At this time, [redacted] realized that [redacted] and [redacted] were not in a designated safe area (rockslide) they had agreed to the day before but were at H-10.

[redacted] and [redacted] agreed together to put the personal gear and fire suppression equipment at H-10 into a stack. [redacted] and Camp estimated they had 15 to 20 minutes before the fire reached them. Early behavior of the spot fire was directly upslope and it delayed its movement toward H-10.

As the fire approached them, [redacted] and [redacted] took refuge in their fire shelters on the upslope side of the helispot and above the stack of personal gear. Both felt quite sure that the helispot was as safe as the designated safe areas and that the shelters would provide them adequate protection. (The investigation team has agreed that the helispot was a minimum safe area. However, the stacking of the personal gear was done in the very place [redacted] and [redacted] should have placed their shelters!) Soon after getting into their shelters, [redacted] and [redacted] talked frequently to reassure one another that they were all right.

Radio transmissions between [redacted] and Fire Boss [redacted] show that [redacted] felt very confident about his location and told Fire Boss [redacted] he was "snug as a bug in a rug". [redacted] picked a location 12 feet from the stack of personal gear. [redacted]s first location was 17 feet from the personal gear and about 5 feet above [redacted]. (See Diagram, page 16)

As the fire moved quickly around the rock helispot, it ignited the personal gear. This then caused an intense source of heat 12 feet from [redacted] and about 17 feet from [redacted] Some additional heat was the result of a minor amount of brush at the bottom of the rock promontory holding the helispot.

[redacted]quickly perceived that the gear was on fire and that his shelter was getting extremely hot. He moved to another location (see diagram). At about this same time, and approximately 20 minutes after crawling into the shelters, [redacted]radioed Elms and said, "The fire is getting very hot, has the main fire burned past?" [redacted]replied, "the fire has past and is up the draws".

One of [redacted] last radio transmissions was to [redacted] in which he said, "The ground is on fire in my shelter". Camp asked if he could beat it out with his hands. [redacted] replied that he couldn't. [redacted] told him to move and that is when he said, "I can't, I can't". Obviously he couldn't beat the fire out because he didn't have his gloves on.

Jim [redacted] moved his shelter 2 more times in the course of the 1½ to 2 hours he was in it. He was able to move his shelter because he was wearing gloves and could handle the very hot shelter edge. [redacted] changed his location once, he moved about the length of his body leaving his hard hat and radios behind. We believe this occurred near the time of his death. [redacted] believes his death occurred approximately 45 minutes after they began use of the shelters.

[redacted] found it very difficult to control his shelter in the erratic and strong winds that surrounded him. He also found it very difficult to keep his bearings as he attempted to peek out from under the shelter and find another safe spot. The winds would raise the shelter from him and make it very difficult to control it, then hot air would sweep in underneath the shelter. He tried to hold it down with his feet, knees, elbows, and hands. At other times, the winds would be pressing the shelter down around him and he would struggle to get the hot shelter off his back.

Second degree burns were received by [redacted] at those places where his hands, elbows, and other parts of his body came in contact with the shelter. Both men were wearing the required Nomex clothing. Both men had received and actually taught shelter use. [redacted] inability to move his shelter was probably due to his not wearing gloves. [redacted] stated he would have been unable to move his shelter if he had not been wearing his gloves.

It is also apparent that the cause of [redacted] death was due to the hot air sweeping in underneath his shelter when the wind would try to raise it off of him. [redacted] commented that it was difficult to breathe and not draw in the hot air when this would happen, which would have seared his mouth and lungs.

The gear pile was completely consumed. A saw box and pump box also caught fire and burned completely.

At the time the spot fire occurred, Safety Officer [redacted] was traversing down the south facing slope into Tumble Creek. His purpose was to check on the safety of the crew and the operation of the heliport at H-10. [redacted] witnessed the spot and the movement of the fire from his vantage point. Soon he had to scramble to the top of the ridge to prevent the fire from overrunning him. [redacted] upon hearing of the fatality, quickly returned to the H-10 and began the accident investigation.

The Targhee and Lolo crews were not at locations that provided them a good view of H-10. Members of the Lolo crew were first to arrive at H-10 and determine that [redacted] had survived. They administered the initial aid. A Targhee crew member with EMT training provided assistance. [redacted] was evacuated by helicopter to the Stoddard Lookout and then to the road end where he was met by ambulance and removed to the Salmon hospital.

