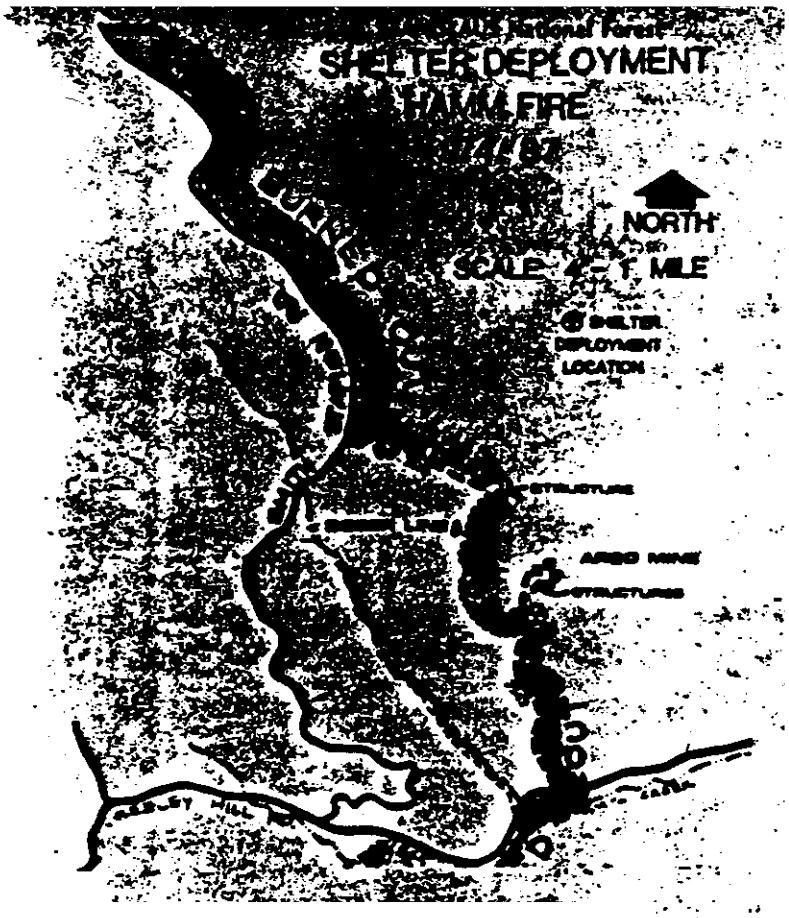

INVESTIGATION REPORT

WOOD · WATER · FORAGE · WILDLIFE · RECREATION
FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

CALIFORNIA DEPARTMENT of FORESTRY and FIRE PROTECTION
CDF

Accident: Hamm Fire Shelter Deployment

Location: SE NE Sec 16 and SW NW Sec. 15

T.2S, R.17.E. Groveland Ranger District

Stanislaus National Forest

Date: September 4, 1987 11:00 a.m.

Chief Investigator: George A. Roby

Angeles National Forest

George A. Roby 1/14/88

(Signature)

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715-536-3857

Team Members:

George Roby: Forest Supervisor, Angeles N.F. - Chief Investigator

Dave Ebert: Battalion Chief, CDF, Training Academy - Ione, CA

Ed Tonnesen: Forest Planner, Stanislaus N.F.

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CONTENTS

A. ACCIDENT BRIEF
FIRE SHELTER DEPLOYMENT
HAM FIRE 9/4/87

At 11:00 am on Friday, September 4, 1987, 28 fire fighters deployed fire shelters where fire from the unburned side of the fireline made a major run towards them.

Twenty men from the Papago #1 crew (R-3) and eight men from the Shasta Trinity O.C. # 29 crew were involved. They deployed in safety zones within the previously burned area. The crews were about 400 yards apart, one in a tractor cleared safety zone and the other in a burned and hand cleared safety zone. The crews were subjected to dense smoke and burning embers for approximately one and a half hours.

There were no injuries, however EMT's administered oxygen to those needing it and monitored their condition. Two crewmen were sent to the hospital for further treatment and observation then later released. All have recovered.

The incident is still under investigation, but the following should be noted by all incident commanders:

> Be sure there is clear understanding whether crews are required to stay on the fireline until relieved or meet at a drop point at a specified time.
>
> Be sure that crews, division supervisors, strike team leaders, etc. all have the same radio frequency capability.

