

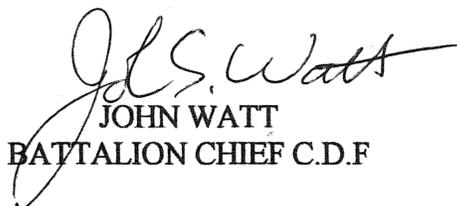
Accident Investigation Report

**Panther Fire Incident
Dozer Burnover**

**August 27, 1996
Pacific Southwest Region
Six Rivers National Forest**



**BROOKS HENDERSON
BATTALION CHIEF U.S.F.S**



**JOHN WATT
BATTALION CHIEF C.D.F**

**Panther Fire Dozer Burn Over
Six Rivers National Forest
SRF # 3070**

Narrative

On September 27, 1996, near the town of Gasquet Ca. , California Department of Forestry dozer 1240 sustained minor damages when it was burnt over by the Panther fire. There were no personnel entrapped or injuries associated with this incident.

The dozer was constructing downhill fireline and as fire behavior increased the operator determined that he could not complete the line before the fire edge below him progressed across his path.

Approximately one half hour after the personnel reached the safety zone at the top of the dozer line the fire burnt through the area where the dozer was left. Air tankers and helicopters were used to protect the dozer and firefighters at the safety zone.

Fire History

The Panther fire started on Thursday, September 26, 1996 at 1430 hours. The incident location was on the North side of the Smith River just East of Gasquet, CA in the Smith River National Recreation Area, Six Rivers National Forest. The fire burned in the same location as the 1972 Panther Fire. The vegetation involved is 24 year old mixed brush and timber, NFFL Fuel Models five and six.

The fire origin was at the Eighteen Mile Creek River Access at an elevation of about five hundred feet elevation. Under the influence of a dry, strong offshore wind flow the fire burned to about two thousand feet elevation in a northwestern direction. The offshore (down canyon) winds intensified after sunset. At zero one hundred hours on September 27 the fire had reached a size of about three hundred acres, approximately one mile long and about one-half mile wide.

The physical and weather factors affecting Division B for the day shift were:

Fuel: Models five & six

Slope: Average 62%; 53% first 160' of elevation drop from the spur road, 80% the next 160' of drop and 64% the next 80' of drop. Total distance from the spur road to the Old Toll Rd. is 1700'. The 62% average is for the upper 700' of the distance. The slope on the lower 1000' is 30%.

Forecasted Weather:

Aspect: SE to SW
Wind: NE 12 to 16, morning, NE 8 to 12, afternoon
RH: minimum 15-20%
Temp.: 83-88 degree's F

Observed Weather:

Wind: Not measured, Fire fighters interviewed agreed with the wind speed in the forecast.
RH: During the time period of 1035 to 1513 hours, 29-39%
Temp.: Same time period as above; 73-83 degrees, the high was at 1215 hours.

Fire behavior observations were obtained from a Field Observer/Lookout (Webb) and the line personnel on Division B. There was agreement among all parties that the early morning winds were fairly strong. The smoke from the east edge of the fire was being transported down canyon before it rose as part of the smoke column. The view from Division B was significantly obscured by the vegetation surrounding the landing. All reports indicate that the fire was "creeping" as it backed into the wind.

Early in the new burning period, after ten hundred hours, the down canyon winds slackened. The diurnal slope wind gained strength relative to the slackening down canyon wind. Webb's attention was drawn to Division E when he heard radio traffic about uphill fire runs and spotting. He says that the resultant wind vector had shifted to support vertical runs on the slope.

The vertical runs impacted the mid-slope Elk Camp Ridge Road spotting and jumping the road in several places. This happened at about the time that HFEO Wallace saw the increased fire behavior below him and stopped line construction. Webb reports that when he repositioned himself to look back into Division B, two persons were walking back up the hill away from the bulldozer.

