

INVESTIGATION REPORT

BURN INJURIES

DAWSON FIRE

PERIOD OF INVESTIGATION: June 17, 1981 through June 30, 1981

INVESTIGATION CONDUCTED BY: Pressley Kent, SFR II
David Gearhart, Forester III

REPORT PREPARED BY: Pressley Kent, SFR II

DATE OF REPORT: June 30, 1981

SYNOPSIS

On June 17, 1981, a wildland fire started in the south portion of Section 25, Township 4S, Range 6W, S.B.B.M.

While engaged in a control action on the fire, Fire Captains Michael Williams and Dale Brusewitz were approached by a Mr. Charles Lewin who offered the use of a bulldozer and the services of himself and another man, later identified as Lou Charles Randall, to fight the fire.

Captain Brusewitz subsequently gave both men explicit instructions as to the work on a narrow dirt road they were to do. The men then proceeded into a small drainage on the dirt road to carry out this assignment. This drainage was located in the NW/NE⁺ Section 36, Township 4S, Range 6W, S.B.B.M.

As the men and the dozer moved into the canyon, the fire was backing down into it from the northeast and against the southwest wind, moving slowly. When they reached a point just beyond the lowest point on the road, the wind quit blowing and became calm. The canyon filled with smoke, hiding the dozer from CDF personnel on the ridgetop and from an engine crew which had just entered the canyon. After a very short time, FAE Dashiell saw the fire spot across the road and the slope above the dozer's probable location was swept with fire in an area ignition situation. The slope, comprising approximately three acres, burned in a matter of a few seconds.

Both Lewin and Randall received extensive second and third-degree burns to their faces, arms, chests, and backs. Both men were evacuated to a clear area and transported to the San Bernardino County Hospital Burn Ward by helicopter.

THE INVESTIGATION

On June 17, 1981, a vegetation fire in Dawson Canyon was reported to the Perris Emergency Command Center at approximately 1614 hours. The origin of the fire was in the South half of Section 25, Township 4S, Range 6W, S.B.B.M. (see Exhibit A)

WEATHER: Taken at 1400 hours on June 17, 1981 at Temescal Guard Station approximately 2 1/4 miles distant, 1,115 ft. elevation.

Wind: Northwest 14 mph

Dry Bulb Temperature: 104° F.

Humidity: 9%

Local weather -- the fire occurred in very complex terrain. At the time of day that it occurred, late in the afternoon, winds would tend to switch erratically. The sun angle is low to the West so that the western aspects are heated with direct radiation causing upslope flow, but the eastern aspects are becoming more shaded, and downslope flow is beginning. Thus, in complex terrain, such as the Dawson Canyon area, wind flow would be changing in speed and direction on the different slopes as the sun's radiation angle changed. General weather conditions over area where fire occurred: Wind northeast over ridgetops, 20-30 mph. Surface winds at incident site, 10 mph southwest; temperature 100 plus; humidity low; fuel moisture low.

FUELS: Light grass, buckwheat, scattered sage, 4-5 tons/acre. Fuel moisture 2% - Live fuel moisture 56.9%.

TOPOGRAPHY: Steep and broken with many ridges, canyons and gullies; varying slopes of 40% to 90% southwest aspect and elevation of 1200' at incident site.

Fire control operations were designed to protect scattered structures in Dawson Canyon and to confine the fire within the original drainage.

At approximately 1720 hours, Captain Mike Williams in Engine 27 was working along Dawson Canyon Road and at a point near a dirt road which formed the right flank on the western most edge of the fire. (See Exhibit A, point A) Road on Exhibit A colored brown is the road on which incident occurred.

Captain Williams was approached by a man he described as 40-45 years of age. (see statement). The man, later identified as Charles Lewin, 1123 Spanish Hills, Corona, California, D.O.B. 2-20-48, had arrived at Williams' location in a pickup truck.

Mr. Lewin advised Captain Williams that he had a friend who had a dozer and asked Williams if he could use it. Williams answered in the affirmative. Mr. Lewin then stated he would bring the dozer and left in the pickup.

Captain Dale Brusewitz, in Attack 26, was Incident Commander during the early stages of the fire and was in the same vicinity of the fire as was Williams.

Brusewitz first noticed the dozer when it was on the dirt spur road which, at that time, formed the right flank and western most line of the fire. (See Exhibit A, point A) He made contact with Mr. Charles Lewin and another man, later identified as Lou Charles Randall, D.O.B. 1-29-59, Route 2, Box 91-B, Corona, California. Captain Brusewitz described the man (see statement) as an older clean-shaven man and a younger man with a full beard and long hair.

The younger man was dressed in a tee shirt, jeans and baseball cap. The older man was in a light shirt and was bareheaded.

Brusewitz felt that the dozer was a D-6 or D-7 and had no canopy, but did have a canvas umbrella installed. Brusewitz talked to both men, stating to them that he understood they were volunteering their dozer to which they replied in the affirmative. Brusewitz asked the two men if they would mind cleaning out the road. (The road referred to was a portion of the dirt road which ran into a drainage below the ridge on which the dozer was parked during the discussion.--See Exhibit A, point B) The men indicated that they had no problems with the assignment.

Brusewitz instructed the men to proceed down the road, clearing it out with the dozer. The plan was to allow the fire which was backing down to the eastern slope of the drainage to burn to the road. He advised Lewin and Randall that two engines would be following behind their dozer. The situation at this time was as follows. (See Exhibit B)

The area into which the dozer was moving was a small drainage or basin comprised of several steep ridges and canyons as shown on Exhibit B. The fire was backing down the face of the basin, moving northeast to southwest against the wind which was from southwest to northeast. Rate of fire spread was slow.