[redacted] body was evacuated by helicopter and removed to the Jones - Casey Funeral Home in Salmon. The coroner advised against an autopsy and determined the cause of death as heat and smoke inhalation. The [redacted] body was not burned.

VI. ORGANIZATION AND MANAGEMENT

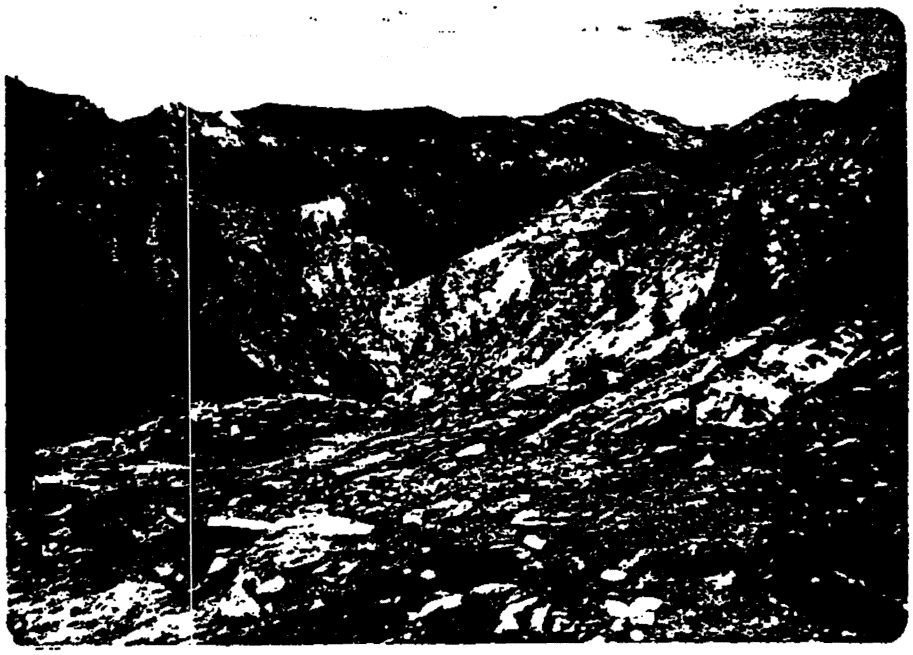
The fire organization was as follows:

H-10 Helicopter Pad

[redacted]first shelter position above the helispot.

[redacted]irst shelter position above the helispot.

[redacted] final position - hard hat and radios are where he left them. Saw box position shown by flagging.



[redacted] final position above helispot.

[redacted] second position.

[redacted] third position. Flagging shows gear box and saw box.

[redacted] final position. Flagging shows gear pile.

A. Fire Overhead Team

[redacted] - Fire Boss
[redacted] - Fire Behavior Officer
[redacted] - Plans and Service Chief
[redacted] - Safety Chief
[redacted] - Division Boss
[redacted] - Division Boss
[redacted] - Line Scout
[redacted] - Line Scout
[redacted] - Camp Boss at Cove Creek
[redacted] - Sector Boss
[redacted] - Crew Boss

B. Fire Qualifications and Experience

A summary showing overhead and fire fighter training experience and fire assignment is shown as Exhibit C in the Appendix.

C. Crew Organization

The Lolo Interregional Crew consisted of [redacted] as crew boss, and 19 crew members. The crew leaders experience and qualifications are listed in the Appendix.

The Targhee Regular Crew consisted of [redacted], crew boss and [redacted] as crew boss trainee plus 18 crew members. Crew boss experience and qualifications are listed in the Appendix.

D. Logistical Support

Transportation to and from the site was entirely by helicopter. A heliport was established at Cove Creek on the main Salmon River and crews were ferried from that point to the fire. Three helicopters were operating:

