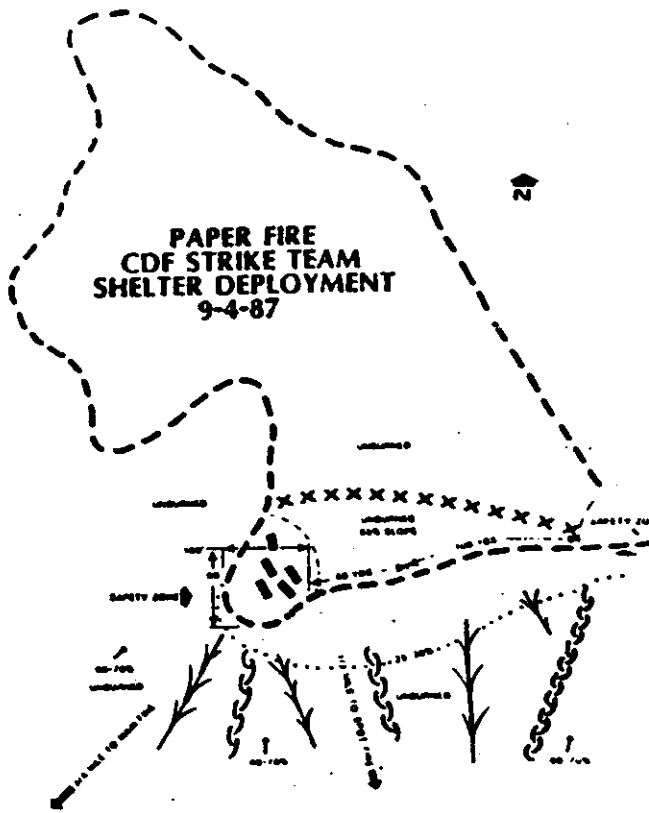


STANISLAUS NATIONAL FOREST

#20



INVESTIGATION REPORT





NOT FOR PUBLIC RELEASE. FS CUSTODIAN
OF ACCIDENT REPORT Z. Smith
415-556-3357

INVESTIGATION REPORT

FIRE SHELTER DEPLOYMENT - CDF ENGINES

PAPER FIRE

STANISLAUS NATIONAL FOREST

9/4/87

REPORT
DISTRIBUTION

ORIGINAL _____

COPY 10





Accident: Shelter Deployment - CDF Strike Team

Location: 1-1/2 mile west of Murphy Peak SE1/4, SW1/4, T.1N., R.16E..

M.D.B.&M.

Date: September 4, 1987

GEORGE ROBY

Chief Investigator

George A. Roby 10/21/87

(signature)

NOT FOR PUBLIC RELEASE, FS CUSTODIAN
OF ACCIDENT REPORT _____

Team Members:

George Roby - Forest Supervisor - Angeles N.F.

Dave Ebert - State Forest Ranger I - CDF Fire Academy

Ed Tonnesen - Forest Planner - Stanislaus N.F.



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A. - Accident Brief

On September 4, 1987, at approximately 0550 hours, a CDF Engine Strike Team from San Diego Ranger Unit, led by Fire Captain [REDACTED] was involved in fire suppression activities on the Paper Fire in the Stanislaus National Forest. Blow-up conditions developed which resulted in crews taking refuge in the cabs of the engines and deploying shelters against the windows and windshield as added precaution against radiant heat.

No injuries were noted; however, Fire Fighter I [REDACTED] was treated for minor heat and smoke stress by medical unit personnel and released. There was no damage to engines.

All personnel were wearing wildland firefighting safety clothing according to California Department of Forestry and Fire Protection specifications, including helmet, goggles, gloves, Nomex, and fire shelter.





B. NARRATIVE

On 9/4/87 at approximately 0500 hours; CDF Strike Team #9331c was in the process of conducting a burning operation along a road approximately 1-1/2 miles west of Murphy Peak. Two contract dozers were working in the vicinity of the strike team; they did not have a leader or any radio communications. Safety zones had been established approximately 175 yards apart.

The strike team was supervised by Captain [REDACTED] of the San Diego Ranger Unit; [REDACTED] Tuolumne-Calaveras Ranger Unit was the Division Supervisor.

Captain [REDACTED] had deployed the engines in his strike team along the road between the safety zones in order to proceed with the operation and provide protection against spotting above the burning operation. It was observed that one large and several smaller drainages led into the area of the operation, and also that the main fire had spotted ahead of itself, placing a spot approximately 1/2 mile below the burning operation. Captain [REDACTED] also observed that smoke conditions from the main fire were extremely bad, making it very difficult to see.

At approximately 0530 hours, it was observed by Captain [REDACTED] that the spot fires below the crew had increased in intensity and the temperature was getting hotter. At this point, Capt. [REDACTED] ceased his firing operation, gathered the strike team into the safety zone furthest to the west along his line. At this time, [REDACTED] a Forester for the Louisiana-Pacific Co. also pulled his pick-up into the safety zone. The dozers were observed to be traveling in an easterly direction toward the other safety zone.