It was approximately at this time (1730 hours), that Battalion Chief James Bliss arrived at the scene and assumed command of the fire.

Fire Apparatus Engineer Robert G. Dashiell with Engine 11 started down the road behind the dozer. His assignment (see statement) was to hold the road, keeping the fire from crossing. He stated the fire was backing down the hill against the wind. He felt there was no danger and felt very safe. Prior to moving into the drainage, Dashiell charged the engine protection line.

When Dashiell was a short way down the road into the drainage, he observed the smoke beginning to lay in the canyon bottoms. He stated the wind had stopped and was calm. He stated it did not feel right, so he stopped his engine. He could not see the dozer due to smoke. (See Exhibit B, point A)

As Engine 11 was entering the drainage, Gordon W. Ehmann, Assistant Fire Management Officer, USFS, Cleveland National Forest, Trabuco Ranger District, arrived at the ridgetop and met with Battalion Chief James Bliss. (see statement) He noticed the dozer, and that it had a white umbrella with black lettering on it. He discussed condition of the road with Bliss and the work the dozer was doing.

At approximately 1750 hours, the fire spotted over the road in the bottom of the drainage onto the slopes of the west ridge. Chief Bliss (see statement), AFMO Ehmann, Fire Captains Brusewitz and Williams, FAE Dashiell all stated that the fire covered the slope in a matter of seconds. Brusewitz and Williams felt there was an area ignition on the slope when the fire blew up.

Engineer Dashiell saw the fire spot across the road in two places and then cover the slope in a matter of seconds. He could not see the dozer or the men on it. After a short period of time (1-2 minutes) Dashiell saw a man walking toward him on the road. He still could not see the dozer. At first, he thought the man was all right, but he saw him stagger and noticed that he was holding his arms upright. Dashiell ran to the victim, later identified as Lewis Charles Randall, and saw that he was badly burned.

Captain Brusewitz brought Attack 26 to Engine 11's location while Dashiell was walking the victim to the engine. Randall was loaded into Attack 26 and transported to a cleared area near the mouth of Dawson Canyon (about two miles) where he was placed in a burn bag. His shirt was nearly burned off.

Incident Commander Bliss notified Perris ECC by radio at 1754 of the burn victim, and at 1756 hours ordered paramedics and medi-vac helicopter. (For sequence of evacuation of injured, see SEQUENCE OF EVENTS.

Dashiell did not see the second victim, Charles Lewin, for some time and not until after Randall had been removed from the scene. He saw him staggering down the road. He got to Lewin and saw that he was badly burned. He saw the dozer parked about half-way up the grade on the road. (see Exhibit B, point B) Dashiell loaded Lewin onto Engine 11 and transported him to the cleared area where Randall had been taken. Incident Commander Bliss notified Perris ECC of the second burn victim at 1825 hours. This was after Lewin had been transported to the clearing.

From the statements of the various witnesses, it appears that just after the dozer, with Randall and Lewin, passed to the bottom of the drainage and began to climb up the grade toward the saddle shown on Exhibit B, the wind then began to blow from the northeast and the fire spotted across the road resulting in area ignition and the injuries to Randall and Lewin. The dozer stopped at the point marked on Exhibit B. (marked "B")

It was determined that neither Randall nor Lewin owned the property where control action was being taken. The bulldozer was an older model Caterpillar D-8 owned by Mr. William Randall, Route 2, Box 91-B, Corona, California. William is the father of Lou Randall, one of the injured.

Sometime after the removal of the injured, and prior to daylight on 6-18-81, a party or parties unknown moved the dozer up the road and into the saddle at the point marked "C" on Exhibit B.

During the course of the investigation, the scene of the injuries was examined on 6-18-81 by SFR II Pressley Kent and Forester III David Gearhart. At point "D" on Exhibit B, the remains of a cloth baseball-type cap was found. Fire had almost completely destroyed the cloth. At point "E" on Exhibit B two burned pieces of what appeared to be cloth from a light weight shirt were found. These remains match the description provided by Captain Brusewitz of the shirt worn by Mr. Lewin.

During the period of the investigation, both Lewin and Randall remained in critical condition at the hospital. No attempt was made to interview either man.

OPINIONS AND CONCLUSIONS

1. The fire's blow up in the basin where the injured were working with a bulldozer most probably was caused by the following circumstances:

The winds aloft on the day of the incident were blowing northeast to southwest over the ridge tops. Surface winds in the fire and at the weather station at the Temescal Guard Station, were blowing from southwest to northeast. As can be seen, there were two opposing wind streams 180° apart in direction.

The ridge forming the northeast boundary of the basin in which the incident occurred is approximately 1,500' elevation while the ridgetop forming the southwest boundary is approximately 1,200' elevation, a difference of 300'.

The winds aloft were subsiding at the time the incident occurred. It is probable that this wind flow descended until it touched the higher ridgetop, effectively sealing off the surface upslope windflow. This produced the calm just preceding the blow up.

During the interval between the onset of the calm and the blow up, the ambient air temperature in the basin rose rapidly. (see statement of Richard Bullard.)

As the upper windflow continued to subside, it touched the upper one-third of the slope, picking up firebrands and dropping them on the slope of the southwest ridge, causing spot fires to occur. The air flow continued to subside and very rapidly reached the surface of the basin, causing the spot fires in the heated basin to ignite the entire slope of the lower ridge with explosive rapidity.