1. Helicopter 60, which is an Alouette Lama, stationed at Indianola on the Salmon National Forest.

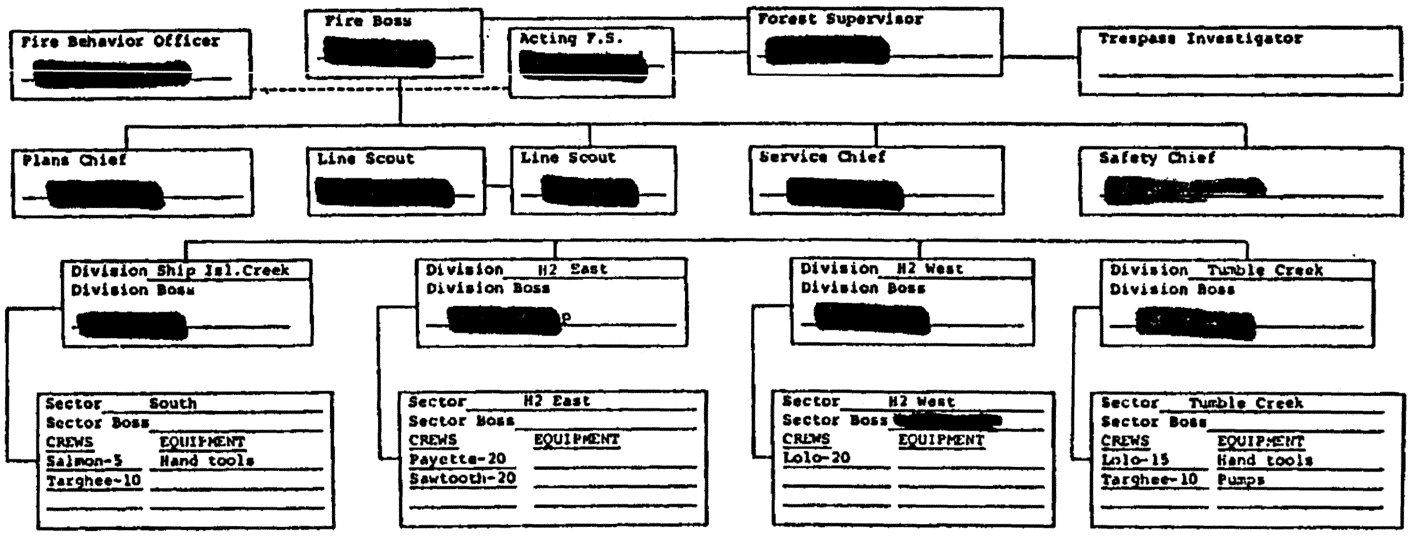
2. Helicopter 51, which is an Alouette III, stationed on the Payette National Forest.

3. Helicopter 11G, which is a Jet Ranger 206B, stationed on the Bitterroot National Forest.

R-4 PROJECT FIRE ORGANIZATION CHART

Salmon National Forest
Ship Island Fire
Zone

Date 7/26 1979
Shift Day
No. Men 85 Crewmen



Mobility on the Ship Island Fire was extremely complicated and time consuming because of the isolated, rugged nature of the Middle Fork of the Salmon River. Once on the fire line, overhead and crews had to maneuver entirely by foot or were moved from one helispot to another by helicopter.

Logistical support was further complicated by difficulties in communication. Because of the isolated nature of the fire, there was a delay in setting up both the administrative and the Interagency Fire Center radio network. At the time of the accident, this network was only partially in place and activated. This meant that the fire overhead team was operating with essentially 5 separate communication systems. They were:

1. Salmon National Forest net.
2. Salmon Forest cache crew radios.
3. Individual crew radios accompanying the Interregional crews.
4. Part of the Boise Interagency Fire Center radio net.
5. The Challis National Forest net for communications to the river.

Communication between the fire overhead teams and the crews working in Tumble Creek were not directly affected by these difficulties. Fire Boss [redacted] was able to talk directly to [redacted] and [redacted].

Compliance with the Ten Standard Fire Fighting Orders

The following Standard Fire Fighting Orders were not rigidly adhered to:

1. FIRE ORDER #3 - BASE ALL ACTIONS ON THE CURRENT AND EXPECTED BEHAVIOR OF THE FIRE.

   The predicted fire behavior had proven accurate over several days. Yet several actions did not adequately consider it:

   - [redacted] location at H-10 rather than in designated escape area.
   - The movement of the Lolo crew and Safety Officer Webster across the south facing slope at midday above the fire.
   - [redacted] remaining at H-10 following the second spot fire to pile the personal gear rather than moving to a safe area.

2. FIRE ORDER #4 - PLAN ESCAPE ROUTES FOR EVERYONE AND MAKE THEM KNOWN.

The escape routes were known to [redacted] and [redacted] and to the Lolo and Targhee crews. However, there was obviously not a clear understanding of what constitutes an escape route. In this case a fire shelter became a planned primary escape route when in fact, it should have only been used as a last resort.

3. FIRE ORDER #8 - GIVE CLEAR INSTRUCTIONS AND BE SURE THEY ARE UNDERSTOOD.

Communications on this fire were extremely difficult. Many of the instructions and information had to be given to the line by radio. [redacted] and [redacted] did not have written instructions as to what their role was in Tumble Creek.