[redacted]

B. NARRATIVE

e Papago crew and Shasta-Trinity OC #29 were originally assigned to work on ision B of the Ham fire on September 3, 1987, during the operatonal period rom 1800 until 0600 on September 4th. Upon their arrival at their assigned location, they were advised by Division Supervisor [redacted] that their assignment was changed to Division A.

The Crew Representative for the Papago Crew, [redacted], was issued what he thought was a tactical radio. He checked twice before going out on the line with the radio technician to make sure he had a tactical radio. The STF OC #29 crew apparently were not issued any radio, but they had C.B. radios of their own.

The night shift plans on September 3rd, called for firing out and holding lines and the Papago Crew #1 and STF Crew #29 were deployed about midnight along a fire line with instructions to hold the line and mop up. [redacted] realized at this time that his radio was not compatible with his Division Supervisor, [redacted]n. The Division Supervisor had half of the STF OC #29 crew stay close to the Papago #1 crew since the STF crew had intra-crew C.B. radios. The crews went to work mopping up along fire line between the "survival camp" and Smith Station Road.

Between 0830--0900 on Friday, September 4th, the Hasloe Fire that was burning south of Smith Station Road was spotting across the Greeley Hill Road. Division Supervisor [redacted] soon realized the spotting couldn't be controlled and told the day shift to delay shift change. He attempted to locate the portion of STF OC #29 crew and Papago crew #1 that had been working gether, which he realized were between the two roads on the fireline.

At approximately 0930--1000 [redacted] attempted to communicate with the missing crew from the Smith Station Road, using the STF OC #29 CB radio, however, the battery was low and the radios would not transmit. [redacted]n drove to jump off point by the "Survival Camp" and hiked 300' to top of a nob, unable to locate the crews. At this time, [redacted] felt it was too dangerous to go further due to unburned fuel with spot fires spotting below line and extreme fire behavior starting to develop.

From his location on the fire line, [redacted] heard roaring sounds of a fire front starting to move, but the smoke was dense and he couldn't see the fire's location. The smoke cleared briefly at approximately 1000--1030 hrs, and he saw two columns of smoke moving in his direction. [redacted] tried to radio operations, without results. [redacted] discussed the situation with crew boss Les LLoyd from the STF OC #29 crew. Both crew leaders agreed that the fire was making a strong run in their direction. The burned side of the line provided considerable amounts of unburned canopy that held strong re-burn potential. The visibility was poor and they were unable to communicate with the rest of the STF crew on Smith Station Road.

The crew boss of STF OC #29, [redacted], said he would go to another safety zone due to the size of the main safety area not being adequate for 28 people.

[redacted] and his 7 men walked east along the cat line about 350 yards and deployed nside the burn. Henson and his 19 men deployed inside the burn in a safety

zone. Henson tried his radio again and made contact with the Ground Support Unit and advised them at 1040 hrs that shelter deployment was imminent. He stated: "don't break radio contact, get to base--let them know..." The ground support supervisor notified Operations Chief [redacted] through the communications unit.

At 1059 hrs [redacted] and his crew deployed their shelters. At some time after this [redacted] made contact with Henderson on the logistics net. STF OC #29 crew deployed their shelters at Deployment Site #2 (Refer to map), approximately 300 - 400 yards to the east.

All persons contacted by the investigation team reported the fire making major runs toward the fire line about 1100 hrs. Crew members interviewed were consistent in describing cyclonic winds, roaring sounds, and flames crackling: they all said they heard and felt objects bouncing off their fire shelters. The smoke conditions were moderate under the shelters, but they did mention an estimated 10-15 degree temperature rise. Smoke outside the shelters was dense with burning embers being blown by winds between 30-50 mph.

The STF crew moved out of their shelters around 1200 noon and started back to the Papago crew.

The Papago crew remained in their shelters, as instructed by Division Supervisor [redacted] until approximately 1230 hrs. Henson felt they could have gotten out of the shelters safely at about 1200 hrs too, but decided to stay as instructed. At about 1230 hrs, it was so uncomfortable due to the sun's heat that he decided to get everyone out. Fire line conditions improved enough so that the rescue team arrived at approximately 1400 hours. Emergency Medical Technicians administered oxygen and monitored vital signs, all personnel walked out to road. The crews were checked by medical personnel before boarding buses and again in camp. Two crew members were sent to the hospital for smoke inhalation treatment and observation; both were released after initial treatment.