Capt. [REDACTED] then noted that the fire intensity had become extreme in the area of the spot below his area. A wall of fire crowned into the timber and advanced rapidly toward his location. At 0550 hours all personnel were ordered into the cabs of the fire engines, whereupon fire shelters were opened and placed against windows and windshield as a deterrent to radiant heat. Crews remained in the cabs of the engines for approximately 21 minutes.

When the blow-up condition occurred, all personnel involved were wearing complete wildland fire fighting safety equipment including helmet, goggles, gloves and Nomex shirt and pants as per CDF policy.

When the fire passed the safety zones and firing out area, spots occurred on the hill above the road. This area (approximately 60% slope) became involved in fire which subsequently caused fire spread beyond another dozer line that had been established above the road. The still unidentified dozers were beyond the area of involvement and were later observed to be working further down the road toward the highway.

At approximately 0611 hrs., it was determined that it was no longer necessary to remain in the protected area. Captain [REDACTED] reassembled the strike team into normal configuration, assessed the condition of his personnel and equipment. There were no apparent injuries; Firefighter I [REDACTED] was later treated for minor smoke inhalation and heat stress by medical unit personnel. Three section(s) of fire hose were scorched on the engines when



embers landed on the hose bed. No damage was observed on any of the fire apparatus.

The strike team returned to normal status and proceeded to shift change.

The Inter-Agency investigation team was advised of this incident on 9-6-87. Members [redacted] and [redacted] arrived at Paper Base on 9-8-87 at approximately 0700. (Team responded late due to commitments on three other incident investigations.) Interviews were conducted of Strike Team Leader [redacted] Division Supervisor [redacted] and Safety Officer Staff, including Safety Chief: [redacted] - BLM, Alaska; Safety Officers: [redacted] - CDF, Ione, [redacted] - USFS, Black Hills, S.D., [redacted] - BLM, Bakersfield, [redacted] BLM, Rawlins, Wy.

Statements were taken from personnel listed below and are included in Section II of this report.

At 1100 hours, Tonnesen and Ebert traveled to the deployment sight with safety Officer [redacted] where photographs were taken and sketches made.

During the examination of the site, team members noted that the burning operation area appeared to be in an area with anchor points being the two safety zones connected by the road and further that there appeared to be no points connecting to the original fire line as indicated on the incident action plan (IAP). Further investigation revealed that line actually extended from the safety zone where the shelters were deployed, leading in a westerly direction into the canyon toward Ingall's Ranch and eventually tied into the main line. This information, however, was not included in the Incident Action Plan for that shift and it was not included in the burnout operation.





C. FINDINGS

- Phil van*
1. ~~Blow-up~~ occurred below crew which was firing down hill toward a spot fire that was located between main fire and crews.
 2. Fire shelters deployed inside cabs of CDF engines and private pick-up truck as added protection from radiant heat.
 3. No burns to personnel or apparatus was noted. Smoke and heat exposure were only physical problems.
 4. All involved personnel were dressed in full protective clothing as specified by CDF standards and regulations.
 5. Objectives appear to be unclear as to purpose of firing assignment in area of the shelter incident as they relate to attached maps. (Appendix E). Instruction between Division Supervisor and Strike Team Leader was not clear.
 6. Shelter deployment was precautionary and warranted with fire behavior characteristics of recent history in mind.
 7. Terrain between firing operation on road/safety zones and the spot fire are approximately 60-70% and change to 20-30% approximately 20' around the safety zones.
 8. One firefighter (unidentified statement) stated that he felt they should not have been where they were in the first place. He asked that his name not be revealed.





D. DEVELOPMENT OF CAUSE

The probable causes of this incident was 1) a combination of ^{extreme} ~~unstable~~ fire behavior due to extremely dry fuels and strong gusty winds, as well as a possibility of the firing operation on steep mid slope terrain drawing spot(s) into the firing operation and 2) unclear work instructions and lack of understanding of Division objectives.



TO: David Kehoe, Review Board Member

Relative to the Accident Investigation Report review of the Paper Fire incident on the Stanislaus National Forest, which occurred on 9-4-87; The Investigation Team would like to submit the following as an addendum to the report under the Heading of Development of Cause:

The Investigation Team, upon conclusion of the fact gathering portion of this assignment, has developed the opinion that several of the 10 Standard Firefighting orders were violated to some degree and also that many of the 13 Situations That Shout "Watch Out" were prevalent on this incident.

- A. Order #2 - Know what your fire is doing at all times, observe personally - use scouts.

It is apparent that there was some uncertainty on the part of the crews involved as well as the Division Supervisor as to the fires behavior and activity on this portion of the fire and it was indicated that no scouting had been done.

- B. Order #3 - Base Action on current and expected behavior of fire.

This order relates back to the previous statement.

- C. Order #4 - Have escape routes for everyone and make them known.

While safety zones were established, it is apparent that escape routes were not clearly defined to all persons involved.

- D. Order #5 - Post a lookout when there is possible danger.

Evidence fails to corroborate any posting of lookouts on this portion of the Paper Fire.

- E. Order #7 - Maintain prompt communication with your crew, your boss, and adjoining forces.