Chronology

Access to the mid and upper parts of the fire were by the Old Gasquet Toll Road (Forest Highway 314) on the mid-slope and to the ridge line by way of the Elk Camp Ridge Road (Forest Road 18N10). This road ends near the ridge line at the trail head of the Elk Camp Ridge Trail on the eastern side of the fire. An old spur road runs east from the trail head intersection about sixteen hundred feet in length. The elevation of the trail head is about twenty one-hundred feet with the ridge line topping out at about twenty three-hundred feet above the northeast corner of the fire. Drop points (DP) one and three were located at the mid-fire level on the Old Toll Road. DP1 on the east flank and DP3 on the west flank. DP2 was near the end of Elk Camp Ridge Road and DP4 was at the origin, the Eighteen Mile Creek River Access.

Division B originally encompassed the entire fire above the Old Toll Road. Sometime prior to the activation of the 9/27/96 day shift, but after the original IAP shift map was drawn, division was divided into two divisions. Division B became the eastern half and the western half became Division E. In the original IAP, Division B was listed as the highest priority. That was changed as the plan was adjusted. Division E became the highest priority, being the head of the fire and threatening the town of Gasquet, and Division B became the least priority.

On Sept 27, 1996 the day shift under Operations Section Chief (OSC.) Windsor, assigned a division group consisting of Division Supervisor (DIVS) Kirste, Engine Strike Team 9121C, Strike Team Leader (STL) O'Neal, CDF crews; Trinity River four and five, Redding Hot Shots, CDF dozer 1240 with Heavy Fire Equipment Operator (HFEO) Wallace, and a private dozer, one water Tender, and two fallers were assigned to Division B. The Redding Hot Shots, the second dozer, two fallers, and a water tender were shown on the Incident Action Plan (IAP), but were not assigned or were not involved in division activities relevant to this investigation.

The STL's instructions at the morning briefing were to hold the Elk Camp Ridge Road. At approximately 0900 ST 9121C, Trinity River crews four and five, and dozer 1240 arrived at DP2 on Elk Camp Ridge Rd. Dozer 1240 had worked the night before, but the operator had rested from twenty three-hundred to approximately zero eight-hundred hours.

The STL assumed a leadership role in the absence of the division supervisor who was in the helicopter with the operations section chief. By 0915 the STL was scouting an abandoned skid trail below the Elk Camp ridge road for possible use as a control line. While looking for a place to start a direct attack the OSC arrived by helicopter with the night shift OSC Ronsse, District Fire Management Officer Parlasca, Situation Unit Leader Erler, DIVS-B, and the other Division Supervisors. The OSC radioed the STL not to use the skid trail because it was located mid slope with a heavy timber canopy. The STL was directed to the landing at the end of the old spur road. The OSC directed the STL to locate the line on a ridge just past the landing and connect it into the Toll Road. The OSC had to repeat the instructions several times because of congestion on the tactical channel. The STL believed he confirmed the intended line location to be adjacent to the landing. The two OSC's returned to the ICP to drop off the Division Supervisors and to attend to other duties. At approximately ten hundred hours the OSC began to monitor radio traffic about increased fire activity in Division E and personnel being pulled back due to fire activity. By 1030 the two OSC's were arranging for a helicopter recon flight to access the situation in division E.

By approximately 1045 the crews and dozer had completed a safety zone around the landing at the end of the old spur road. The HFEO of Dozer 1240 evaluated the proposed fireline, and after some consideration told the STL that he could make a "one pass" line downhill. Crew Task Force Leader Bobich offered to be a line scout as the dozer started out. The HFEO declined, feeling that it would be unsafe to have a person working below him. Fire activity had increased with up hill runs crossing the Elk Camp Ridge Road west of their location. The STL had one of the hand crews and all but one engine pulled back to DP2. Dozer 1240 began the downhill line. After building about 125 yards of line he noticed an increase in fire activity and determined the fire was going to cross his path. He continued another 75 yards down the hill attempting to turn the dozer around or find an alternative route out. At about eleven hundred hours the OSC arrived overhead, after seeing the fireline safety situation instructed the STL to pull the dozer out. The STL contacted dozer 1240 on a CDF frequency and told Wallace to pull out, the HFEO advised him that he was already attempting to do so, but was so far unsuccessful. The STL sent CDF Fire Captain Samuelson, an experienced operator, down the line to assist the dozer operator. At about this time the remaining Trinity River Crew pulled back to the Toll House and Elk Camp ridge road intersection. The HFEO and Fire Captain Samuelson decided it was unsafe to attempt to pass through the fire. They could not clearly see through the smoke, and

were not familiar with the topography. They felt there was insufficient time to winch the dozer out or construct a benched trail east to flatter ground. The decision was made to abandon the dozer and walk back up to the safety zone.