C. FINDINGS

The CLO for the Papagos #1 crew had requested a tactical radio and was given a logistics radio. This was confirmed later on the shift by the Division Supervisor.

2. The STF OC #29 crew did not have a tactical radio and could not communicate with the Division Supervisor.

3. The safety message in the plans for 9/3/87 night shift recognized a shortage of radios and advised operations to "Establish your own system to maintain communications with adjoining forces."

4. The Fire Behavior Officer, [redacted] predicted that the fire would be active throughout the evening and entrapments still were possible. His forecast said "Establish safety zones, and watch for neighboring fires merging through your lines."

5. Smoke was thick and visibility was poor through the night and up until the incident occurred.

6. The 28 firefighters assigned to the line where incident occurred never saw or heard the Division Supervisor from about midnight until after they deployed shelters.

7. The crew boss and CLO for the Papago Crew #1 and the crew boss for the STF #29 crew all made the right decision to deploy shelters.

The crews used good safety zones in which to deploy their shelters.

9. Both crews had time for a short review of instructions for using the shelters prior to actual deployment.

10. Members of both crews deployed close together so they could talk and reassure each other that all was OK as the fire approached.

11. The ground support unit recognized the seriousness when contacted by CLO [redacted] and notified the ICP that crews were in danger.

12. The fire hit the fire line near both sides of site 1, but CLO [redacted] did not believe that it reburned on his side of the fire line. (See Appendix I-B)

13. The fire made a run just west of site #2 and reburned approximately 50-60' into the burn, but this was well away from the safety zones (see exhibit).

14. Neither crew was burned over, however, smoke was extremely bad at both sites.

15. Division Supervisor radioed instructions to stay in the shelters until he and the paramedics arrived. He did this to assure the crew safety, not realizing how hot it was in the fire shelters.

16. The Papago #1 crew said they could have gotten out of their shelters a half hour earlier.

17. After the fire front passed, the sun shining on the shelters increased the inside temperatures.

18. Rescue operations were delayed until approximately 1330 hours due to heat and smoke along the fire line.

19. Paramedics administered oxygen to both crews at site #1 before they hiked back to the drop off point. Further monitoring by medical personnel continued when the crews reached the road.

20. There was some conflicting information on the shift plans for Division A and B. The map shows the control line being the Greeley Hill Road and Smith Station Road for both shifts. The instructions mention the control line where the crews were, but does not show it on the tactical maps.

21. There was confusion/misunderstanding between the night shift crews, Division Supervisors and Operations, concerning whether the crews were to stay on the line until relieved or go to a drop off point at a specified time.

22. Fire shelters functioned as they were designed. Two shelters were randomly selected from pile of shelters for closer inspection. Both were in good servicable condition.

The 2 shelters were from the following contracts:

1 - Anchor Ind. GS-08F-37487 8/85
1 - Metro Plastics GS-08S-35188 4/81

D. DEVELOPMENT OF CAUSE

Apparent cause of the accident was the fire spotting across the control lines of the Hasloe fire to the south and spotting into unburned fuel southwest of the crews. These spots spread rapidly and grew into several large fire fronts which burned up to the tractor line near the crews.

A contributing cause was the lack of communications between crews and the Division Supervisor and between the Incident Commanders of the Hamm and Hasloe fires, and also between Incident Commanders and the Area Command.

The Hamm IC stated that he made several requests for proper communications equipment and communications personnel. His requests were directed toward the Forest Dispatcher, the Forest FMO, and the Area Commander. An adequate communications system was not in place on the Hamm Incident until approximately mid-point through the incident. This accident occurred well before this communication system was in place.

TO: David Kehoe, Review Board Member

Relative to the Accident Investigation Report Review of the Hamm 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 the crews were not aware of the activity of this fire or adjacent fires. It appears that no scouting was accomplished.

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

With fire behavior characteristics that had been experienced for several days on this complex, crews and overhead should have been more cognizant of the potential of extreme fire behavior.

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

While safety zones were established, no escape routes had been identified.

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

It appears that no lookouts had been posted on this segment of the Hamm Fire.

E. Order #7 - Maintain prompt communications with your firefighters, your boss and adjoining forces.

Severe problems were identified due to a lack of adequate radio communications, as well as a lack of other verbal and written communications from overhead to line personnel as to objectives and existing situations.