While there were no radio communication problems identified to the Accident Investigation Team, it is apparent that the written communication relating to the instructions to firefighter crews in the IAP was vague as to objectives on this portion of the incident.

Relative to the 13 Situations That Shout "Watch Out", it is the opinion of this team that all situations were present to some degree with the exception of #13 - You feel like taking a nap on the fire line.

We hope that this addendum to the report will further clarify our position in this investigation.

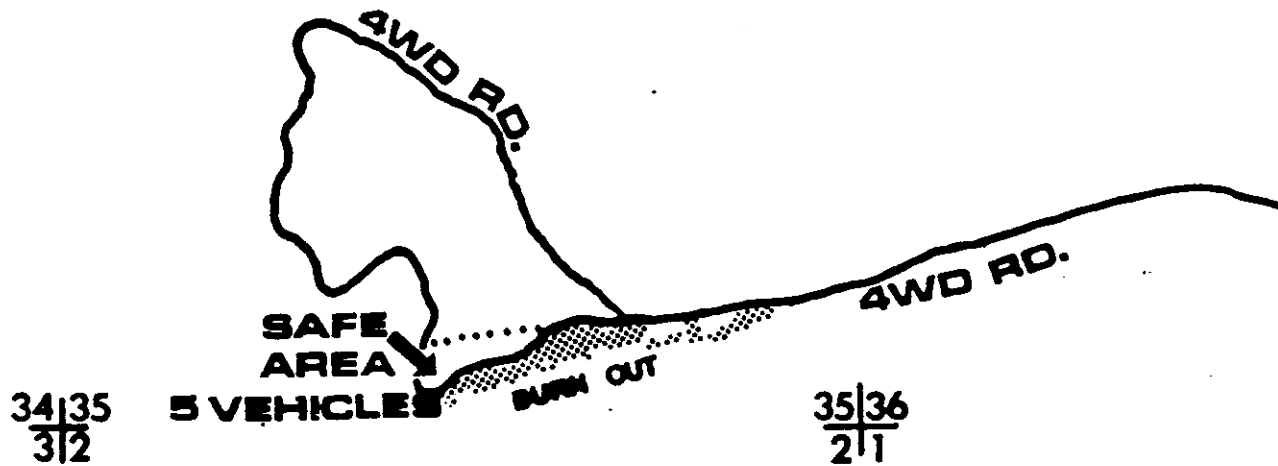
/s/George Roby
Chief Investigator
February 18, 1988