[redacted] and [redacted] personally briefed [redacted] and [redacted] on site. Fire behavior, escape routes, and escape areas were discussed. In view of these actions, it's difficult to realize there may have been a misunderstanding as to where they should have been positioned to direct the Tumble Creek operation.

F. Exposure To The Fire Situations That Shout "Watch Out"

1. FIRE SITUATION #6 - YOU ARE AWAY FROM THE BURNED AREA WHERE TERRAIN AND/OR COVER MAKES THE TRAVEL DIFFICULT AND SLOW.

The travel in the bottom of Tumble Creek was very difficult due to brush, rock, and steep terrain.

2. FIRE SITUATION #10 - YOU ARE GETTING FREQUENT SPOT FIRES OVER YOUR LINE.

The fire had spotted across the line during the night and in the early morning. In addition, the fire behavior forecast was for probable spotting across Tumble Creek with resulting spot fires that would probably not be controllable.

3. FIRE SITUATION #12 - YOU HAVE BEEN GIVEN AN ASSIGNMENT OR INSTRUCTIONS ARE NOT CLEAR TO YOU.

In this incident, the assignment and instructions may have been clear to [redacted] and [redacted], however, there appears to be some misunderstanding in what the fire boss and overhead team visualized as the tactics in Tumble Creek and the perception that [redacted] and [redacted] had of those same tactics. Perhaps written instructions along with a briefing, could have clarified the situation.

VII. FINDINGS

The investigation team reviewed all the information which had been provided them by the various Forest Service offices and by individual witnesses during interviews and in written statements.

Nine findings have been documented. Five of the findings are direct causes of the fatality and are so labeled. Each of the findings relates directly to the information contained in this report. The findings are grouped by the general category of human factors, mechanical factors, physical factors and management factors.

The findings are as follows:

A. Human Factors

CAUSE 1. [redacted] did not use one of the pre-designated safe areas as agreed to with Fire Boss [redacted] and Fire Behavior Officer [redacted] on July 25, 1979.

CAUSE 2. [redacted] and [redacted] used valuable time to stack personal crew gear on the helispot in lieu of leaving for a designated safe area.

CAUSE 3. Undue reliance was placed on the shelter from the advancing fire by [redacted] and [redacted] They considered it as an actual escape device rather than to be used as a very last resort.

B. Mechanical Factors

CAUSE 4. Gloves were not worn by [redacted] and prevented him from moving his shelter away from the burning personal gear as [redacted] was able to do.

CAUSE 5. The concentration of the crew personal gear became an intense source of heat and flame.

6. Fire shelters do work in cases of extreme fire emergency and it is responsible for the survival of [redacted] The shelter is designed to reflect heat only. The [redacted] shelter undoubtedly withstood temperatures in excess of design specifications and was in contact with actual flame.

C. Physical Factors

7. Fire and weather behavior was accurately predicted and was usual for that terrain and that time of year.

D. Management Factors

8. Careful attention to the predicted fire behavior and a thorough review of the strategy employed was made by the fire overhead team, the Forest Supervisor, and the investigation team. Given the conditions, the holding tactic in the Tumble Creek Canyon was acceptable strategy, considering the small crew force and the location of designated safe areas.

9. Lack of written instructions may have contributed to:

   a. Unreliable communications of extreme fire behavior from overhead to crew leaders.

   b. Precise understanding of impending fire behavior.

   c. Inadequate use of intelligence.

   d. Less attention to safe practices.

79 Ship 77

EXHIBIT C -1

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received			Passed Step Test	Red Carded	Highest Red Card Qualification
		S-130	S-190	Other			
(Targhee NF) [redacted]	Training Officer Targhee Reg. Crew	1971	1971	230, 260, 270, 320, 330, 331, 110, 211, 212, 213, 214, 215, 370, 390, 420 Squad Boss - 9+ fires	Yes	Yes	Line Boss Intelligence Office Training Officer
				Crew Boss - 42+ fires			
				Firefighter - 10+ fires			
				Tractor Boss - 1 fire			
				Training Officer - 4 fires			
				Sector Boss - 10 fires			
				Fire Boss III - 41 fires			
				Crew Liaison - 9 fires			
				Tanker Boss - 4 fires			
				Division Boss - 1 fire			
				Fire Boss II - 1 fire			
				Line Boss II - 1 fire			
				Felling Boss - 1 fire			
				TOTAL: 134+ fires			