F. Order #8 - Give clear instructions - make sure they are understood.

Crews indicated that they were not sure of the control objectives relative to this assignment.

G. Order #9 - Maintain control of your firefighters at all times.

The Division Supervisor was not in a position where he could adequately control or supervise personnel on the Division.

The Investigation Team concluded that all of the 13 Situations with the exception of #13 - You feel like taking a nap on the fire line - were prevalent to some degree on this incident.

/s/George Roby
Chief Investigator
February 18, 1988

E. PERSONAL INJURIES

Twenty eight firefighters were subjected to varying degrees of smoke inhalation while waiting for a fire front to pass. Emergency Medical Personnel administered oxygen to those in need approximately 3 hours after they had deployed their fire shelters. Two firefighters were determined to need further observation and were sent to the hospital. [redacted] from the Papago #1 and [redacted] from the Shasta Trinity OC #29 were sent to the hospital and later released.

The Shasta-Trinity crew was released from this incident and returned to their unit after meeting with this investigation team.

The Papago crew returned to normal assignment on this incident upon completion of accident team interviews.

F. SITE INVESTIGATION

investigation team members, George Roby, Dave Ebert and Ed Tonnison traveled to the Survival Camp on September 6, 1987 and met with [redacted], USFS Division Supervisor. Team members were led on foot to the accident site there a detailed examination was made and photographs were taken.