STANISLAUS NATIONAL FOREST

PAPER FIRE CDF STRIKE TEAM SHELTER DEPLOYMENT 9-4-87

26
27|35
34

26|25
35|36



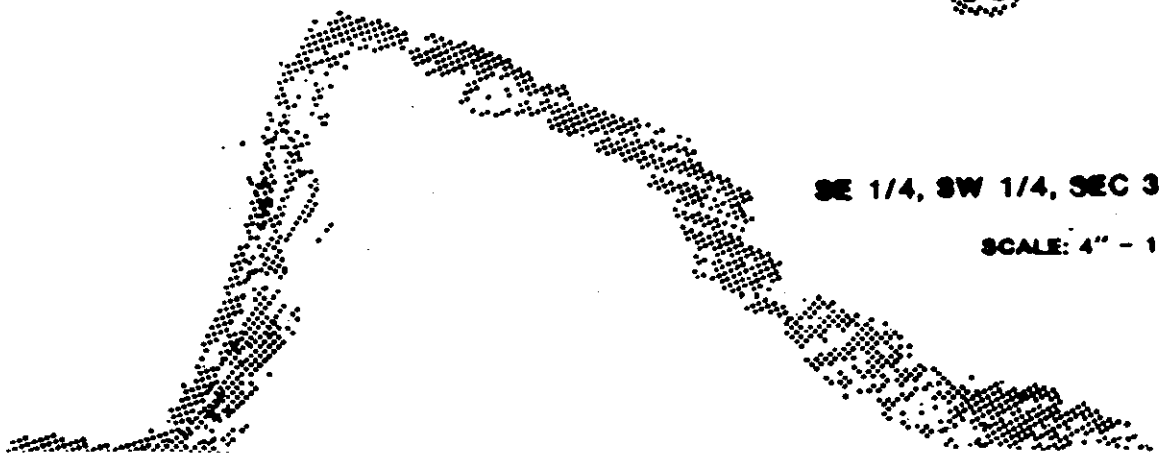
MAIN FIRE



X SPOT FIRE

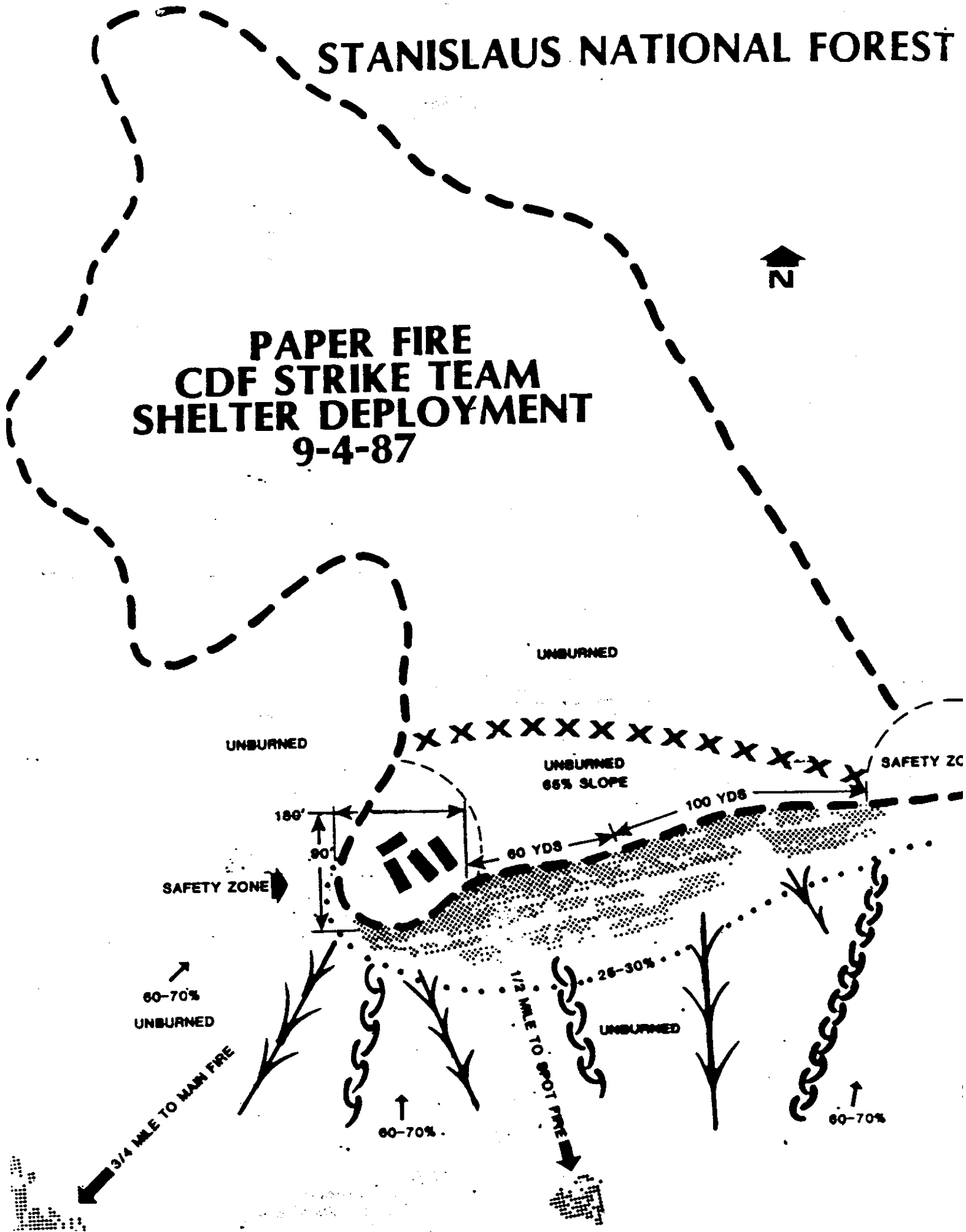
SE 1/4, SW 1/4, SEC 35, T1N, R. 10E MDSM