It is probable that the entire sequence of events occupied no more than five minutes.

2. Both Captains Williams and Brusewitz agreed to use the dozer and services of Randall and Lewin. Brusewitz gave both men explicit instructions as to work to be performed and where to go.
3. Neither Lewin nor Randall were properly attired for firefighting. Each was scantily clad above the waist, with Randall in a tee shirt, and Lewin with some type of light shirt. Each had on jeans. Randall had on a cloth baseball type cap. Lewin was bearheaded.
4. The D-8 dozer operated by Lewin and Randall was an older model. The grousers on the tracks were worn to a height of three-quarters inch to one inch. It was not fitted with a canopy or other roll-over protection equipment. It was equipped with a cable-controlled straight blade. This tractor was not equipped nor in condition to safely perform fire control work in mountainous terrain.

5. Captain Williams assented to the use of the dozer and the services of Lewin and Randall during his contact with Lewin but had no further verbal contact with either Lewin or Randall after the dozer arrived and proceeded into the canyon on the spur road.
6. Captain Brusewitz agreed to allow Lewin and Randall to work on the fire. He was aware that neither were wearing CDF issue protective clothing and had none available to give them. He further gave them specific instructions as to where to go and what to do with the dozer.
7. Captain Brusewitz did not inspect the dozer for mechanical soundness. He was aware that the dozer lacked a canopy and other roll-over protection equipment.
8. Battalion Chief Bliss arrived at the scene prior to the burn incident and the dozer was already down the spur road. He was driving a temporarily assigned sedan which was not equipped with a dozer kit. His pickup truck which was equipped with such a kit was out of service due to a mechanical problem.

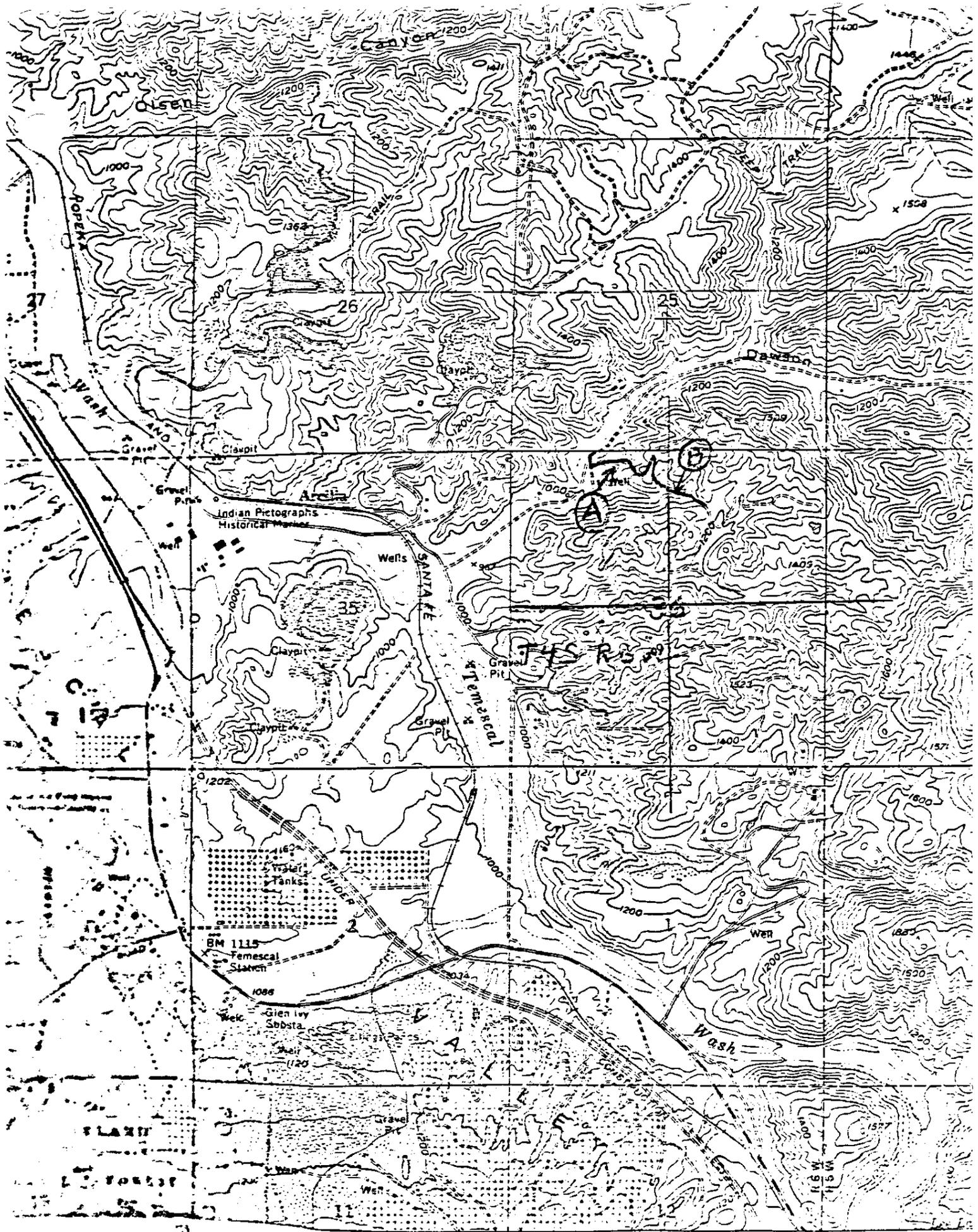
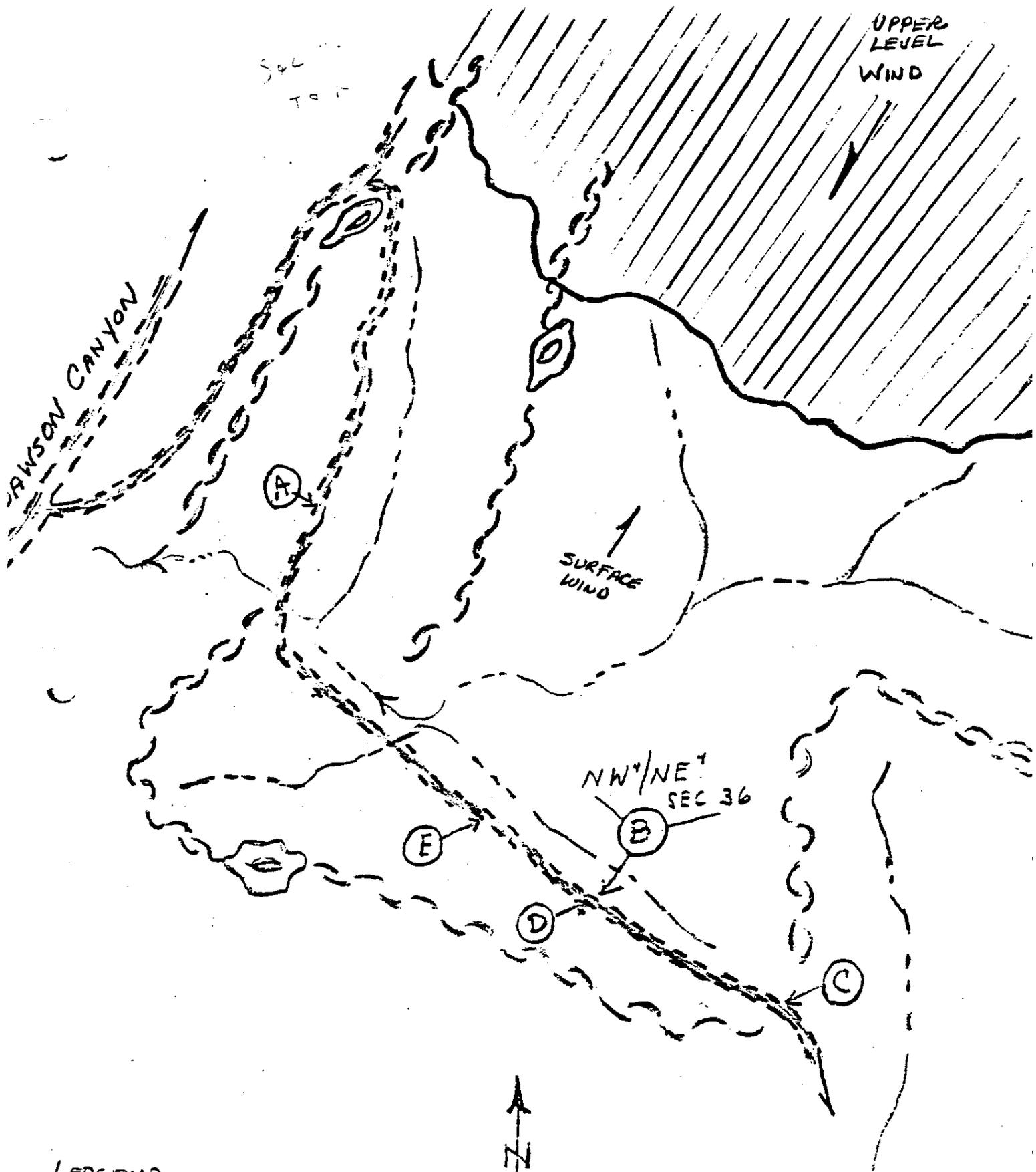
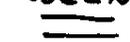
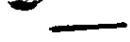
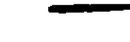