After completing the recon flight of the fire, and attending a short meeting with the other Division supervisors and the day shift OSC, DIVS-B attempted to drive to his division but was told the road was not passable due to fire activity. He met the Trinity River Crews at the Toll House Road intersection and took them out the Toll road where they started line uphill toward the landing. They constructed direct line until fire behavior increased to the point they were getting frequent spot fires near their line and withdrew.

The Operations Section Chief stayed over DIV-B, and ordered fixed wing air tankers and helicopters with buckets to protect the abandoned dozer and personnel in the safety zone. Approximately one half hour after the operator and fire captain reached the safety zone, the fire burnt through the dozers location.

At approximately fourteen-hundred hours resources from Division E and B reassembled to contain the uncontrolled fire edge in division E and B. By twenty-hundred hours the uncontrolled fire edges in both divisions were contained between the Elk Camp, ridge and the Toll road, using in part, the ridge the OSC had originally intended.

FINDINGS

Background

- The incident occurred on second day of fire.
- No personnel were involved.
- Burn over occurred on the first operational period for a multi agency Type II team, on the second second day of the fire.
- The Fire had burned actively all night.
- Helicopter recon by both Operations Section Chiefs, Situation Unit leader, and Divisions Supervisors was first daylight recon of fire by these individuals.
- Downhill line construction started at beginning of burning period.
- An unidentified local firefighter warned personnel on Division B of possible consequences if strong down canyon winds decreased.

Incident Action Plan

- Division instructions on IAP were not specific.
- A strategic decision was made late in the planning process to break division B into two divisions.
- Division B was stated as low priority in the morning briefing.
- Division E that replaced the down stream flank of division B was not included on a division assignment sheet.
- Division E was not evaluated in the LCES analysis.
- Division E was not included in the communications plan.
- The Incident Action Plan for September 27 contained a Safety message, Fire Weather

Forecast, Fire Behavior Forecast and LCES Analysis. The LCES analysis did not show the downhill check list.

- Division B was listed as number 1 priority on the Air Operations Worksheet, but Division E should have been listed as Priority 1.

Communications

- The OSC had to repeat the instructions directing the STL where to locate the fireline several times, because of congested radio traffic. The OSC also flew up and down the intended ridge several times to designate the fireline.
- The OSC consulted with DIV-B on intercom before contacting STL on Air to Ground channel.
- The pilot and OSC had air-to-ground and intercom capabilities, other personnel in the helicopter had intercom capabilities only and could not hear air to ground communications.
- The Division Supervisor in the helicopter and the Strike Team leader on the line understood the operation Section Chiefs instructions were to begin the fireline off the end of the landing.
- DIVS-B's location in the helicopter facing the tail, pilot's side may have prevented him from identifying the intended line location.
- The single tactical channel assigned for five divisions, was severely congested.
- There was an assumption stated by the STL that the OSC could see something favorable from the helicopter that personnel on the ground could not.
- The dozer and STL were using a local CDF channel to avoid congested traffic on the assigned tactical channel.
- Personnel on line believed their instructions were not to burn out.

Operations

- Fireline was not scouted.
- Proposed line location was not questioned by personnel on Division B.
- The DIVS and STL both stated they felt they had the authority to change line locations.
- Actual location of fire's edge was not known, it was assumed that the fire was west (down stream) of the landing and the intended line construction. Map and compass plotting during the investigation of information from the lookout across the canyon and the STL, indicates the fire was at least even or up stream (East) of their line location when the fireline work began.
- HFEO was reasonably certain that the dozer would not climb back out the line he was assigned to construct.
- HFEO told the STL that he could only construct a one pass line.
- The strategy inferred from the IAP and verbal instructions from the OSC to the DIVS B and to STL was to build downhill line.
- When the Division Supervisor was unable to reach the top of the division and supervise division operations there was no communication or coordination between the STL and DIVS who was taking action with the handcrews from the Toll road up toward the

- landing.
- Division B personnel expressed their tactical priority as getting into a direct attack position as soon as possible.