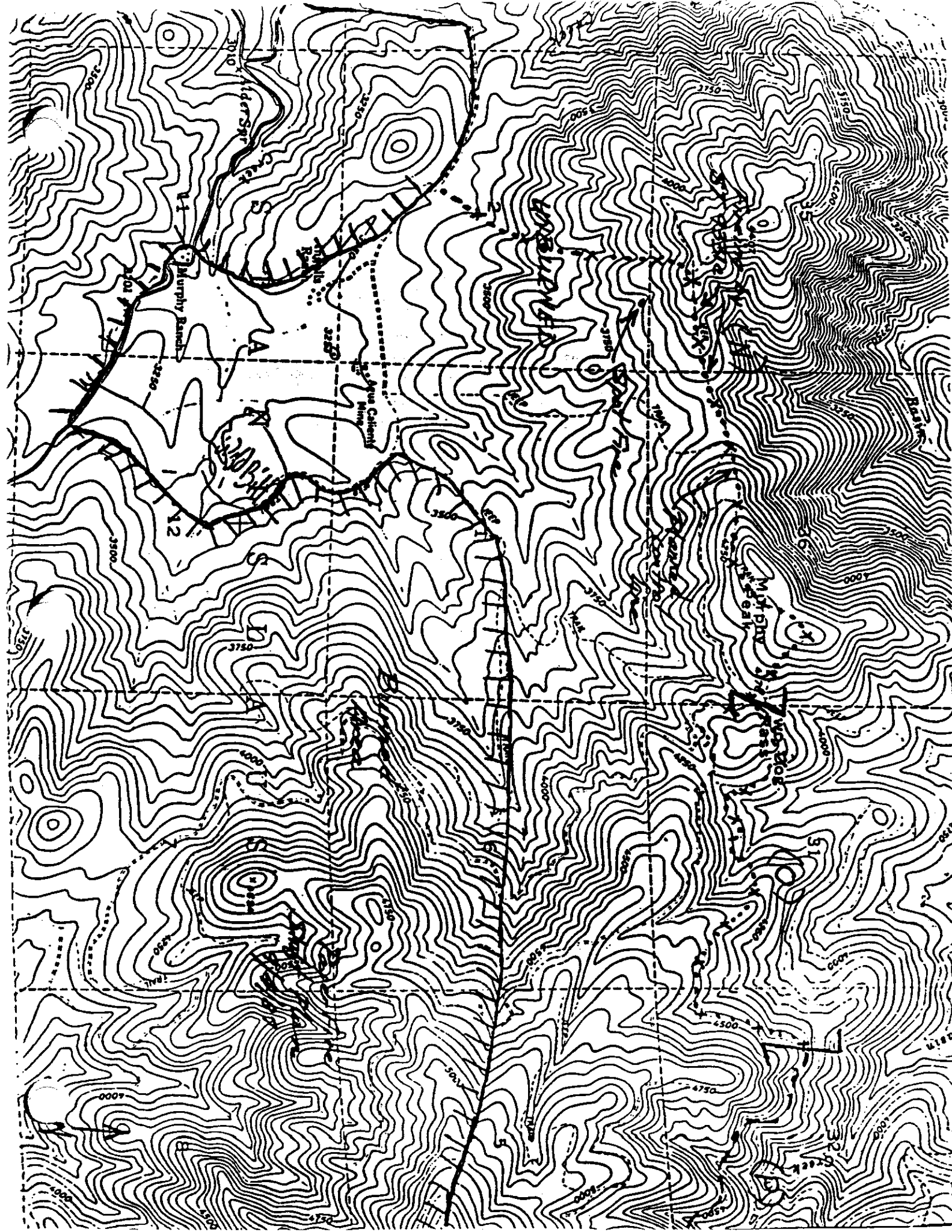
SCALE: 4" = 1 MILE



STANISLAUS NATIONAL FOREST

PAPER FIRE CDF STRIKE TEAM SHELTER DEPLOYMENT 9-4-87







PHOTOS

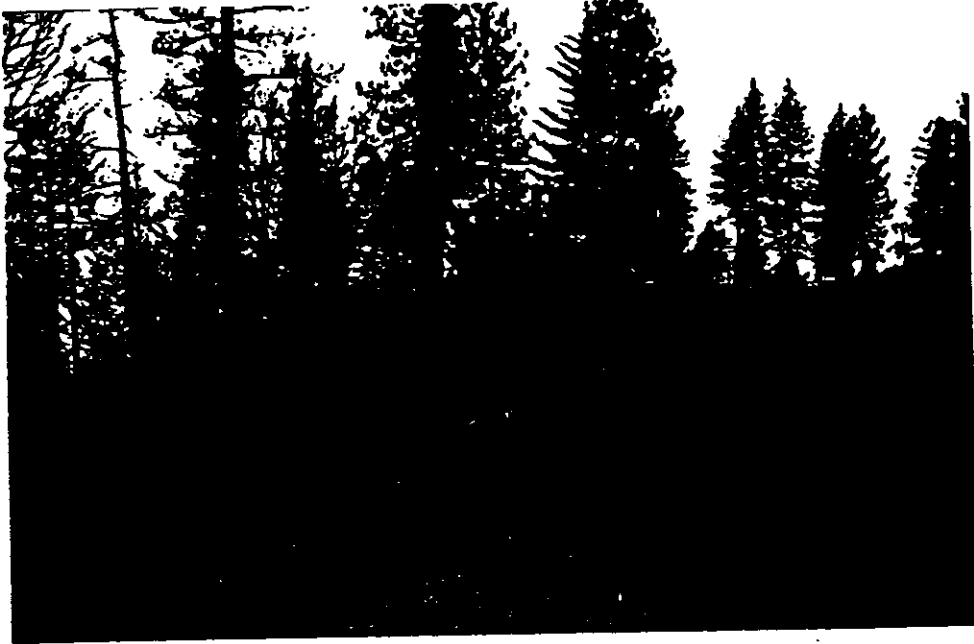


Photo #1 Safety zone (deployment site) east to west

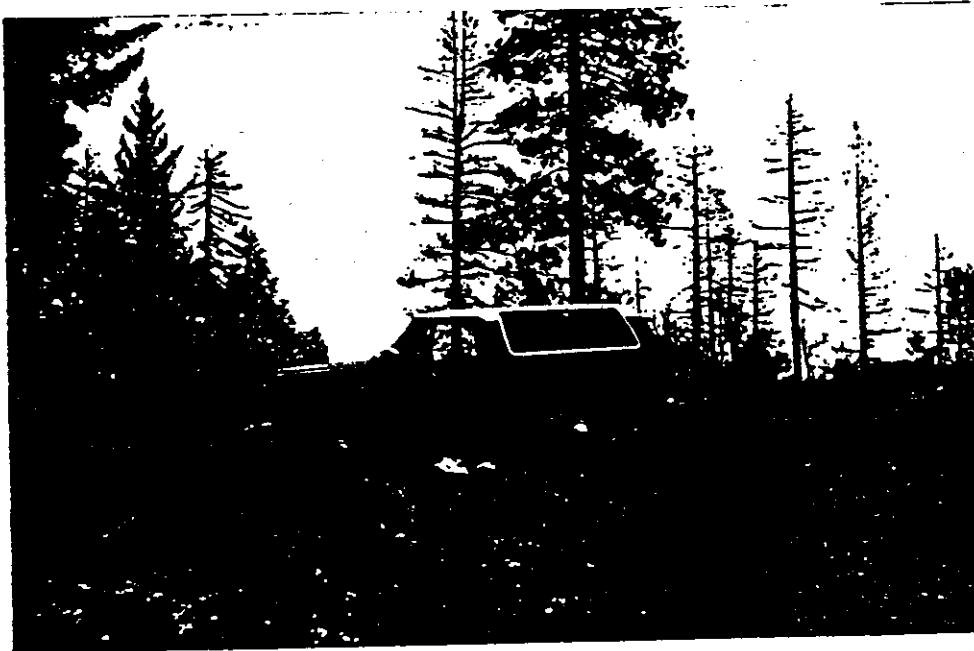


