# GREEN SHEET

## California Department of Forestry and Fire Protection

### Investigation Summaries of Serious CDF Injuries, Illnesses, Accidents and Near-Miss Incidents

**Wildland Fire Entrapment**
**Minor Burn Injuries**

**June 17, 2002**

**BLUECUT FIRE**

**CA-BDF005183**
**RSS-109**

**South Region**

**A Board of Review has not approved this Summary Report. It is intended as a safety and training tool, an aid to preventing future occurrences, and to inform interested parties. Because it is published on a short time frame, the information contained herein is subject to revision as further investigation is conducted and additional information is developed.**

**L**ookouts **C**ommunications **E**scape Routes **S**afety Zones

# SUMMARY

At approximately 1630 hours, on June 17, 2002, California Department of Forestry and Fire Protection (CDF) Strike Team 9440C, from the Tuolumne-Calaveras Unit, experienced a wildland fire entrapment while conducting suppression efforts on the BLUECUT FIRE in the San Bernardino National Forest. The crew of Engine 4473, a CDF Model #1, was conducting suppression and firing activities in conjunction with the other four engines on the strike team when they were overrun by fire.

One firefighter deployed a fire shelter approximately 90 feet from the fire engine, on a dirt road. The other firefighter utilized the engine fire blanket in the open crew compartment of the Model #1 while the Fire Captain used the cab of the fire engine as a refuge. None of the injured parties suffered more than 3% second degree burns.

# CONDITIONS

**Location:** The incident occurred in the Baldy Mesa Area, 2 ½ miles northeast of the interchange of Highways 15 and 138, on the San Bernardino National Forest in San Bernardino County.

**Fuel:** **Type:** Fuels in the Baldy Mesa area are a distinctive shrub mix of scrub oak and chamise, similar to fuel model 4, with scattered California juniper, manzanita, and some buckwheat.

**Loading:** The fuel bed ranged from 5-10' in height. Fuel loadings varied from 20-60 tons per acre.

**Continuity:** The shrub layer was horizontally broken in some areas, and in some areas bare dirt existed between shrubs. The relatively poor horizontal continuity caused the fire behavior to be sensitive to small increases in wind velocity.

**Live Fuel Moisture**: Evaluations indicated a live fuel moisture of 48%. Normal seasonal growth patterns would result in a sample for early June being around 100%.

**Dead Fuel Moisture:** Fine dead fuel moisture indicated 1 hour time-lag fuel moisture of 3-4%. The ignition probability of a firebrand landing in receptive fuels was 90%.

**Terrain:** The burnover site is at an elevation of 4100', on a shelf above the Cajon Canyon, at the edge of the Mojave Desert. The site is relatively flat with 30-50' deep, drainages or washes. Aspect of the burnover site and the surrounding drainage is

south and west, generally aligned with the prevailing winds. The slope of the burnover area, relative to the advancing fire, is actually down slope 3-5%.

**Weather:**

| | |
|---|---|
| Temperature: | 95 |
| Relative Humidity: | 22% |
| Winds: | south and east 8-10mph w/gusts to 15 |

**Fire Behavior:** The BLUECUT Fire started on June 16 and made rapid initial runs to the north and east, pushed by strong southwest winds. The forward spread rate was occasionally over 2 miles per hour. June 17 saw the fire move north at highly variable rates, sometimes creeping, other times running 100-200 feet per minute, with 20-50' flames, highly dependent on wind gusts. At the time of the burnover, the fire was advancing at a rapid rate of spread with 30' flame lengths. The spotting distance was up to several hundred feet.

# SEQUENCE OF EVENTS

On June 17, 2002, the crew of Engine 4473, acting as a member of CDF Strike Team 9440C, was attempting a firing operation from a dirt road, in direct support of structure protection to residences in advance of the fire. The width of the road was approximately 12' with 5'-10' heavy mixed chaparral on both sides.

The objective was to establish an anchor point to support the structure protection operations to the north & east. The crew of Engine 4473, supported by Engine 4465, was told to anchor at a nearby transmission tower and fire out that section of road. They were to bring fire down into the wash, tying in with the firing operation started by the remainder of the Strike Team.

The Captain of Engine 4473, and the two firefighters, began their firing operation and progressed in the designated direction. Captain 4473 was driving while the firefighters fired out. At some point during their firing operation, burning conditions accelerated, causing them to believe that they were in jeopardy.

The firefighter in the lead recognized that he was in imminent danger and unable to retreat to the safety of the engine. He deployed his fire shelter on the road, approximately 90' from the engine. The other firefighter, who was closer to the engine, retreated to the engine and assisted Captain 4473 in an attempt to rescue the deployed firefighter.

Seeing the fire sheeting across the road, and after their unsuccessful rescue attempt, Captain 4473 took refuge in the cab and the firefighter sought refuge on the back, deploying the fire blanket. Captain 4473 attempted to back the engine out of the path of the fire, coming to a stop on top of the road berm. Engine 4473 suffered severe burnover conditions, as did the firefighter deployed on the road.

The remainder of the Strike Team executed a successful rescue of the crew of 4473 and the victims were evacuated to the nearest burn treatment facility.

