GREEN SHEET

California Department of Forestry and Fire Protection

Informational Summary of Serious CAL FIRE Injuries, Illnesses, Accidents & Near-Miss Incidents

Pine Fire Wildland Fire Entrapment & Burn-Over
One Victim – Moderate to Major Burn Injuries
One CAL FIRE Dozer with Moderate Damage

September 12, 2007
Pine Fire

Incident Number CA-CNF-002463
Accident Investigation Incident Number CA-CSR-000087

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.

SUMMARY

The following information is a preliminary summary of a wildland fire entrapment and burn over that occurred on the "Pine Fire" in which one CAL FIRE Heavy Fire Equipment Operator (HFEO) suffered moderate to major burn injuries to his hands and face, was airlifted to an approved burn center and remains at the burn center receiving treatment. One CAL FIRE dozer (MVU Dozer 3346, vehicle ID 6X55) received moderate damage.

CONDITIONS

Location: The fire was located within the Cleveland National Forest (CNF) approximately two miles south of the town of Pine Valley in southeastern San Diego County. The accident occurred just off of Corte Madera Road in Oak Valley about one mile south of Interstate 8.

Fuel Type: The fuels within the area represent Native California Chaparral and grass with an intermixed light duff and grass component. The fuels are heavy with Sage, Mahogany, Manzanita, Scrub Oak and annual grass species. The age class of brush fuels was 37 years of growth with an average height of 12 feet and a height range of 10'-16'. Fuels are best defined by Fuel Model 4, Native California Chaparral for older, decadent stands with average height of 6' or greater.

Fuel Loading: There is an estimated 45-50 tons of fuel per acre.

Fuel Continuity: The fuels were continuous as part of a very dense brush stand which was 80% closed canopy.

Live Fuel Moisture: The fuels are stressed this year due to drought conditions and had an average live fuel moisture content of 45%.

Dead Fuel Moisture: 1 hr = 3%, 10 hr = 4% 100 hr = 7%

Weather Observations (Descanso RAWS):

Temperature: 95ºF
Relative Humidity: 13%
Winds: Light and variable with a 7 MPH eye level westerly wind

Rainfall: For the 2006 – 2007 precipitation year, the general area received 11.32" of precipitation. The annual average precipitation is about 18". For the months of August and September 2007, 1.58" of precipitation fell.

Topography: The area of the burn over was relatively flat to steep and rocky. The slope at the accident site averaged 5% with a north aspect.

Fire Behavior: There is a significant fire history in the area. The Laguna Fire of September 26, 1970 was the last fire in the area. Fire history maps show a 30 year fire history regime. On the day of the fire, the actual Ignition Component was 91% and the Burning Index (BI) was 113. The BI historical average for September 12 is 70 and the maximum recorded BI is 150. The overall rate of spread was moderate. The fire was primarily fuel and topography driven. Average spotting distance was about ¼ mile ahead of the main fire. No special weather forecast or fire weather warning was in effect at the time of the fire.

SEQUENCE OF EVENTS

On September 12, 2007 at 1233 hrs, the USFS CNF dispatched ground and air resources to a reported vegetation fire (CA-CNF-002463) south of Interstate 8 near the Pine Valley Bridge west of Pine Valley, CA (Thomas Bros. map page 1237 B6). At 1239 hrs, the CAL FIRE Monte Vista Unit ECC dispatched a first alarm assignment. Both agencies thereafter dispatched numerous additional air and ground resources to the fire. The CNF remained the single ordering point for resource orders.

At 1249 hrs, Pine Air Attack-ATGS (AA 330) arrived and reported the fire as being 7-10 acres, having a moderate rate of spread, moving into an inaccessible area and having the potential for a major fire. At 1300 hrs, Pine Air Attack reported access in and out of the Corte Madera Road would be cutoff due to the fire burning east at a rapid rate of spread.