79slip-79

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received S-130	S-190	Other	Passed Step Test	Red Carded	Highest Red Card Qualification
(Payette) [redacted]	Division Boss	1964	1964	110, 211, 212, 214, 215, 230, 260, 270, 320, 330, 351, 352, 355, 370, 390, 451	Yes	Yes	Division Boss Fire Boss III ASM - Heli I
				Division Boss - 3			
				Fire Boss III - 9+			
				Sector Boss - 2			
				Crew Boss - 6			
				Squad Boss - 11			
				Firefighter - 9+			
				Helicopter Boss - 9+			
				Tanker Boss - 9+			
				Firing Boss - 6			
				Felling Boss - 2			
				Line Locator - 3			
				General Scout - 3			
				Tool Manager - 4			
				Truck Manager - 2			
				Air Serv.Mgr.-Heliport I-6			
				" " " Heliport II-9+			
				Radio Operator - 9+			
				TOTAL - 102+			
(Sawtooth) [redacted]	Safety Chief	1960	1960	110, 211, 212, 230, 260, 270, 320, 330, 341, 380, 370, 390, 420, 580	Yes	Yes	Safety Chief Maps-Records Office Line Boss II
				Safety Chief - 2			
				Line Boss II - 1			
				Plans Chief II - 1			
				Division Boss - 2			
				Fire Boss III - 7			
				Sector Boss - 1			
				Crew Boss - 3			
				Intelligence Officer - 1			
				Safety Officer - 2			
				Air Service Officer - 6			
				Radio Operator - 1			
				TOTAL - 27			

7-1 NIP-84

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received S-130'	S-190	Other	Passed Step Test	Red Carded	Highest Red Card Qualification
(R.O.) [redacted]	Fire Boss	1967	1966	110, 341, 520, 343, 590, 354, 211, 355, 212, 356, 214, 370, 215, 390, 230, 420, 260, 440, 270, 450, 320, 451, 330, 470	Yes	Yes	FBO Line Boss I Fire Boss II
				Fire Boss II - 2 Line Boss II 10+			
				Plans Chief II - 9+ Air Attack Boss 9+			
				Division Boss - 11+ Fire Boss III - 16+			
				Sector Boss - 9+ Crew Boss 9+			
				Squad Boss - 9+ Firefighter - 11+			
				Helicopter Boss - 7 Tractor Boss - 8			
				Tanker Boss - 9+ Firing Boss - 9+			
				Felling Boss - 9+ Line Locator - 9+			
				Line Scout - 9+ Crew Liaison Officer - 9+			
				Maps-Records Officer - 4 Intelligence Officer - 9+			
				General Scout - 9+ I.R. Interpreter 10+			
				Fire Behavior Officer - 1			
				TOTAL - 197+			

79 Ship-49 SPOT WEATHER FORECAST ISSUED 0700, 7/26/79 **EXHIBIT A**

WS FORM D-1 (2-71)
Prev. By WSOM D-41

FIRE WEATHER SPECIAL FORECAST REQUEST

(See reverse for instructions)

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL WEATHER SERVICE

• REQUESTING AGENCY WILL FURNISH:

1. NAME OF FIRE OR OTHER PROJECT	2. CONTROL AGENCY	3. REQUEST MADE — TIME #	DATE
Ship Island	U.S. F.S.	0630	7-26

4. LOCATION (By 1/4 Sec - Sec - Twp - Range)	5. DRAINAGE NAME	6. EXPOSURE (NE, E, SE, etc.)
T 21N R14E Sec 1-2, 11-12	Ship Island	W

7. SIZE OF PROJECT (Acres)*	8. ELEVATION* TOP	BOTTOM	9. FUEL TYPE	10. PROJECT ON:
3500	8500	3400	4H L.P Pine, D-F, Rock	☒ GROUND ☐ CROWNING

11. WEATHER CONDITIONS AT PROJECT OR FROM NEARBY STATIONS *(See example on reverse)*

PLACE	ELE-VATION	OB TIME#	WIND DIR.-VEL.	TEMP. DRY	TEMP. WET	† (Lv. Blank) RH	DP	REMARKS (Indicate rain, thunderstorms, etc. Also wind condition and 10ths of cloud cover.)
Stoddard L.O.	7540	0600	SW @ 6	57	44			scatterd cumulus - yesterday low elev, high temp 94°, MIN r.h. 11%, ~~high~~ high elev 75°, rh 18%

12. SEND FORECAST TO:	PLACE	VIA	ATTN: (Name, if applicable)
	Salmon	Teletype	

[illegible] FIRE WEATHER
[illegible] FORECAST FOR SHIP ISLAND FIRE
ISSUED 0700 MDT THURSDAYY, JULY 25 1979

DISCUSSION...LITTLE CHANGE IN OVERALL WEATHER PATTERN EXCEPT LITTLE MOISTURE INFLUX FROM SOUTHWEST LIKELY TO PRODUCE FEW THUNDERSTORMS.