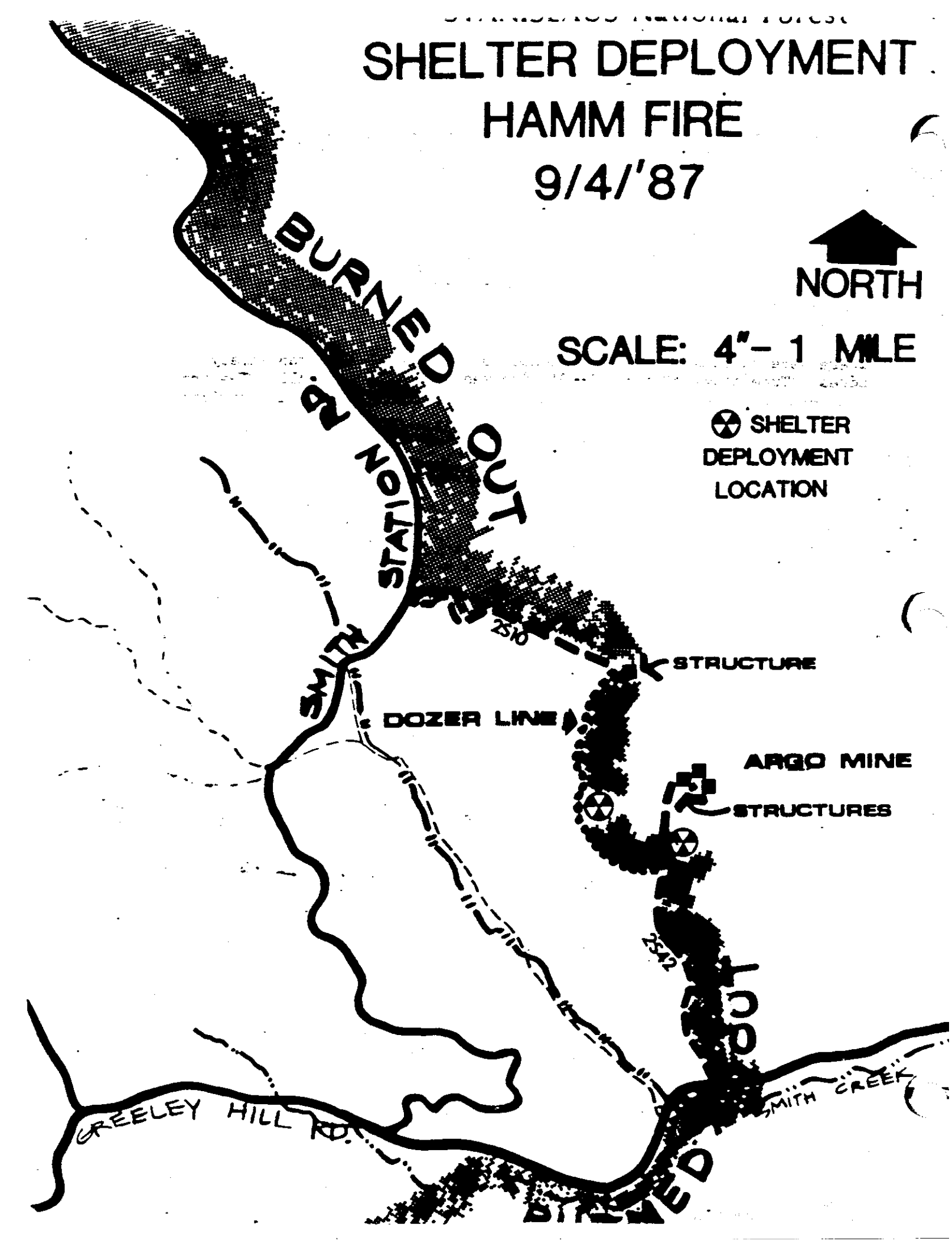
Papago #1 Crew

This was in the SE NE Section 16. T2S, R17E, on a flat ridge about 100' above a dozer fire line. The deployment was within a safety zone which had been constructed by a Dozer. The clearing is 120' x 111' down to mineral soils.

There were needles and twigs attached to the trees around the safety zones. Tree heights were 60'-80' with manzanita 10'-14' tall. The area had been back fired during the night and most of the canopy (approximately 2/3) was unburned.

