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CDF GREEN SHEET

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

FIREFIGHTER BURN INJURIES AND BURNOVER OF ENGINE 224

LASSEN-MODOC RANGER UNIT COAST CASCADE REGION

HYATT FIRE 8LMUOO2015

JULY 20, 1998

A Board of Review has not approved this Summary Report. It is intended as an aid in accident prevention, to let interested parties know what happened, and to be used as a safety training tool. To that end it is published and distributed within a short time frame. Information contained within may be subject to revision as further investigation is conducted, and other reports and documents are received.

INFORMATIONAL SUMMARY REPORT

SUMMARY

On July 20, 1998, at 1722 hours the Susanville Interagency Command Center (ECC) received a report of a vegetation fire from Thompson Peak Lookout. The fire was reported to be on Lassen County Road A-3. There was a series of four fires, all within State Responsibility Area. Three of the fires were quickly contained and the fourth, the **HYATT FIRE** was actively burning. Fire fighting resources from the California Department of Forestry and Fire Protection (LMU), Bureau of Land Management (NOD), California Correctional Center Fire Department, at Susanville (CCO), Standish-Litchfield Fire Protection District (STL), Janesville Fire Protection District (JNV), Susanville City Fire Department (SUS) and Susan River Fire Protection District (SSN) responded to the fires.

E224, from the SSN had responded to a separate fire along County Road A-3, four miles from this series of fires at approximately 1700 hours. The fire was contained and E224 was dispatched to the series of fires on County Road A-3. E224 was assigned to the **HYATT FIRE** to provide structure protection along Deshane Road. The operator drove on an unimproved road between the fire and a threatened structure. The fire quickly advanced toward the structure. The operator attempted to drive around a horse trailer that was parked on the unimproved road. Visibility was restricted by heavy smoke and unburned fuels. E224's front axle became high centered on a berm, causing the rear of the vehicle to slide two feet downslope. The rear wheels became stuck in the desert sand. E224 caught fire and was soon fully involved. The operator exited through the passenger door and was assisted to the structure above E224. The operator was not wearing personal protective clothing; receiving first and second degree burns to the left arm, with a small blister on the right hand and below the left eye. The operator was treated and released from the local hospital that evening and referred to the burn center at the University of California, Davis (UCD).

FIRE LINE CONDITIONS

TOPOGRAPHY

Terrain: Fire originated on a gentle slope along a county road. High desert plain with a small ridge rising up fifty feet (50') from the origin.

Aspect: South

Slope: 4% to 7% with a 10% slope at the downslope side of the unimproved road.

Elevation: Origin- 4040 feet
Accident site- 4055 feet

FUELS

Arrangement: 50% grass that was 80% cured; 2 foot maximum height
40% sage; 2 feet to 4 feet in height
10% bitterbrush; 2 feet to 8 feet in height; 25% to 35% dead material

Continuity: No break in fuel continuity. Grass interspersed throughout the sage and bitterbrush.

Fuel Loading: 1.5 ton to 2 ton per acre.

Live Fuel Moistures:	Old Growth:	Sage 118%	Bitterbrush 77%
	New Growth:		Bitterbrush 151%
Critical Live Fuel Moistures:		Sage 80%	Bitterbrush 100%

Fire Behavior Fuel Model '2'

National Fire Danger Rating System Fuel Model 'T'

WEATHER:

Janesville Remote Automated Weather Station (RAWS) M10 data between 1525 hours and 1925 hours. RAWS station is located 5 miles southwest of the fire at an elevation of 4200 feet.

TIME	TEMP (F)	RH	WIND SPEED (mph)	WIND DIRECTION (degrees)
1525	97	11	7	295
1625	97	15	4	271
1725	93	20	5	258
1825	89	25	4	255
1925	85	26	7	285

Witnesses at the fire reported southwest winds up to 4 mph until approximately 1900 hours. The wind increased to about 7mph with gusts over 10mph.
Clear skies with cumulus clouds twenty miles to the north and east.