Weather and Fire Behavior

- Personnel on Division B believed there was enough time to complete the downhill line before “anything happened.”
- Fire behavior increased before anticipated.
- The personnel were thinking about the effects of a reversal of the wind’s direction, not the effects of slackening canyon winds where up-slope winds could dominate.

Safety

- The OSC and DIVS did not review the downhill fireline construction checklist
- No time lines or limitations were discussed or identified for completion of fireline in Division B.
- There was no line safety briefing or discussion of the downhill fireline checklist prior to beginning the down hill line in Division B.
- **The Downhill/Indirect Checklist were not followed.**
- **Fire Orders were not followed.**
- **Watch Out Situations applied.**
- Nine lookouts were posted at various location on the fire, including Webb, across the Smith River Canyon from Division B and E.
- STL assigned an engine to position itself as a lookout, when the engine was unsuccessful for unknown reasons the STL was not notified.

CAUSAL FACTORS

Influenced

- Division instructions on the IAP were not specific.
- Division Supervisors seat location in the helicopter, facing the tail, pilot's side may have prevented him from identifying intended line location.
- Communication between the helicopter and the ground were poor and had to be repeated several times because of congestion on the tactical net.
- There were no time lines or critical factors discussed or identified for completion of fireline in Division B.
- The HFEO told the STL that he could only construct a one pass line, but the STL may not have realized this would mean that the dozer could not climb the hill.

Significantly Contributed

- **Contributory:** The strategy inferred from the IAP and verbal instructions from the OSC to the DIVS and STL was to build downhill line. This set in motion the mind set for downhill line, even though there were alternatives to downhill line and adequate resources, overhead, and access to meet the downhill/indirect fireline checklist.
- **Contributory:** The Division B supervisor was not present when the downhill fireline work was initiated. The STL left the morning briefing with the assignment of controlling spot fires and holding the Elk Camp Ridge road. If it was not preplanned for the STL to supervise the downhill line, DIVS-B did not maintain control of the division when he did not supervise line construction in a critical area of his division.
- **Contributory:** The OSC and DIVS did not review the downhill fireline construction checklist. Had this been done it is more likely the DIVS would have ensured the checklist was followed by personnel in his division.
- **Direct:** No review of the downhill fireline construction checklist or safety briefing by the STL. The STL accepted the downhill assignment, and directed the dozer to begin work. This was the last opportunity to ensure the downhill fireline checklist items would be met.
- **Direct:** There was an assumption stated by the STL that the OSC must have seen something favorable from the helicopter that personnel on the ground could not. When the OSC directed them to a place to begin the fireline, personnel may have felt there was implied authorization for downhill line at that location.
- **Direct:** Line location was not questioned by personnel on Division B. Because of the assumption the OSC saw favorable conditions at that location, the STL may not have considered alternative locations.

- **Contributory:** Downhill line construction started at the beginning of the burning period. The lookout across the canyon stated the winds seemed to be in transition about the time the line was started.
 - **Direct:** Fireline location was not scouted. Had the line been scouted prior to committing the dozer, it is possible the incident would not have occurred.
 - **Direct:** Actual location of fire's edge was not known, it was assumed that the fire was west of the intended line construction. Had the location of the fire been scouted and the fire's location known the STL may have changed the location of the fireline.
 - **Contributory:** Personnel on Division B believed there was enough time to complete the downhill line before anything happened. Several people interviewed expressed this opinion. Because they believed the dozer could complete the line quickly, exposure time seemed the primary mitigation for downhill line. Standard safety practices, checklists, and principals of fire behavior were not used to compensate for the fire environment and the lack of information, direction and supervision
 - **Contributory:** Personnel were thinking about the effects of a reversal of the wind direction, not the effects of slackening canyon winds where up slope winds could dominate. Several mentioned the predicted decreased winds, but no one linked decreased down canyon too possible up slope dominated winds.
 - **Direct:** The downhill/indirect fireline construction checklist was not followed. All personnel interviewed were aware of the downhill checklist. The circumstances or decision by all operational personnel involved not to check for compliance with the downhill checklist directly effected the decision to commit the dozer.
- Direct:** Of the Ten Fire Orders, the following 2 were not obeyed:
- Obtain current information on the fire status.
 - Fight fire aggressively but provide for safety first.
- **Direct:** Of the 18 Watch out Situations the following 8 applied:
 - #1 Fire not scouted and sized up.
 - #4 Unfamiliar with weather and local factors influencing fire behavior.
 - #5 Unfamiliar on strategy, tactics, and hazards.
 - #6 Instructions and assignments are not clear.
 - #8 Constructing line without safe anchor point.
 - #9 Building fireline downhill with fire below.
 - #11 Unburned fuel between you and the fire.
 - #15 Wind increases or changes direction.
 - **Direct:** Common Denominators of Fire Behavior on Tragedy Fires. The following