Shasta Trinity OC #29 Crew

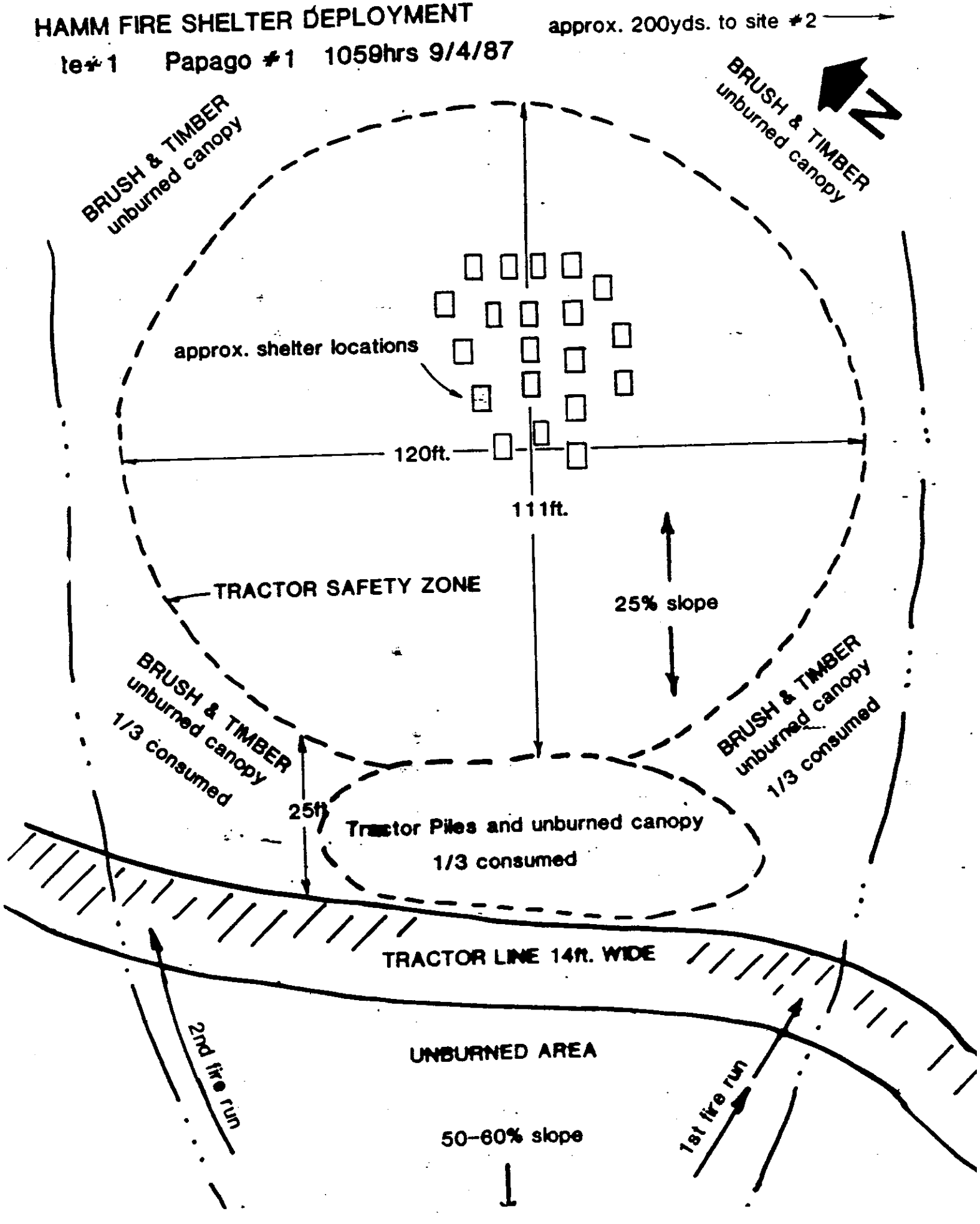
This deployment was in the SW NW Section 15, T2S, R17E, on a flat ridge 150' east of an unimproved road. The crew deployed in a burned over area that had very little aerial fuels. There was little, patchy mountain misery with a few scattered pine saplings 5"-8" diameter. The crew cleared a small area down to mineral soil.