At 1302 hrs, CNF Division 4 arrived, took command (IC) of the incident and advised that CNF Battalion 42 would be the Operations Section Chief (OSC). The Incident Command Post (ICP) was established on Corte Madera Road in Oak Valley just north of the left flank of the fire. At 1328 hrs, Pine Air Attack reported 30-40 acres. At 1330 hrs, the OSC reported 40’ flame lengths, the fire burning parallel to Interstate 8 and a flanking action was being employed. A second alarm was started a 1343 hrs. At 1402 hrs, the IC reported 100 acres with a potential of 8,000 to 10,000 acres.

CAL FIRE Dozer 3346 was dispatched at 1251 hrs, drove from the La Cima Camp to the Julian Fire Station where he initiated his response with Transport/Dozer 3346, arrived at the fire scene just prior 1400 hrs and was assigned to Division B. He was briefed by the assigned Dozer Boss at approximately 1405 hrs. The Dozer Boss directed Dozer 3346 to begin cutting a direct line from near the origin along the left flank off Corte Madera Road (~1410 hrs). Between 1410 and 1415 hrs, after doing a recon of the fire area and adjusting dozer priorities, the Dozer Boss redirected Dozer 3346 to follow him east and south on a dirt road leading away from the ICP and toward the center of the left flank of the fire. After going approximately 1/2 mile, the Dozer Boss instructed Dozer 3346 to begin cutting a direct line west, along the left flank, towards the origin. The brush was approximately 10’-16’ high.

Initially, the burning conditions did not alarm the HFEO operating Dozer 3346. From where he started cutting direct line west off the dirt road (~1420 hrs), Dozer 3346 could not see the main fire and was not in communications with anyone who could. He was also sheltered from the prevailing westerly wind. Dozer 3346 was located uphill and east of the main fire which was on the south side of a knoll separating the dozer and the left flank of the fire. Dozer 3346 was cutting a direct line on the left flank around the north side of the knoll. The percentage slope increased toward the same knoll from the south side of the hill.

After cutting approximately 100 yards of direct line, Dozer 3346 dropped below a rock pile to pick up the fire edge. He widened the initial single pass line and began to encounter considerably changed fire conditions. The fire was on his left, front and right sides (~1440 hrs). Dozer 3346 immediately tried to reverse up his line but was unable to do so, as the engine died during the backing attempt. The HFEO began to smell fumes in the cab. The HFEO tried to deploy the heat protective curtains but was only able to drop the front and rear curtains. Due to problems opening the snaps on the side curtains, the left and right curtains were never closed. He did activate the dozer emergency strobe warning light but did not activate the dozer emergency audio warning signal.

The HFEO stated he made two attempts by radio to notify others that he was entrapped and his dozer was on fire. Between 1430 and 1530 hrs, MVU La Cima Crews 1 & 2 and McCain Crew 2 heard a radio call on an unidentified tactical radio net that a dozer was on fire. MVU Engine 3374 heard a similar radio message at approximately the same time, again, on an unidentified tactical net. The after action review found the dozer radio microphone had an intermittent connection where the microphone plug attached to the radio.

The HFEO exited the right side of the dozer because of the heat bearing on the left side of the unit. While exiting, the

HFEO attempted to grab his web gear but had to drop the gear because it was too hot to handle with bare hands. When the HFEO exited the dozer, he was not wearing his gloves and did not have his web gear containing his fire shelter. The HFEO jumped off the right side of the dozer and moved to a 'sandy spot' behind the dozer where he took refuge at about 1445 hrs. He left his portable radio in the dozer.

The assigned Dozer Boss was trying to coordinate the actions of two dozers, Dozer 3342 and Dozer 3346. At 1515-1520 hrs, the Dozer Boss pulled Dozer 3342 away from his assignment (working opposite direction from where Dozer 3346 initiated his line). Due to an increase in fire behavior, the Dozer Boss took Dozer 3342 back down the hill to the ICP location and asked the OSC for air support. After a retardant drop both the Dozer Boss and Dozer 3342 returned up the dirt road and began cutting another line east from the dirt road on the left flank towards the head of the fire. Sometime between 1545 and 1550 hrs, conditions worsened and the Dozer Boss radioed Dozer 3342 and advised him to retreat. Uncertain if Dozer 3342 heard the retreat directive, the Dozer Boss walked to Dozer 3342's location and signaled him to retreat. At this point the Dozer Boss looked to the west and saw a "wall of flame."