Photo #2 Safety zone (deployment site) west to east



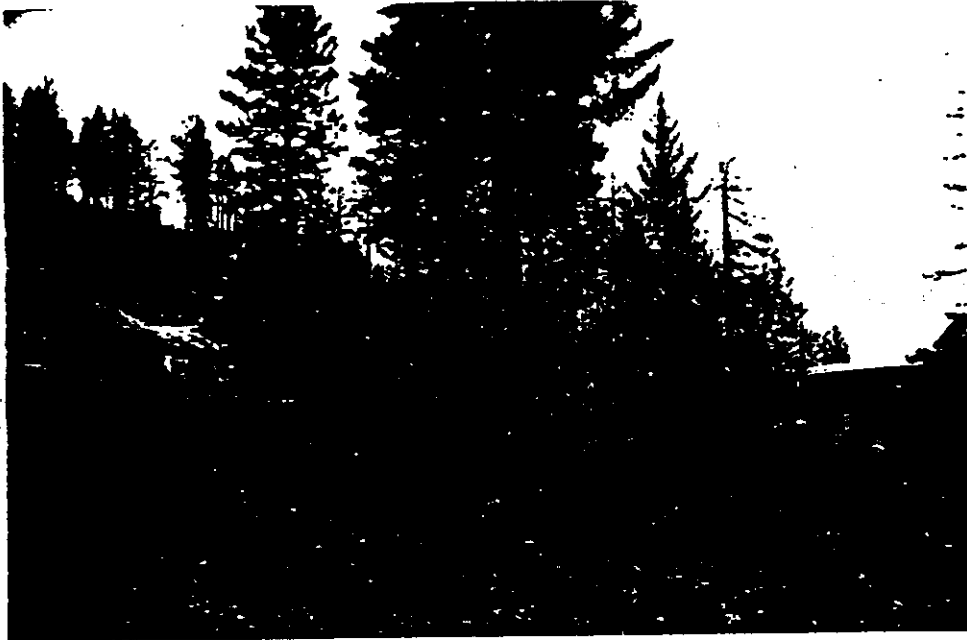


Photo #3 4wd road - Looking east from safety zone (deployment site).



Photo #4 Plastic shelter pouch - Located in center of deployment site.





Photo #5 View of chute below deployment site - east to west.