THURSDAY.. MOSTLY SUNNY HOT AND DRY. RISK AFTERNOON DRY THUNDERSTORM. LITTLE CHANGE TEMP/RH FROM YESTERDAY.. MAX/4000 FT 92..8000 FT [illegible] MIN RH/4000 FT 10 AT 8000 18. WINDS SOUTH TO SOUTHEAST 8-12 A[illegible] INCREASING SOUTHWEST 12-18 AFTERNOON WITH GUSTS TO 25.

TONIGHT: THREAT OF THUNDERSTORMS DIMINISHING AFTER DARK. LITTLE SLOW TEMP AND RH RECOVERY. MIN TEMP 52/4000 AND 58/8000. MAX RH 50/4000 A[illegible] 35/8000. WINDS DIMINISHING SLOWLY ABOUT SUNSET. RISK GUSTY DOWNSLOPE EVENING IF THUNDERHEADS DEVELOPE TO EAST. LIGHT SOUTHERLY 5-10 DURING [illegible]ST OF NIGHT.

[illegible]DAY.. LITTLE CHANGE FROM THURSDAY. HOT AND DRY WITH SCATTER[illegible] [illegible]ERNOON BUILDUPS AND RISK BR[illegible] THUNDERSTORMS.

[illegible] BOISE FIRE WEATHER

III - REQUESTING AGENCY WILL COMPLETE UPON RECEIPT OF FORECAST

IV. FORECAST RECEIVED:	TIME #	DATE	NAME

Explanation of symbols:
- \# Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015.
- * For concentrations (as groups of lightning fires) specify "Concentration"; then give number of fires and size of largest. If concentrations are in more than one drainage, request special forecast for each drainage.
- † No entry necessary. To be computed by the Fire Weather Forecaster.

WS FORM D-1 SUPERSEDES WB FORM D-1 (9-70) WHICH MAY BE USED UNTIL EXISTING STOCK IS DEPLETED.

Ship-83

NAME OF FIRE: SHIP ISLAND

PREDICTION FOR: DAY SHIF

FOREST: SALMON

SHIFT DATE: 7/26/79

TIME AND DATE FORECAST ISSUED: 1000 7/26

SIGNED: [redacted]
FIRE BEHAVIOR OFFICER

WEATHER SUMMARY LITTLE CHANGE FROM YESTERDAY EXCEPT FOR CHANCE OF AFTERNOON AND EVENING THUNDERSTORMS WITH STRONG WINDS IN VICINITY (WILL KEEP WATCH AND ADVISE ALL DIV. BOSSES OF PROGRESS) RIDGETOP WINDS 12-18 MPH BY AFTERNOON WITH GUSTS TO 25 MPH. WINDS WILL BE 10-12 UPSLOPE IN TUMBLE CREEK. RH IN BOTTOM 10% AND 18% AT HIGHER ELEVATIONS. INVERSION WILL SCOUR OUT BY NOON.

FIRE BEHAVIOR GENERAL: FIRE INTENSITY WILL INCREASE AS INVERSION SCOURS. RUNS WILL OCCUR IN TUMBLE CR (SOUTH SIDE) ABOVE FORKS AND AT EXTREME LOWER END THIS AFTERNOON. THUNDERSTORM WINDS CAN BE FROM ANY DIRECTION. I WILL MAINTAIN A WEATHER WATCH AND ADVISE EXPECTED DIRECTION AND FIRE BEHAVIOR.

SPECIFIC:

NORTH RIDGE (H-11 to H-2) - BURNOUT WILL NOT BE POSSIBLE IF THUNDERSTORMS DEVELOP. IF FIRE SPOTS TO NORTH SIDE OF TUMBLE CREEK FIRE WILL SPREAD RAPIDLY UPSLOPE - FIRE BOSS WILL ADVISE IF BURNOUT OF LINE IS TO BE ATTEMPTED.

TUMBLE CREEK - FIRE WILL SPREAD UPSLOPE AT LOCATIONS NOTED ABOVE WITH SPOTTING TO NORTH SIDE PROBABLE

RIVER FACE ABOVE H-12 - FIRE WILL BACK DOWN TO RIVER THIS AFTERNOON WITH HIGH PROBABILITY OF SPOTTING ACROSS RIVER WITH NO CONTROL ACTION.