applied:

- #1 Most incidents happen on smaller fires or on isolated portions of larger fires.
- #3 Flare-ups generally occur in deceptively light fuels.
- #4 Fires run uphill surprisingly fast in chimneys, gullies, and on steep slopes.

Mind Set and Attitude

The decision to start line construction directly downhill from the landing at the end of the old spur road was based on the following:

- Their initial placement at the top of Division B.
- The observed fire behavior.
- A strategy of limited time exposure as a safety mitigation.
- The incomplete communications on the assigned tactical channel.
- A desire to direct attack the fire as soon as possible.
- An unquestioned assumption about what could not be seen.

Due to the priorities of attack, resources were focused on the Elk Camp Ridge Road as the best access to the West flank and the ridge line area. The previous actions, and the priorities established, pre-selected the high side of the fire as the entry point for Division B resources.

The IAP strategy and objectives were very general. Specific tactics developed in the recon flight were perceived differently by the personnel involved.

Recommendations

- Interagency Incident Management teams need to clearly understand, and put in practice, any safety, strategy, or tactical requirements of the agency having jurisdiction and authority for the incident.
- Incident Management Teams taking over evolving, fluid incidents need to ensure that adequate communication exists so that changes or specific instructions not part of the IAP can be clearly transmitted and understood.
- Incident Commanders and Operation Sections Chiefs, during transition from Initial Attack to full team incident management, need to be particularly conscious of safety considerations for line personnel who are developing strategies and tactics within a loose framework of operational objectives.
- Operation Section Chiefs need to ensure that adequate resources are available to line supervisors for them to carry out assignment, within recognized safety parameters for the strategy and tactics directed in the IAP.
- Line supervisors need to conduct line safety briefings to review safety considerations and practices with respect to the Standard Fire Orders, Downhill Indirect Fireline