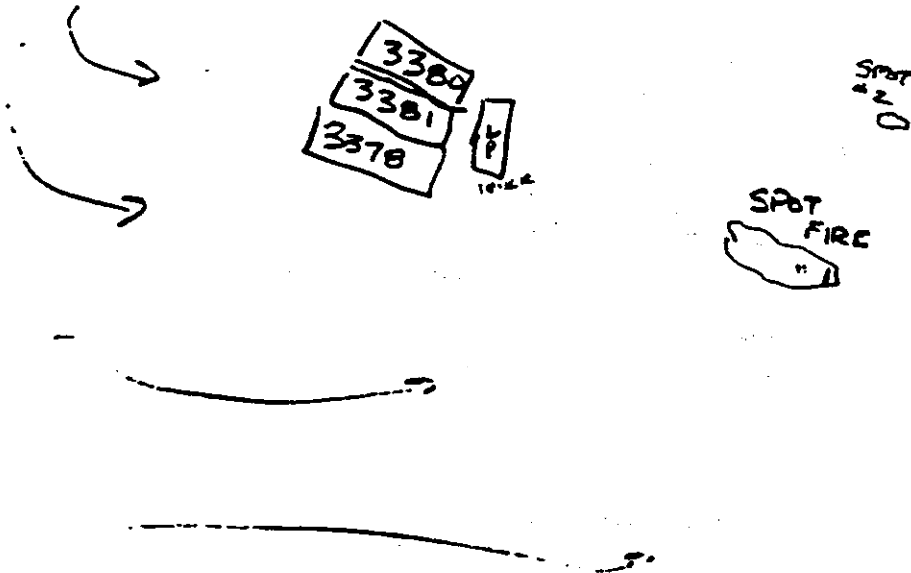


OUR ASSIGNMENT WAS TO BURN
OUT A SMALL SECTION OF LINE
AFTER OUR TAIL GATE TALK BEFORE STARTING
THERE WERE 6 DOZERS IN A SAFETY
ISLAND AT THE STARTING POINT OF
OUR BURNING OPERATION. AS WE STARTED
BURNING MY ENGINE WAS THE LAST
IN LINE MAKING SURE THE FIRE DID
NOT CROSS TO THE UPHILL SIDE OF THE
ROAD. AFTER ABOUT AN HOUR AND
A HALF THE BURN WAS WELL ON
THE WAY WE STARTED GETTING
A FEW SMALL (2'x2') SPOTS ABOVE
US. (ALL WERE SUPPRESSED)

A SHORT TIME LATER FC [REDACTED]
CONTACTED US TO ADVISE THE MAIN
FIRE BELOW US WAS BUILDING RAPIDLY.
AT THIS TIME FC [REDACTED] MOVED ALL
CREWS TO THE SAFETY ISLAND. AFTER
A SHORT TIME A SPOT FIRE WAS NOTED
ABOVE US. AT THAT TIME EMU 3500B
STARTED A HOSE LAY WITH ALL MY
FIRE FIGHTERS AND EMU 3500 FF1.
AFTER LAYING ABOUT 300' OF HOSE
I NOTED A SPOT FIRE NOW BELOW
US IN THE OTHER DRAINAGE AT THIS

TIME I ORDERED THE CREW BACK TO
THE ENGINES. WE THEN PARKED
THE ENGINES IN THE SAFETY ISLAND

MAIN FIRE



AT THIS TIME ALL PERSONNEL
WERE ORDERED INTO THE CAB OF
THESE ENGINES

IN MY ENGINE I HAD MY
CREW MEMBERS PLUS ~~THE~~
AT THIS TIME 3 SHELTERS WERE
TAKEN OUT. 2 PLACED OVER WINDOWS
1 PLACED OVER THE CREW MEMBERS

THE CAB STAYED VERY WARM
THE HOUR 21 MIN WE WERE IN
THE CAB.

THOUGHT - ①. THE MIND WORK
FAST

② FELT LIKE THINGS WERE
BAD BUT NOT TO BAD

③ FL CRUSHER MADE THINGS
EASIER

④ EXTREMELY SCARED FOR CREW MEMBERS

AFTER THE MAIN FIRE PASSED I THEN
CHECKED THE ENGINE FOR DAMAGE
ALSO HAD CREW STAY IN CAB FOR SAFETY
A FEW MINETS LATER FFI COSTELLO
SHOULD SIGN AT HEAT STROK AND
MEDICAL TREATMENT STARTED

IT ALSO TOOK A GREAT
DEAL OF TIME TO GET OUT BECAUSE
OF FIRE BURNING OVER THE ROAD
FOR ABOUT A MILE AND 1/2.

FOR ANY MORE INFORMATION
PLEASE FEEL FREE TO CALL OR WRITE

[REDACTED]
FBI [REDACTED] [REDACTED]
[REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]
[REDACTED] [REDACTED] [REDACTED]

THIS LETTER WILL GIVE THE FACTS
AS I RECALL ON THE MORNING
OF 9-4-87, ON THE PAPER FIRE
DURING A USEIN4 OF MY CREWS FIRE
SHELTERS

FACT: STRIKE TEAM 93312

① FROM THE SAN DEAN

② STRIKE TEAM LEADER FC ~~XXXXXXXXXX~~

③ EN4 3379 A MODEL #1

EN4 3380 A MODEL #1

EN4 3381 A MODEL #1

④ MY ENGINES MAN POWER

FAE ~~XXXXXXXXXX~~

FFI ~~XXXXXXXXXX~~

FFI ~~XXXXXXXXXX~~

NOW THE STORY:

ON THE MORNING OF SEPT. 4
1987 THE STRIKE TEAM HAD BEEN
BROKEN. 3390 & 3394 WERE WORKING A
SPOT FIRE AND EN4S 3381, 3380, 3378 AND
STRIKE TEAM LEADER 93312 WERE REASSIGNED
TO HELP WITH A BURNING OPERATION
ON FC ~~XXXXXXXXXX~~ DIVISION.

**SUMMARY REPORT
FIRE SHELTER DEPLOYMENT**

**CDF ENGINE STRIKE TEAM
AND ONE PRIVATE CITIZEN**

**ON THE
PAPER FIRE - STANISLAUS NATIONAL FOREST**

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

FIRE ACADEMY

SEPTEMBER 4, 1987

On September 4, 1987, at approximately 0550 hours, a CDF Engine Strike Team from San Diego Ranger Unit, led by Fire Captain [REDACTED] was involved in fire suppression activities on the Paper Fire in the Stanislaus National Forest. Blow-up conditions developed which resulted in crews taking refuge in the cabs of the engines and deploying shelters against the windows and windshield as added precaution against radiant heat.