FIRE BEHAVIOR:

Rate of Spread (ROS) was approximately 10 acres per hour. Fire spread aided by slope and SW wind. The fuel continuity provided active fire along both flanks and the head with twenty-foot (20') flame lengths. Smoke column was vertical for the first 45 minutes and then bent to the northeast for the next 15 minutes. One spot fire occurred and was controlled at the head of the fire.

Behave System ROS calculated at 16 chains per hour for Fuel Model #2.

VEHICLE DESCRIPTION

1972 International Loadstar 1700, CDF Model #5.

SEQUENCE OF EVENTS

On July 20th, 1998, there were a series of fires along Lassen County Road A-3. The first fire was reported at 1703 hours. Engine 224 (E224), engine operator with one firefighter, was dispatched along with other resources. At 1718 hours E224 was cancelled enroute. Between 1722 hours and 1723 hours four new fires were reported along Road A-3. E224 was dispatched by the ECC to these fires.

When E224 arrived at the new fires a second firefighter from SSN joined the crew. E224 was assigned structure protection on the HYATT FIRE, along Deshane Road. They stopped part way up Deshane Road to prime the auxiliary pump but were unable to get a prime. E224 was then instructed to continue up Deshane Road and assigned to protect the last residence on the left side of the road. Before continuing the operator put E224 into four wheel drive (4WD).

Before they arrived at the structure one of the firefighters on E224 got off the engine and released a horse from a pen. The other firefighter also left the engine and assisted a local resident in removing two pigs from a horse trailer that was on an unimproved road just below the structure that they were to provide protection. While the firefighters were working on releasing the animals the operator on E224 made the decision to drive down the unimproved road to stop the fire from reaching the residence.

E224 drove down the unimproved road to the horse trailer. The two firefighters came back to E224 and began fighting the fire, using the left hose reel; 1" cotton jacket with a combination nozzle. The fire quickly approached E224 and an attempt was made to drive around the trailer. There was a 10% slope on the downhill side of the road. Visibility was limited due to the heavy, dark smoke and unburned bitterbrush. There was a pigpen below the horse trailer and the passage between the two was narrow. The E224 became high centered on a berm, losing traction and becoming stuck. The operator was unable to move E224. The fire ignited E224 and the operator had to exit through the passenger door. The operator received burns to the left arm and hand, right hand, neck and face when going through the flames outside the engine.

The engine operator was assisted up to the residence by the SSN firefighters, receiving prompt treatment of the burns, by applying water from a garden hose. Additional burn treatment by other firefighters was provided and the operator was taken by ambulance to the local hospital.

GENERAL FINDINGS

After reviewing the accident scene, talking to the firefighters involved with this incident, reading policies, procedures and training records, the Serious Accident Investigation Team (SAIT) has identified a number of key points that contributed to the accident. Many of the points are components of the "Eighteen situations that Shout 'Watch Out' "; the "Ten Standard Fire Orders"; Common Denominators of Fatalities and Near Misses, and the Operational Wildland Safety System known as LCES (Lookouts, Communications, Escape Routes and Safety Zones).

- The use of Personal Protective Equipment (PPE) would have prevented or significantly limited the injuries.
- Personnel need to notify the incident commander (IC) when PPE is unavailable or not appropriate to the assignment.
- Instructions, assignments and tactical operations must be clear and understood by all crew members in order to coordinate actions.
- The escape route identified by the engine operator had a hazard (berm) obscured by the height of the fuels.
- Dense pockets of fuel coupled with a continuous grass understory resulted in a higher than anticipated rates of spread and produced flame lengths that were observed to be in excess of twenty feet (20').
- The tactical decision, by the engine operator, to do a frontal assault, without an operational auxiliary pump limited fire control options.
- The method of using reel lines for frontal assault fire control efforts afforded low volume flows and limited the protection against the fire's intensity.
- No erratic or unusual conditions or fire behavior were observed.