

LOOP FIRE REVIEW
ANGELES NATIONAL FOREST
NOVEMBER 1, 1966
TWELVE FATALITIES

BACKGROUND

The Loop Fire started on November 1, 1966 in a canyon near the boundary of the Angeles National Forest (see Figure 1). It was caused by a faulty electric distribution line and was spread rapidly by Santa Ana winds. Many factors came together culminating in an accident, later that day, which took the lives of twelve firefighters.

The fire occurred in November, after a long, dry summer. Only 1.44" of rain had fallen in the fire area since March of that year. Santa Ana winds were blowing from the E-NE at 40-60 mph. Weather observations at the fire that day were:

Morning

dry bulb temperature: 73 degrees
relative humidity: 15 percent

Afternoon

dry bulb temperature: 80 degrees
relative humidity: 12 percent
fuel sticks: 3-4 percent

Fuels at the accident site were chamise, sage and sumac; averaging about 11 tons per acre. However, the loading at the base of the canyon (immediately below the accident site) was estimated to be as high as 30 tons per acre. Live fuel moisture was about 60 percent which is near the minimum for plant survival.

The entire fire area was marked by steep, rocky terrain. The valley floor is 1,400 feet; the accident site is 1,600 feet; the main ridge is 2,600 feet. The slope at the accident site is 75-95 percent, facing south.

FIRE SPREAD AND SUPPRESSION ACTIONS

After the electric line ignited the fire, it spread rapidly from the mountain top to the urban area below. Before being brought under control, it burned 2,028 acres - 1,436 acres of National Forest Land and 592 acres of privately owned land.

The lookout on Mendenhall Peak discovered the fire immediately. The first firefighter attacked the fire 17 minutes later and within 30 minutes the Forest Service, Los Angeles County and Los Angeles City Fire Departments had joined forces to control the fire.

The Forest Service efforts, led by well-experienced firefighters, was directed primarily to the north and east edges of the fire. The south side, along the

foothills, was the responsibility of the Los Angeles County and City Fire Departments (Figure 1).

When the fatal accident occurred on the southeast corner of the fire, a Forest Service hotshot crew was attempting to connect a fireline some 200 feet long between Division A and Los Angeles County firefighters on Division C. This was the final action necessary to contain the fire.

FATAL FLAREUP

Following instructions from the operations section chief, at 1500, the hotshot crew superintendent led his crew in a direct attack of the fire's edge. They constructed a little bit of handline, but mostly cold trailed the inactive fire edge.

From the head of the canyon (Point A, Figure 2), it appeared that this crew would have no trouble extending the control line to meet the Los Angeles County Crew plainly visible below. They didn't know that near the base of the chimney canyon, a thirty foot deep gully with near vertical sides would delay the forward progress of the county crew.

At 1530 the county crew was stopped by the steep sided gully (Point D, Figure 2). To cross with dozers would have taken several hours. Fire in the gully and near vertical walls prevented hand crews from crossing. The Los Angeles County captain dispatched a handcrew to go around the gully and begin constructing handline on the opposite side, below the hotshot crew. By this time, the hotshot crew had cold trailed deep into the chimney canyon to the lower end of a bench-like natural fireline. Their actions were slowed by the steepness of the route and extra care taken to avoid rolling rocks.

The hotshot superintendent observed the situation from a point 500 feet from where the Los Angeles County line construction was stopped, on the west side of the gully (Point B, Figure 2). The terrain was too steep to continue cold trailing operations from the chimney canyon into the deep gully to the west. Further, the gully was obviously a difficult and dangerous place to hold the fire. There was no fire on the east side of the gully. He decided that the quickest and safest way to contain the fire was to tie in with 300 feet of natural firebreaks by constructing about 200 feet of indirect handline through unburned fuel along the east edge of the gully to a point directly across from the county's fireline (see dotted line, Figure 2). He estimated that it would take about 15 minutes for the hotshot crew to complete this handline.

At 1535 the fire direction changed, surprising the superintendent and his crew. While he was positioning the crew to construct handline, the fire had crossed the gully (Point E, Figure 2), ran up a 50 foot long slope and established itself in the chimney canyon below the hotshot crew and within 60 feet of the superintendent. Before any suppression action could be taken on this hot spot, fire swept up the chimney canyon and enveloped the crew. It is estimated that the fire flashed through the 2,200 foot long chimney canyon in less than one minute.

Point F, Figure 2, in an area 200 feet long and thirty feet wide, is where 10 members of the crew burned to death. The superintendent ran through the flames and stumbled, badly burned, into a safe area below. Four crewmembers and the division supervisor survived the fire in the upper end of the chimney. The remaining 11 crewmembers survived in or near the diamond-shaped area clearly visible on Figure 2. All of these latter survivors were seriously burned.

RESCUE OPERATIONS

One of the helicopters assigned to the fire began rescue operations within 10 minutes after the crew was overcome. The diamond-shaped area was still surrounded by fire when the helicopter hovered and picked up the first survivor. A second fire helicopter soon joined and the rescue operation continued with great courage and skill until all of the injured firefighters were evacuated to the incident command post at Pacoima. From there they were taken by auto to the hospital. Two of the survivors succumbed to their burns in the hospital. In all, twelve firefighters were killed.

CONCLUSIONS

Overall action from discovery to final control of the Loop Fire was generally good. Included in this action were some outstanding events in the rescue of the survivors of the accident and the coordination of a number of agencies involved in control of the fire and rescue operations.

There was no evidence of negligence, disobedience or carelessness in the Loop Fire control operation.

RECOMMENDATIONS FROM THE ACCIDENT INVESTIGATION

1. Provide a physical checklist for downhill line operations whereby such an operation would be done only when all critical factors are aligned favorably and checked off on the list. This should be more than the ten standard firefighting orders now in use. Included in this checklist must be the complete factual knowledge that the toe of the fire edge will be held in a safe condition.
2. Improve intelligence by helicopter or on-the-ground scouting or both at all critical points in the fire area and particularly where two crews are working toward each other.
3. Increase the use of short range lightweight radios for intradivision operations on intercrew operations as a secondary net.
4. When two crews are working toward one another, communication must always be provided between them. This requires special arrangements between crews whose radios are on different frequencies.

5. Increase efforts on the development of lightweight flame resistant suits, including face masks and gloves. When satisfactory items have been developed, make their use mandatory by trained firefighters ordinarily assigned to work in fast burning fuels.
6. Continue development of improved fire protective shelters and make them standard equipment for all firefighters who are ordinarily assigned to fight fires in fast burning fuels.
7. Reexamine the full array of presuppression activities in flash fuel areas and establish the benefits, plus or minus, of accelerating the nuebreak system in relation to safety and its place in the balance of all presuppression activities.
8. Make crystal clear in firefighting training that a "chimney", "narrow box canyon" or similar topographic feature is a hazard area even if devoid of fuel.
9. Establish a Task Force to study this incident in relation to the findings of the Fire Task Force of 1957. Develop an action program.

Many of the above recommendations have been implemented. There is a checklist for downhill line operations (see 06-02-S230-H0). We have greatly increased our use of helicopters for gathering intelligence and monitoring fire behavior. Most crews assigned to fires are now provided with at least one fire-net radio; many are equipped with several programmable, scanning-capable radios. Fire resistant clothing is more the standard than the exception with wildland fire suppression agencies. Fire shelters are now standard equipment for all federal agencies as well as many state and local fire protection agencies. Chimney hazard are covered in all fire behavior training sessions.

FINAL CONTROL LINE LOOP FIRE

FIGURE 1