Recognizing that he was in a compromising situation, the Dozer Boss got into the cab of Dozer 3342 and returned to the ICP area. The Dozer Boss became concerned about the location of Dozer 3346 and asked the OSC if he had heard from Dozer 3346. The OSC asked Division B (1609 hrs) if he knew the location of Dozer 3346. Pine Air Attack also began looking for Dozer 3346 and subsequently reported seeing a dozer parked in the burn. The Dozer Boss with the aid of the Safety Officer (at scene time 1545 hrs) began looking for the dozer.

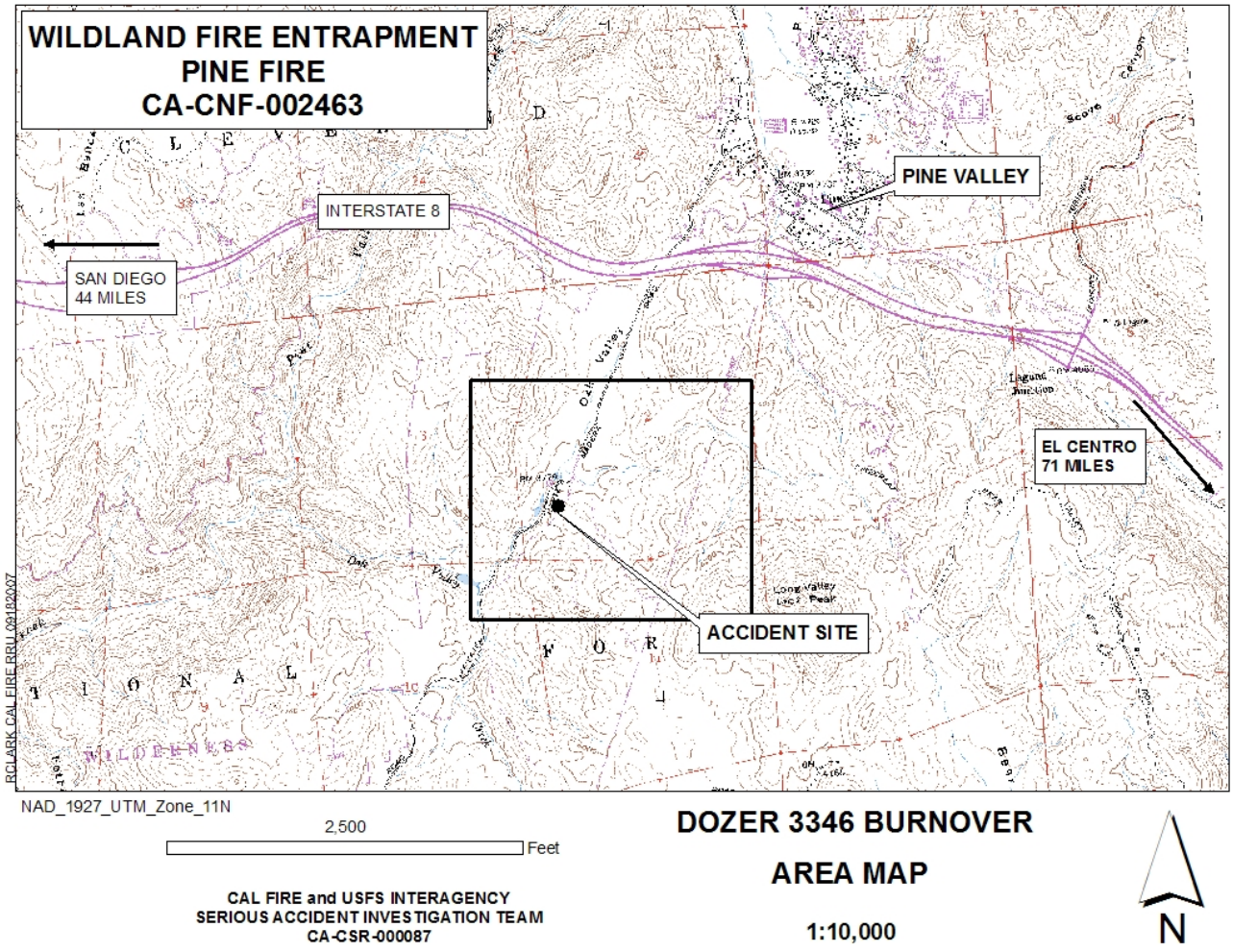
The Dozer Boss and the Safety Officer located the HFEO (1615-1617 hrs) crouched on a rock approximately 80' behind Dozer 3346. They attempted to but were unsuccessful in notifying the IC after locating the victim. They assessed the injuries to the HFEO, determined the injuries to be non-life threatening and with the HFEO's concurrence, walked him about 500' down the hill to the Incident Command Post. A San Diego Fire Department engine company including a firefighter paramedic assessed and initially provided the HFEO Advanced Life Support service where he was found at the rock.