EXHIBIT A - Survey

456 1630 000 FEET 457 27 30' 458 ALBERMILL 3.6 MI. 459
 ELSINOPE 10 MI

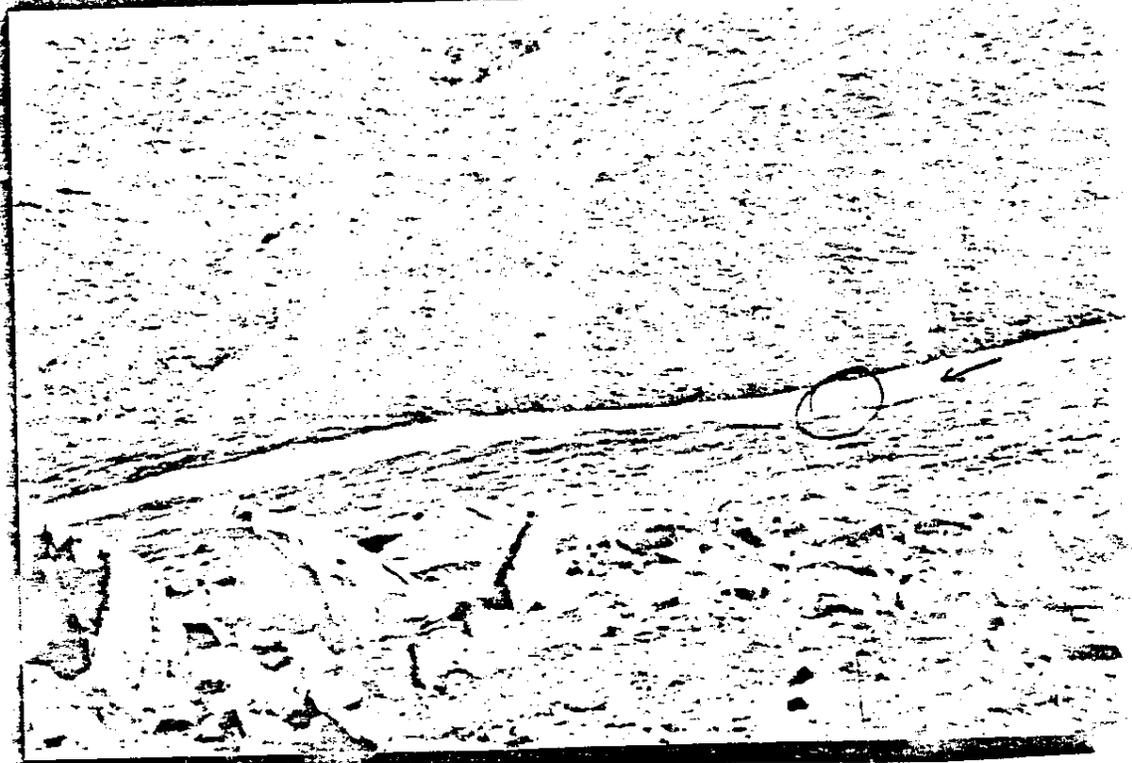


- LEGEND
-  RIDGETOPS
 -  CANYON BOTTOMS
 -  FIRE
 -  ROAD

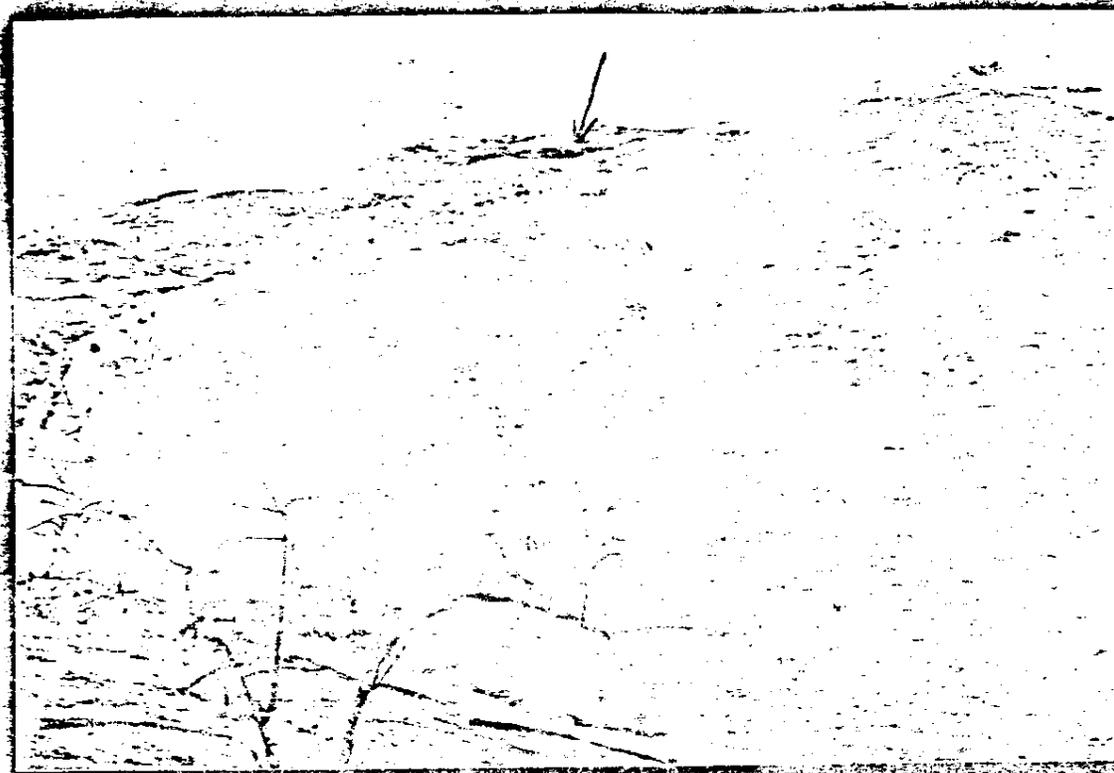
PORTION OF
 NW 1/4 SEC 36 T45 R6W S.B.B.M.
 (NOT TO SCALE)



1. Looking south from top of ridge. "X" is approximate location where the dozer was overrun by fire.



2. Looking NE from top of south ridge. Dark area circled in red is oil stain from dozer where it idled after being overrun by fire. Marks on road at red arrow is where blade was dropped by operator.