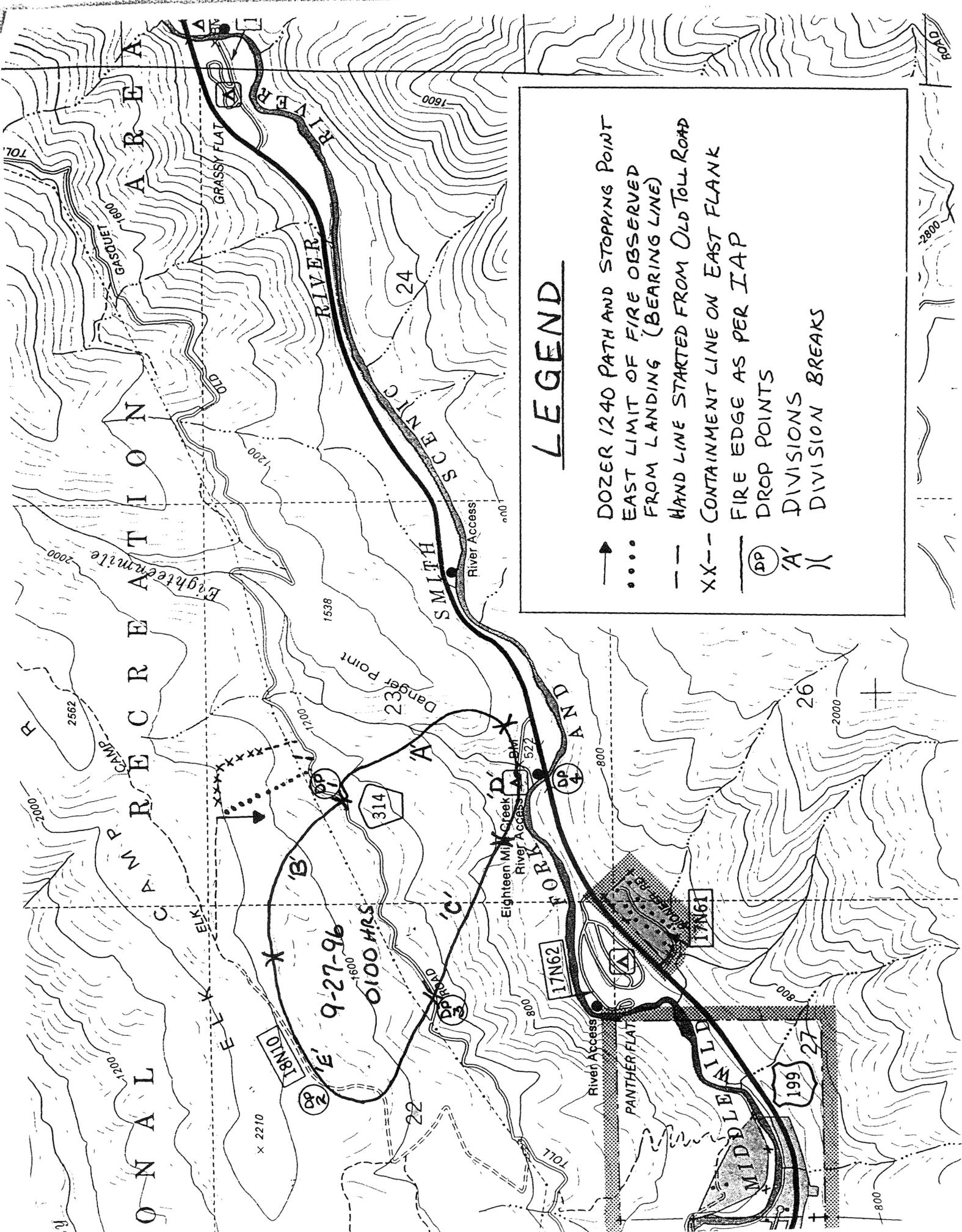
Construction Checklist, and LCES for assigned strategy and tactics. Ensure that line personnel know and understand the critical factors and their mitigation(s) affecting the assignment.

- Line personnel need to take personal responsibility for their safety, and the safety of their co-workers. Making sure that safety considerations for assigned strategy and tactics are known and understood. If doubts exist, clear them up before starting.



BROOKS HENDERSON (Team Leader)
Battalion Chief
Feather River Ranger District
Plumas National Forest

/S/JOHN WATT (Investigator)
Battalion Chief
Shasta Ranger Unit
California Department of Forestry



LEGEND

- DOZER 1240 PATH AND STOPPING POINT
- EAST LIMIT OF FIRE OBSERVED FROM LANDING (BEARING LINE)
- HAND LINE STARTED FROM OLD TOLL ROAD
- XX-- CONTAINMENT LINE ON EAST FLANK
- FIRE EDGE AS PER IAP
- ⊙ DP DROP POINTS
- 'A' DIVISIONS
-) DIVISION BREAKS

ONAL RECREATION AREA

SCENTING RIVER

SMITH

FORBAND

MIDDLE WILD

PANTHER FLAT

GASQUET

GRASSY FLAT

DANGER POINT

EIGHTEEN MILE CREEK

PANTHER FLAT

ELK CAMP

OLD TOLL ROAD

RIVER ACCESS

RIVER ACCESS

RIVER ACCESS

RIVER ACCESS

RIVER ACCESS

18N10

314

17N62

17N61

199

27

26

24

22

20

18

9-27-96

0100 HRS

X 2210

18N10

314

17N62

17N61

199

27

26

24

22

20

18

9-27-96

0100 HRS

X 2210

X 2210