At 1620 hrs, the IC alerted the CNF ECC that Dozer 3346 had been burned over on Division B, requested an air ambulance medivac and requested a paramedic unit to the scene. At 1622 hrs, the CNF ECC determined the responding air ambulance would have an ETA of 18 minutes (1640 hrs). At 1644, the IC advised the CNF ECC the HFEO had burns to the hands and maybe to the face and the operator would be air lifted to a burn center. The air ambulance landed at 1646 hrs and took off at 1655 hrs enroute to an approved burn center with the burned HFEO.

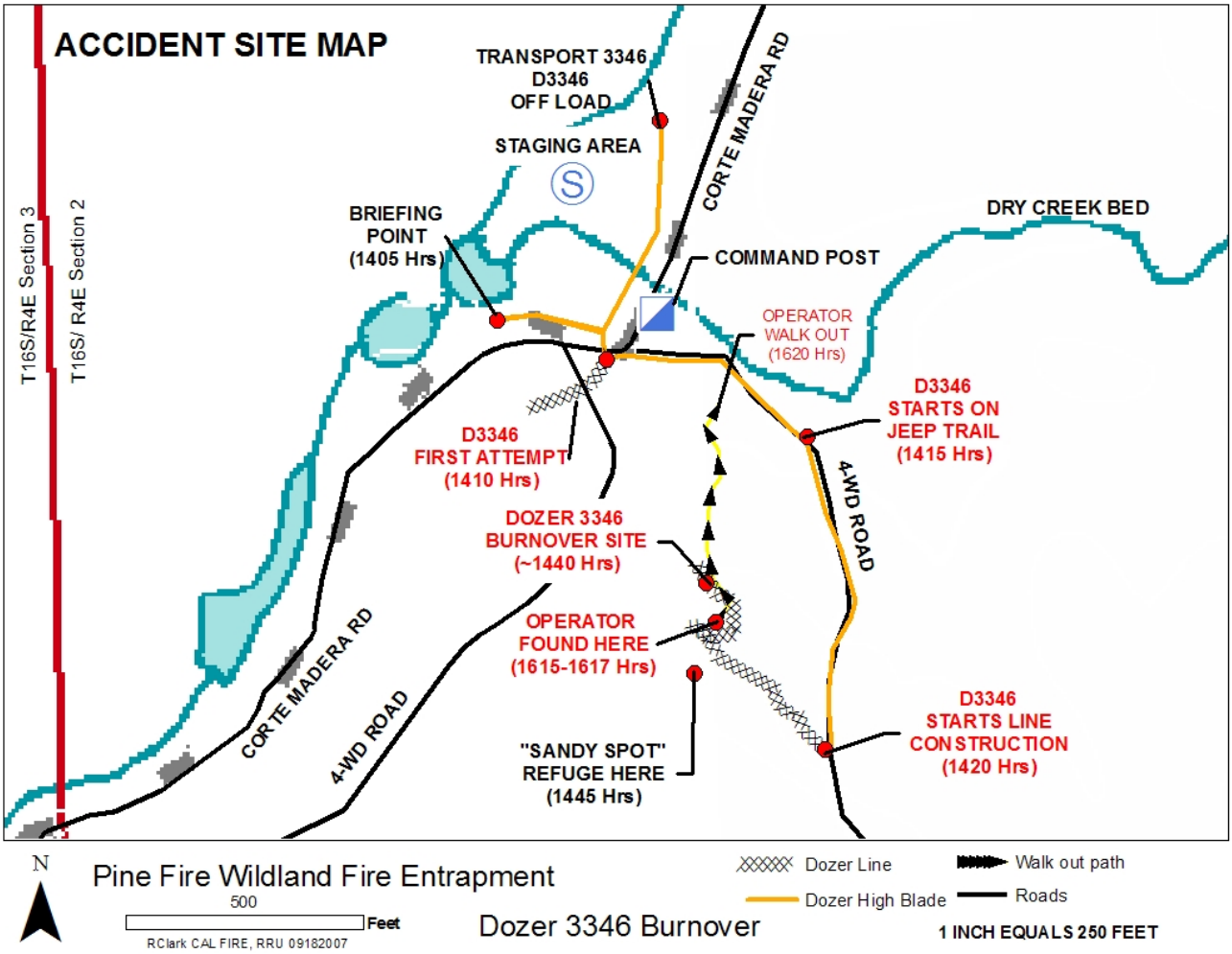
It is estimated that from the time of his assignment briefing to the time of the burn over, a total of 40 minutes elapsed.