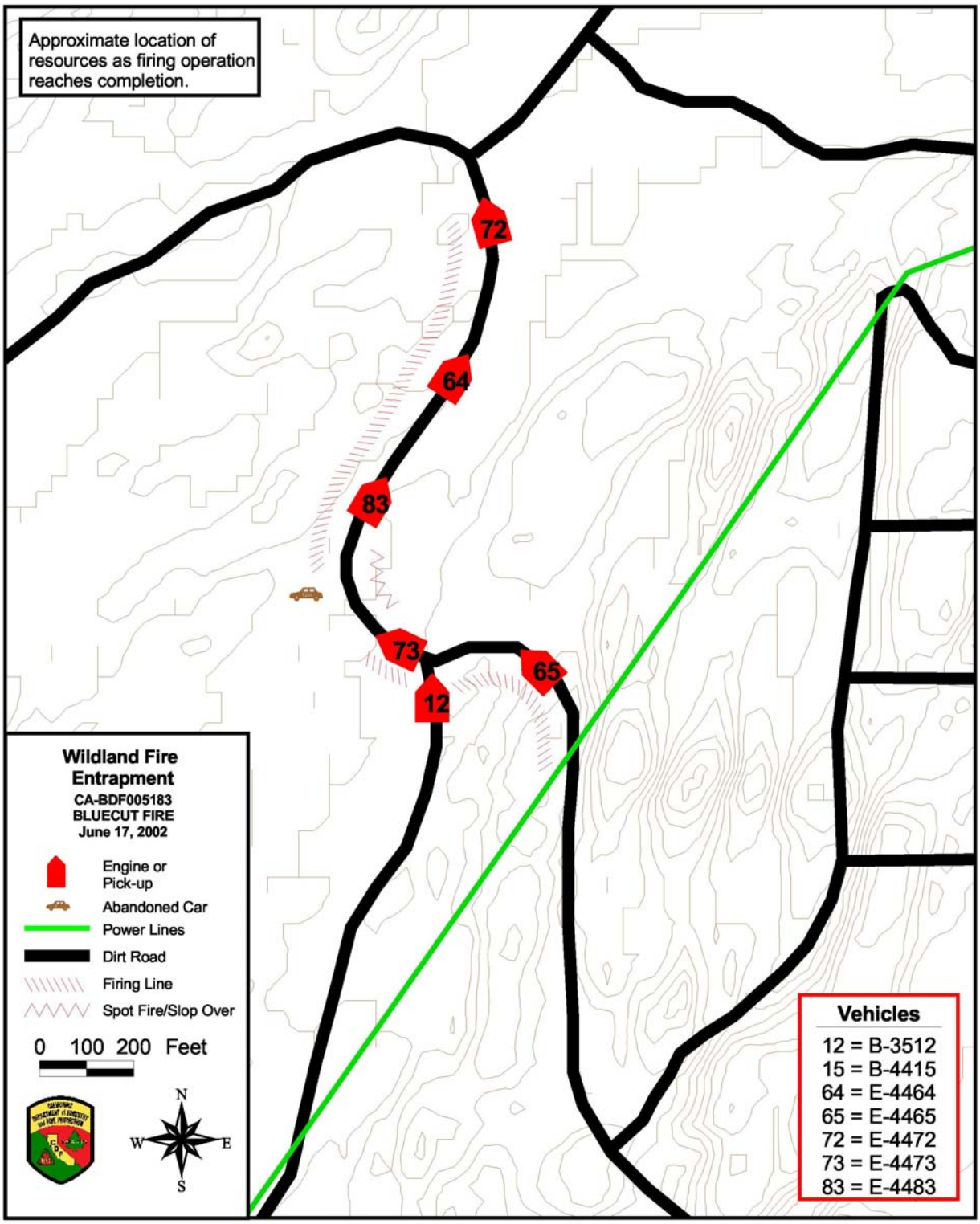
# INJURIES/DAMAGES

Three firefighters suffered first and second degree burns, as well as minor smoke inhalation. None of the firefighters suffered more than 3% total burns. Most burns occurred to the face, elbows knees, back, shoulders and waist. They were treated at the nearest burn unit, kept overnight for observation and released early in the afternoon the next day.

Damage to the engine, state and personal property is estimated to be $15,000 – $18,000.

# SAFETY ISSUES FOR REVIEW

- Inspect all PPE for serviceability, cleanliness and compliance identification (labeling)
- Inspect fire shelters to ensure that they appear serviceable and that the older style polyvinyl protective bags have been modified
- Review and practice deployment procedures with fire shelters and engine blankets
- Review the Fire Shelter publication and video
- Deployments
    - Remove and discard all unnecessary and/or flammable materials
    - Once deployed, stay in place, **unless it is absolutely necessary to move**
    - Carry additional fire shelters in the engine cab for protection during refuge
- Inspect all CDF Burn Packs and replace all expired items
- This year's burning conditions especially dictate the use of 1 ½" attack lines
- Company Officers need to continually weigh value v. risks in their strategy and tactics
- L.C.E.S. must be a continuous part of all operations

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