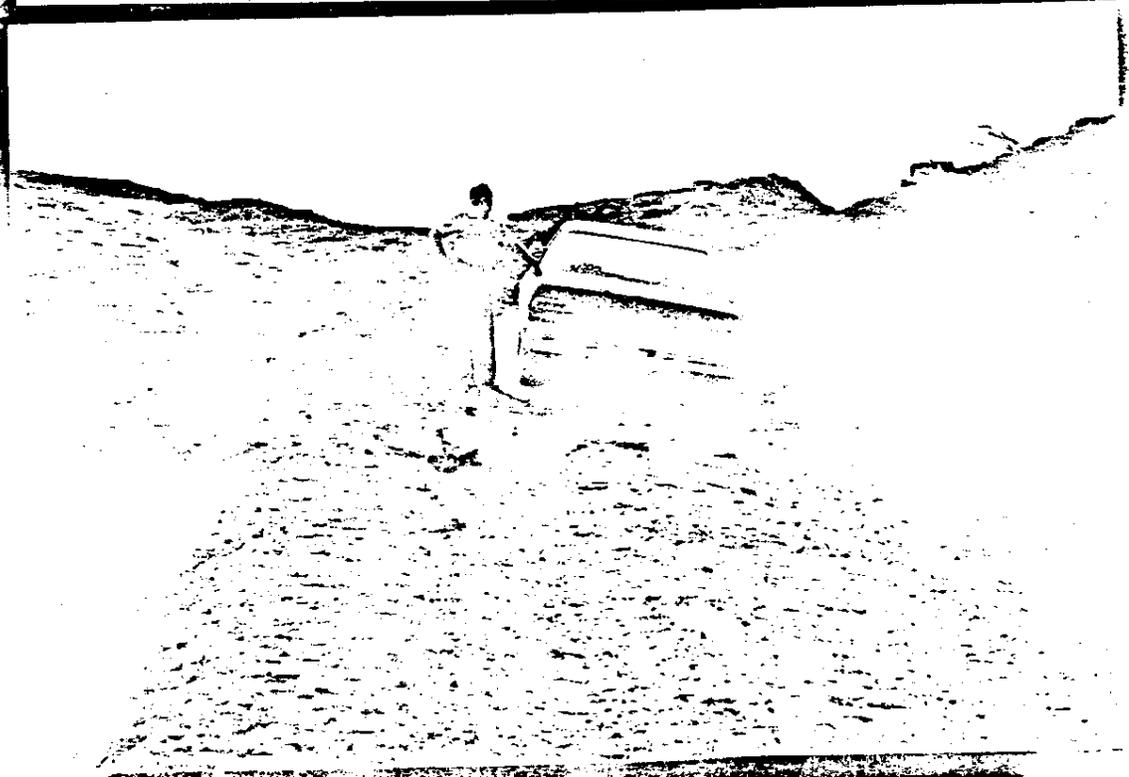
3. Looking north from south ridgetop. Red arrow points to location of Brusewitz, Bliss and Ehmann just prior to and during blowup.



4. Looking north from saddle.



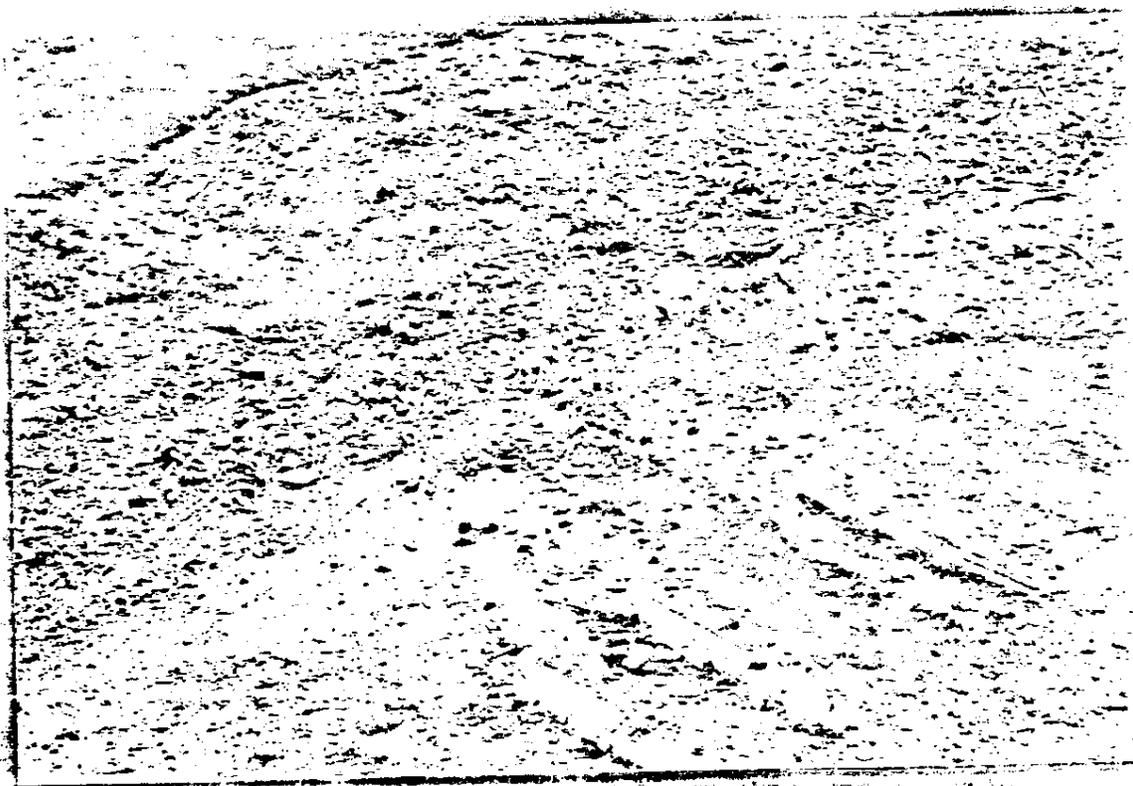
5. Looking north. Dark spot on road is oil stain from idling dozer where it was overrun by fire. Gouges in road at arrows are marks made by blade when it was dropped by operator.