INJURIES/DAMAGES

Burn Center medical specialists diagnosed the HFEO has having 2nd and 3rd degree burns to both hands and to the finger tips. He also had 1st and 2nd degree burns to the left side of the face and to his nose. The burns are considered moderate to major in severity. Dozer 3346 suffered moderate damage.



The accident site was on State Responsibility Area lands within the Direct Protection Area of the United States Forest Service. The latitude of the accident site is 32° 48.25'N and the longitude is 116° 32.84W or otherwise identified as the SW ¼ Section 2, T16S, R4E, SBBM.



SAFETY ISSUES FOR REVIEW

LCES (Lookouts, Communications, Escape Routes & Safety Zones)

- Lookouts
  - Must be able to see the hazard (fire) and the risk (firefighters)
  - Must understand fire behavior and planned tactics
- Communications
  - Must have effective communications from the Lookout to firefighters
  - Must have a clear understanding of the communications plan and assigned frequencies
  - Must be able to convey a clear message that everyone understands about holding in place, readying to escape or immediately escaping the specific work site
- Escape Routes
  - Require one Escape Route but desire two routes
  - Most elusive of the four LCES factors
  - Must be short enough and traversable to reach Safety Zones
- Safety Zones
  - A place where no sheltering is required
  - Require 4 times the flame length in separation from fire
  - Consider topographical position

Lookout **C**ommunications **E**scape Routes **S**afety Zones

Accountability (Critically important)

- Single resources are responsible to check in and assist in maintaining their accountability
- Supervisors must maintain resource accountability at all times
- Company officer and Crew Supervisor must maintain engine or crew accountability
- STL or TFL must maintain ST, TF or single resource accountability
- DIVS must maintain ST, TF & single resource accountability
- OPBD must maintain DIVS, GRPS and other subordinate accountability
- OSC must maintain accountability for ground, air & staging subordinates

Emergency Evacuation (Very important)

- Use the standard FIRESCOPE notification procedure (http://www.firescope.org/ics-guides-and-terms/ICS%20910.pdf)
    - "Emergency Traffic – Firefighter Down" with location
    - "Emergency Traffic – Engine Trapped" with location
- Frequency must go quiet – supervisor acknowledges emergency notification
- If not acknowledged by supervisor, anyone hearing emergency notification calls for quiet radio time and notifies the OSC

Personal Protective Equipment (PPE)

- All PPE must be worn and immediately available when in the 'hot zone'

Radio Readiness

- Must have portable radio immediately available and take it when leaving the apparatus
- Must have radio frequency list that shows radio nets for both mobile and portable radios
- Conduct radio tests (actual voice test count not just clicking transmitter) between supervisor and assigned resources during incident briefing

Mobile Equipment

- CAL FIRE mobile equipment can only be modified as authorized in Handbook 6700
- Maintenance and operational readiness must be evaluated and documented as required in Handbook 6700