SPOT ON WEST SIDE OF MIDDLE FORK - SMOKES WILL OCCUR AS WIND INCREASES BUT NO MAJOR RUNS EXPECTED

SOUTH SECTOR (H-4 to H-9) - FIRE WILL INCREASE IN INTENSITY AS WINDS INCREASE, FIRE IN TALUS SLOPE COULD SPOT INTO SHIP ISLAND CREEK.

AIR OPERATIONS: SMOKE WILL REDUCE VISIBILITY VICINITY OF H-10 AND LATER IN AFTERNOON H-2. DENSITY ALTITUDE AT H-10 7000', AND H-2 10,000'

SAFETY: ROLLING ROCKS AND LOGS REMAIN A HAZARD, STRONG THUNDERSTORM WINDS COULD PRODUCE DANGEROUS FIRE BEHAVIOR. ALSO WATCH FOR SNAGS BURNING OFF, PARTICULARLY ON SOUTH SECTOR.

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received			Passed Step Test	Red Carded	Highest Red Card Qualification
		S-130	S-190	Other			
(Payette) [redacted]	Line Scout	1955	1955	110, 211, 212, 213, 214, 215, 230, 260, 270, 320, 330, 331, 341, 380, 351, 352, 370, 390, 420, 590	Yes	Yes	Fire Boss III FBQ
JIM CAMP							Line Boss II
				Line Boss I - 1 Fire Boss II - 2			
				Line Boss II - 1 Division Boss - 4			
				Fire Boss III - 15+ Sector Boss - 1			
				Crew Boss - 9+ Squad Boss - 13+			
				Firefighter - 9+ Helicopter Boss - 2			
				Tanker Boss - 9+ Firing Boss - 9+			
				Felling Boss - 2 Line Locator - 5			
				Line Scout - 5 Crew Liaison Officer - 9+			
				General Scout - 5 Fire Behavior Officer - 2			
				Safety Officer - 5 Tanker Manager - 9+			
				Truck Manager - 9+ Air Serv.Mgr.-Heliport II - 5			
				Radio Operator - 9+ Time Officer - 9+			
				Time Recorder - 9+			
				TOTAL - 158+			

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received			Passed Step Test	Red Carded	Highest Red Card Qualification
		S-130	S-190	Other			
(Targhee) [redacted]	Crew Boss	1967	1970	110, 211, 212, 214, 215, 230, 260, 270, 320, 330, 351, 352, 390	Yes	Yes	Sector Boss Air Serv.Mgr.Heli.I Fire Boss III
				Fire Boss III - 13			
				Crew Boss - 7			
				Squad Boss - 12			
				Firefighter - 21+			
				Tanker Boss 2			
				Line Locator - 1			
				Tool Manager - 1			
				Air Service Manager- 9 Heli. II -			
				Radio Operator - 2			
				TOTAL - 68+			

Ta[illegible]e R [illegible]ar [illegible]

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received S-130	S-190	Other	Passed Step Test	Red Carded	Highest Red Card Qualification
(Targhee) [redacted]	Firefighter	1979	1979	110, 211, 212	Yes	Yes	Squad Boss
				Firefighter - 20 Squad Boss - 1			
				TOTAL - 21			
(Targhee) [redacted]	Firefighter	1979	1979	110	Yes	Yes	Firefighter
				Firefighter - 2 Squad Boss - 1			
				TOTAL - 3			
(Targhee) [redacted]	Firefighter	1979	1979	110	Yes	Yes	Firefighter
				Firefighter - 2			
(Targhee) [redacted]	Firefighter	1977	1977	110, 212	Yes	Yes	Firefighter
				Firefighter - 16			
(Targhee) [redacted]	Squad Boss	1977	1977	110	Yes	Yes	Squad Boss Trainee Crew Boss
				Firefighter - 13			
				Squad Boss - 8 Crew Boss - 1			
				Total - 22			
(Targhee) [redacted]	Firefighter	1977	1977	110, 212	Yes	Yes	Firefighter
				Firefighter - 4			