6. Looking south from where dozer was overrun by fire.



7. Oil stain made by idling dozer.



8. Grouser marks and marks made by blade when dropped



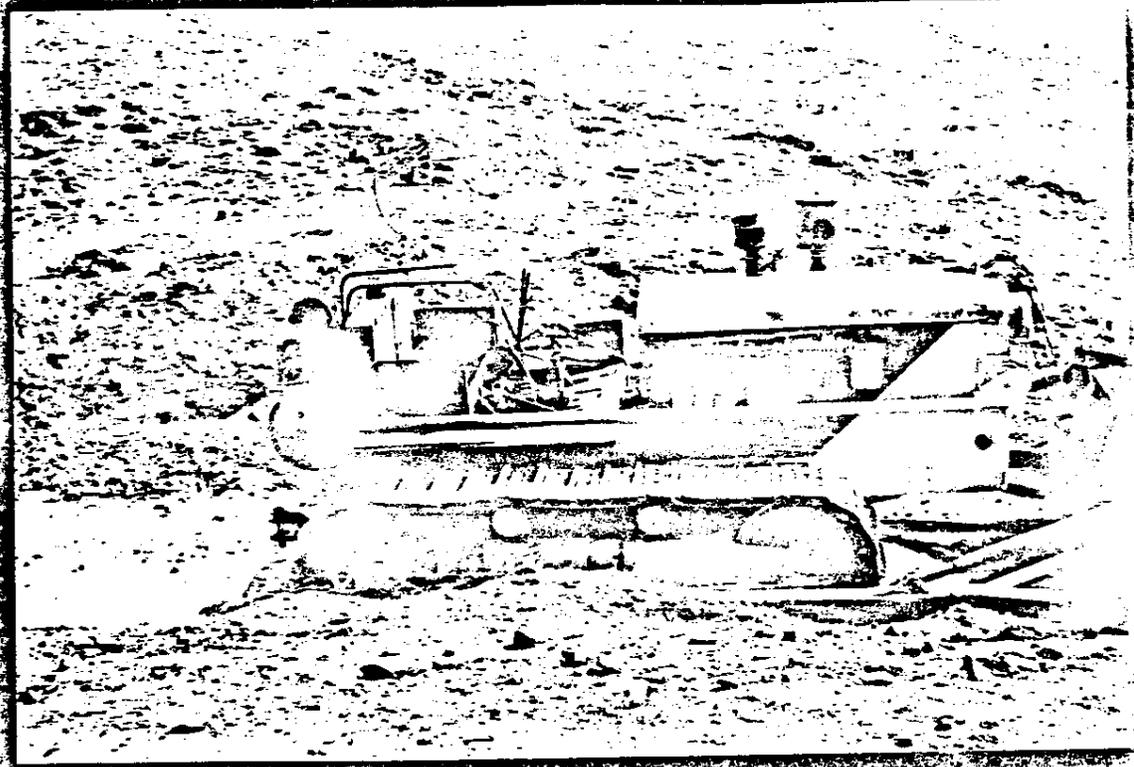
9. Looking southwest. View of ridge from location where dozer was overrun by fire.



10. Looking southeast from south ridgetop. Dozer was moved to this location after incident.



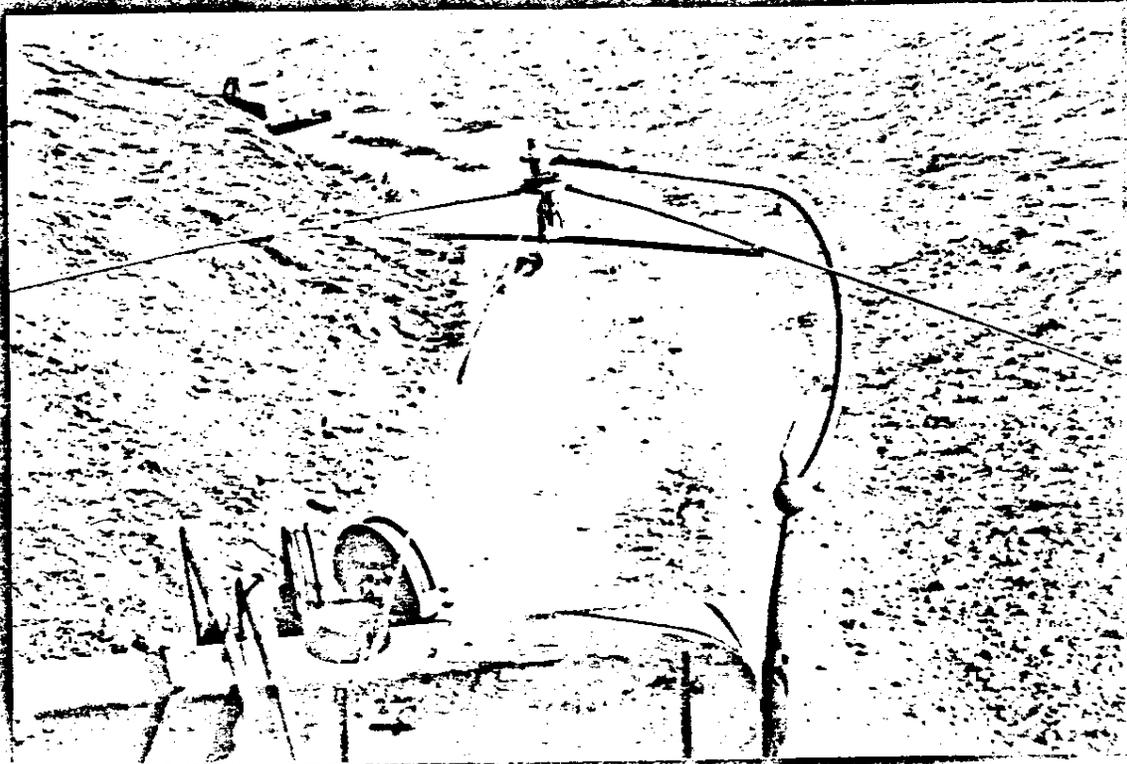
11. Looking northeast from south ridge gully is the one that crosses road just to the north of where dozer was overrun by fire.