STANISLAUS NATIONAL FOREST
SHELTER DEPLOYMENT
HAMM FIRE
9/4/'87
NORTH
SCALE: 4"- 1 MILE
SHELTER DEPLOYMENT LOCATION
BURNED OUT
STATION RD.
STRUCTURE
DOZER LINE
ARGO MINE
STRUCTURES
GREELEY HILL RD.
SMITH CREEK
BURNED OUT

Stanislaus National Forest

HAMM FIRE SHELTER DEPLOYMENT

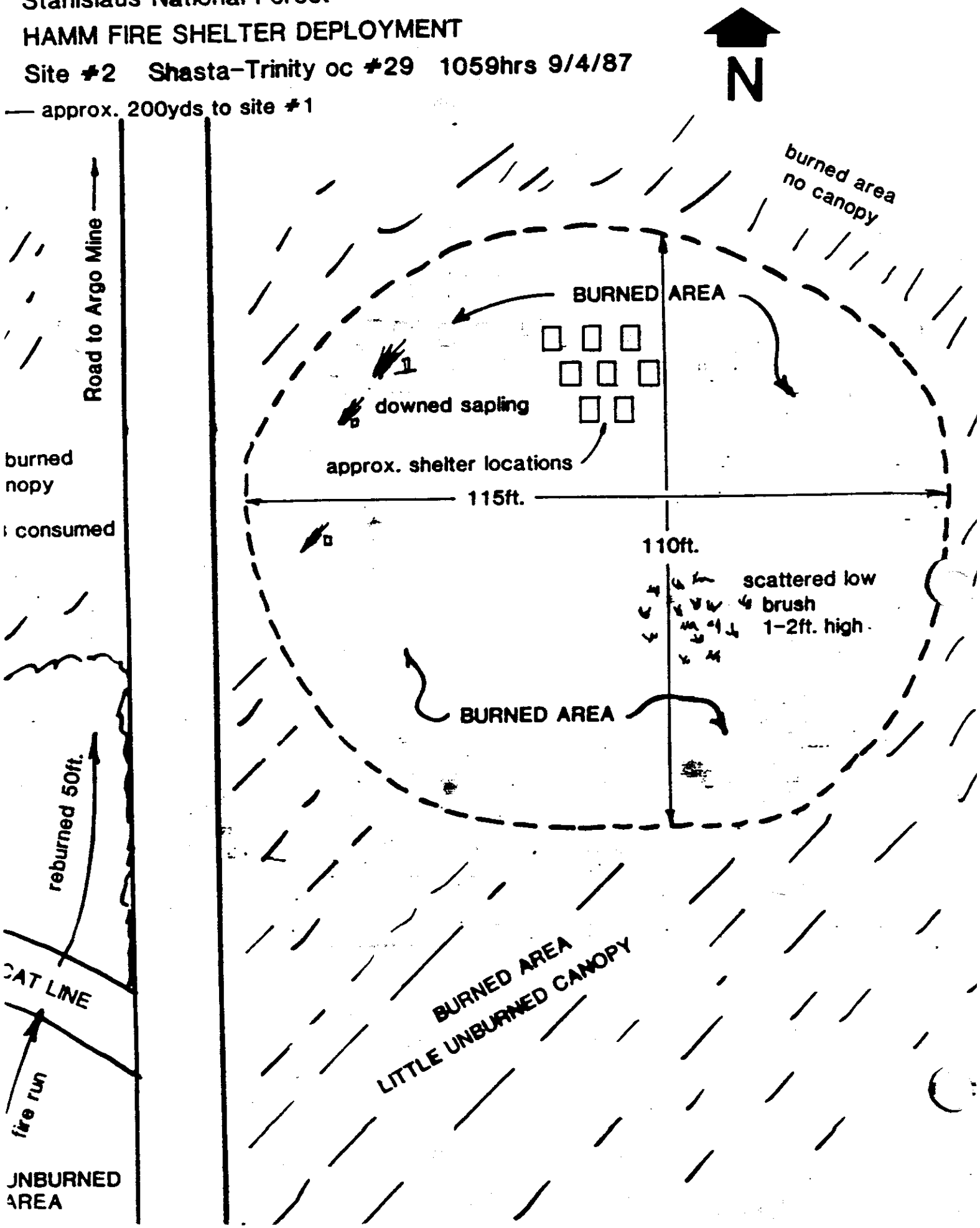
te #1 Papago #1 1059hrs 9/4/87



Stanislaus National Forest

HAMM FIRE SHELTER DEPLOYMENT

Site #2 Shasta-Trinity oc #29 1059hrs 9/4/87



PHOTOS

Photo #1 Deployment Site #1: Safety zone view to northwest.

Photo #2 Deployment Site #1: View northeast through vegetation below site.

Photo #3 Deployment Site #1: View to southwest from site toward direction that fire came from.

Photo #4 Deployment Site #1: Dozer line below site - view toward southeast showing drainage.

Photo #5 Deployment Site #1: From center, view toward northwest.

Photo #6 Deployment Site #1: From center, view toward northeast.

Photo #7 Deployment Site #1: View from bottom center toward top.

Photo #8 Deployment Site #1: Pointing to depression in ground made for better breathing while in shelters.

Photo #9 Deployment Site #2: View toward northeast from road

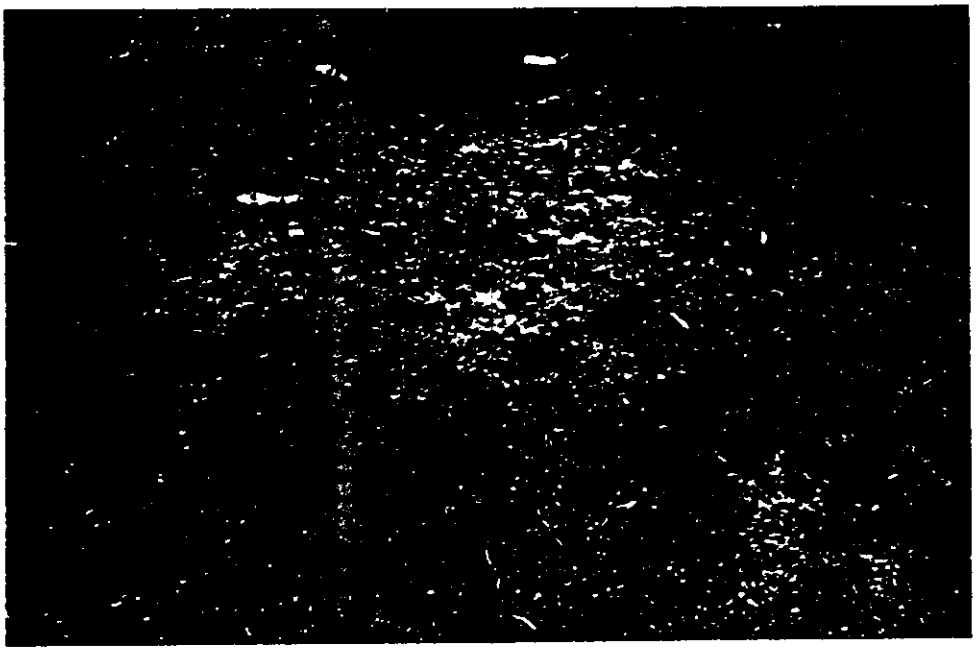


Photo #10 Deployment Site #2: View toward east across site.

Photo #11 Deployment Site #2: View south from center of site.

Photo #12 Deployment Site #2: Plastic shelter casing.