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received S-130	S-190	Other	Passed Step Test	Red Carded	Highest Red Card Qualification
(Targhee) [redacted]	Firefighter	1970	1970	110, 211, 230, 260, 270	Yes	Yes	Squad Boss
				Fire Boss III - 4			
				Crew Boss - 7			
				Squad Boss - 13			
				Firefighter - 7			
				TOTAL - 30			
(Targhee) [redacted]	Firefighter	1978	1978	110, 260	Yes	Yes	Firefighter
				Radio Operator - 2			
				Firefighter - 2			
				TOTAL - 4			
(Targhee) [redacted]	Squad Boss	1975	1975	110, 211, 212, 230, 260, 270, 390	Yes	Yes	Crew Boss
				Firefighter - 14+			
				Radio Operator - 1			
				Squad Boss - 1			
				Crew Boss - 6			
				TOTAL - 22+			
(Targhee) [redacted]	Firefighter	1978	1978	110	Yes	Yes	Firefighter
				Firefighter - 3			
(Targhee) Tom Reuter	Firefighter	1979	1979	S/110	Yes	Yes	Firefighter
				Firefighter - 1			

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received S-130	S-190	Other	Passed Step Test	Red Carded	Highest Red Card Qualification
(Targhee) [redacted]	Crew Boss	1975	1975	110, 230, 270, 260 Firefighter - 14	Yes	Yes	Crew Boss Trainee Squad Boss
				Squad Boss - 10			Faller
				Crew Boss - 3			
				Faller - 2			
				Tanker Boss - 1			
				Total - 30			
(Targhee) [redacted]	Firefighter	1976	1976	110	Yes	Yes	Firefighter
				Firefighter - 6			
				Squad Boss - 7			
				Faller - 27			
				Total - 40			
(Targhee) [redacted]	Squad Boss	1978	1978	110	Yes	Yes	Firefighter
				Squad Boss - 8			
				Firefighter - 20			
				TOTAL - 28			
(Targhee) [redacted]	Firefighter	1978	1978	110	Yes	Yes	Firefighter
				Firefighter - 3			
				Squad Boss - 1			
				TOTAL - 4			
(Lolo) [redacted]	Lolo Crew Leader	1972	1973	110, 211, 212, 213, 214, 215, 230, 260, 270, 320, 330, 370, 390	Yes	Yes	Fire Boss III Sector Boss
				Fire Boss III - 1			
				Crew Boss - 11			
				Squad Boss - 1			
				Firefighter - 2			
				TOTAL - 15			

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received			Passed Step Test	Red Carded	Highest Red Card Qualification
		S-130	S-190	Other			
(Payette) [redacted]	Fire Behavior Officer	1956	1956	110, 211, 212, 213, 214, 215, 230, 260, 270, 320, 330, 331,	Yes	Yes	GHQ Service Coord. FBO
				341, 343, 351, 352, 354, 355, 356, 370, 390, 420, 440, 450,			GHQ Plans Coord.
				451, 520, 590, 620 GHQ Service Coord. - 1			
				Plans Chief I - 1 Service Chief I - 16+			
				Line Boss II 1 Service Chief II - 2			
				Division Boss - 3 Fire Boss III - 1			
				Sector Boss - 4 Crew Boss - 9+			
				Squad Boss - 9+ Firefighter - 9+			
				Line Scout - 4 Maps & Records Off. - 4			
				IR Interpreter - 2 Fire Behavior Officer - 2			
				Air Serv.Mgr.-Airport - 1 " " " -Heliport II-4			
				Radio Operator - 9+ Time Officer - 9+			
				Time Recorder - 9+ TOTAL - 100+			

QUALIFICATIONS AND EXPERIENCE

Name	Fire Assignment	Fire Training and Year Received S-130	S-190	Other	Passed Step Test	Red Carded	Highest Red Card Qualification
(Targhee) [redacted]	Firefighter	1979	1979	110	Yes	Yes	Firefighter
				Firefighter - 1			
(Targhee) [redacted]	Firefighter	1978	1978	110	Yes	Yes	Firefighter
				Firefighter - 9			
(Salmon) [redacted]	Plans Chief	1964	1965	110, 211, 212, 213, 214, 215, 230, 260, 270, 320, 330, 352, 354, 370, 390, 420, 451	Yes	Yes	Fire Boss III Fire Boss II (OH)
				Fire Boss II - 2			Line Boss II ASM - Heli I
				Line Boss II - 2			
				Division Boss - 1			
				Fire Boss III - 8			
				Sector Boss - 3			
				Crew Boss - 9+			
				Squad Boss - 9+			
				Firefighter - 9+			
				Line Locator - 4			
				Line Scout - 4			
				Air Service Manager-Heliport 2			
				Time Officer - 9+			
				Time Recorder - 9+			
				TOTAL: 71+			