12. View of right side of dozer showing fire damage to seats and bodywork.



13. View of fire damage to operator's seat.



14. View showing umbrella frame.

SEQUENCE OF EVENTS

This sequence was taken from the dispatch tapes at Riverside Ranger Unit Emergency Command Center (Perris) and covers the period from 1753 hours through 1852 hours on June 17, 1981. The information is all from recorded radio traffic.

TIME

MESSAGE

1753 6114 notified ECC that fire had jumped line and was headed toward Spanish Hills.

1754 Attack 26 notified 6114 that there was a burn injury.

1754 6114 notified ECC of burn.

1755 Attack 26 advised 6114 that burns were second- and third-degree on face, arms, and back.

1756 6114 orders medi-vac helicopter and paramedics.

1757 ECC requests ambulance. Goodhew is responder.

1757 ECC notifies 6114 that helicopter LA-15 is assigned to transport victim.

1757 ECC requests Comm Center request LA-15 to evacuate burn victim from Dawson Canyon.

1757 LA-15 routed by Comm Center to S.O. landing area, Rialto Airport for fuel.

1759 6114 notified by ECC of verification of LA-15 and ambulance with paramedics.

1808 6114 advised ECC that victim is at mouth of Dawson Canyon and in burn blanket.

1809 LA-15 advised Comm Center that his ETA Dawson Canyon 15-20 minutes and is one minute to lift off.

1810 ECC advises 6114 ETA LA-15.

1812 6114 gives ECC name of victim (Charles Lewin) and vital statistics.

1821 County Comm notifies LA-15 that San Bernardino County Hospital burn ward can take victim.

1825 6114 notified ECC of second burn victim.

1826 6114 gives vital statistics and name Lou Charles Randall to ECC and vital statistics.

1828 LA-15 notified County Comm of landing at location of victim.

- 1829 6114 notified ECC that copter had arrived.
- 1831 ECC notified Comm Center that there was a second victim and paramedics on scene.
- 1832 ECC confirms to 6114 that both victims will be transported to San Bernardino County Hospital.
- 1836 6114 requests investigative team.
- 1839 LA-15 notifies County Comm of two victims and extent of injuries. County Comm confirms San Bernardino County can take both. LA-15 gives ETA hospital 15 minutes.
- 1850 LA-15 notified County Comm landing at hospital two minutes.
- 1852 LA-15 notified County Comm he is on ground.

PERMANENT FILE

DAYSON FIRE
June 17, 1981

Received _____
Date _____
Sent _____
Time 3:59
Initials 3l
Exposed to Fred

FIRE BEHAVIOR ANALYSIS

Findings:

A. Fuel

1. Light grass, buckwheat, and scattered sage
2. 4-5 tons per acre
3. Fuel moisture (10 hr) 2%
- ~~4. Live fuel moisture 56.9%~~

B. Weather (From Temescal 1114')

1. June 17, 1981 1400 hrs
Dry Bulb temperature 104° F.
Humidity 9%
~~Wind NE 14~~

2. The surface weather analysis of the National Weather Service for 1700 hours, June 17, 1981, shows a low pressure area and a western tail of a cold frontal system in the general fire area. This weather pattern will produce erratic winds in the area.

3. ~~Upper air temperatures were obtained from Montgomery Field in San Diego County in order to project the adiabatic lapse rate over the fire. Although the cool ocean air will influence the lower elevation readings at Montgomery Field the temperatures above 5000' should be about the same. The estimated soundings at Temescal were very close to adiabatic (5.5°F/1000'). Under these conditions, a slight change of temperature in the fire area would have been enough to cause the atmosphere to become unstable for a short period of time. The heating from the fire would contribute to instability. Instability favors vertical motion and encourages mixing of the air.~~

1. Upper level winds
above the fire
in area -
potential

For erratic surface winds. The winds were westerly at 10 MPH from the surface to about 6000' and southerly at 15 MPH above 6000' over Montgomery Field. If a similar wind shear existed over the fire area, which is likely, it would have increased the probability of erratic winds affecting fire behavior.

5. Local weather -- The fire occurred in very complex terrain. At the time of day that it occurred, late in the afternoon, winds would tend to switch erratically. The sun angle is low to the west so that the western aspects are heated with direct radiation causing upslope flow, but the eastern aspects are becoming more shaded, and downslope flow is beginning. Thus, in complex terrain, such as the Dawson Canyon area, wind flow would be changing in speed and direction on the different slopes as the sun's radiation angle changed.

C. Topography

1. Steep and broken with numerous ridges, steep canyons and gullies.

Varying slopes of 40% to 90%. Southwest aspect, elevation approximately 1200' at accident site.

Explanation:

Analysis of the weather conditions on June 17, 1981 show that the situation was primed for occurrences of fire storms and erratic fire behavior. Conditions of high temperatures, and low humidities and fuel moistures were accompanied by numerous other factors which set the stage for strong erratic fire behavior! A light frontal passage, unstable air, wind shear conditions in the upper air, and differential heating and cooling brought about by complex terrain, all played a role in stimulating air mixing and producing blowup conditions.