Fire Line Conditions

Weather: Temperature - 85° (estimated at scene).
Wind - erratic and gusty from 10-70 mph at time of blow-up due to extreme lightning/thunder cell activity.

Fuel: Understory: Heavy manzanita, bear clover, and grass - approximately 45 tons per acre. Approximately 80% closure with fuel heights from 15-16 feet.
Overstory: Heavy pine and cedar timber with a canopy closure of approximately 65%.

Fuel Moisture: Live fuel moisture in the low 70% range - 1000 hour time lag fuels below 8%.

Topography: Slope of 60-70% below the road where the crews were working, decreasing to approximately 25-30% within 20 feet of road; 65% slope above the crews.
Ridges and canyons run perpendicular to and below the crews position.

Aspect: South, south-west.

Sequence of Events

Captain [REDACTED] and his strike team had been working along a road, conducting a firing-out operation. Safety zones had been established by dozers approximately 150-200 yards apart. When their assignment started, the fire behavior was moderate and it was noted that the main fire was approximately 3/4 mile from their line. After the burning was started, the main fire became more active and a spot was observed approximately 1/2 mile below the road where the engines were located.

The intensity of the main fire was starting to increase and the winds in the area were becoming stronger and erratic.

Captain [REDACTED] discontinued his burn-out operation and assembled his apparatus and firefighters in a safety zone measuring 90 x 180 feet. At this time, the strike team was joined by an employee of the Louisiana-Pacific Lumber Company in his company pickup. Captain [REDACTED] directed all personnel in the safety zone to take refuge in closed cabs of the vehicles and to deploy fire shelters against inside of the windows and windshields. At 0550 hours, a blow-up occurred and the entire area below and above the crews became involved in fire, jumping a secondary dozer line that had been constructed sometime earlier.

The engine crews and lumber company forester remained in their position for 21 minutes; heat in the cabs were estimated to exceed 1000.

When conditions were safe, Captain [REDACTED] reassembled his strike team and they departed the area enroute to a pre-designated area for shift change.

No injuries were noted; however, Fire Fighter I [REDACTED] was treated for minor heat and smoke stress by medical unit personnel and released. There was no damage to engines.

All personnel were wearing wildland firefighting safety clothing according to California Department of Forestry and Fire Protection specifications, including helmet, goggles, gloves, Nomex, and fire shelter.

cut

**SUMMARY REPORT
FIRE SHELTER DEPLOYMENT**

**CDF ENGINE STRIKE TEAM
AND ONE PRIVATE CITIZEN**

**ON THE
PAPER FIRE - STANISLAUS NATIONAL FOREST**

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

FIRE ACADEMY

SEPTEMBER 4, 1987

On September 4, 1987, at approximately 0550 hours, a CDF Engine Strike Team from San Diego Ranger Unit, led by Fire Captain John Gruber was involved in fire suppression activities on the Paper Fire in the Stanislaus National Forest. Blow-up conditions developed which resulted in crews taking refuge in the cabs of the engines and deploying shelters against the windows and windshield as added precaution against radiant heat.

Fire Line Conditions

Weather: Temperature - 85° (estimated at scene).
Wind - erratic and gusty from 10-70 mph at time of blow-up due to extreme lightning/thunder cell activity.

Fuel: Understory: Heavy manzanita, bear clover, and grass - approximately 45 tons per acre. Approximately 80% closure with fuel heights from 15-16 feet.
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Ridges and canyons run perpendicular to and below the crews position.

Aspect: South, south-west.

Sequence of Events

Captain Gruber and his strike team had been working along a road, conducting a firing-out operation. Safety zones had been established by dozers approximately 150-200 yards apart. When their assignment started, the fire behavior was moderate and it was noted that the main fire was approximately 3/4 mile from their line. After the burning was started, the main fire became more active and a spot was observed approximately 1/2 mile below the road where the engines were located.

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1004G/0086E

Captain Gruber discontinued his burn-out operation and assembled his apparatus and firefighters in a safety zone measuring 90 x 180 feet. At this time, the strike team was joined by an employee of the Louisiana-Pacific Lumber Company in his company pickup. Captain Gruber directed all personnel in the safety zone to take refuge in the closed cabs of the vehicles and to deploy fire shelters against the inside of the windows and windshields. At 0550 hours, a blow-up occurred and the entire area below and above the crews became involved in fire, jumping a secondary dozer line that had been constructed sometime earlier.

The engine crews and lumber company forester remained in their position for 21 minutes; heat in the cabs were estimated to exceed 1000.

When conditions were safe, Captain Gruber reassembled his strike team and they departed the area enroute to a pre-designated area for shift change.

No injuries were noted; however, Fire Fighter I James R. Costello was treated for minor heat and smoke stress by medical unit personnel and released. There was no damage to engines.

All personnel were wearing wildland firefighting safety clothing according to California Department of Forestry and Fire Protection specifications, including helmet, goggles, gloves, Nomex, and fire shelter.

