

GREEN SHEET

California Department of Forestry and Fire Protection

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



**Burn-Over and Shelter Deployment
Nine Injuries
One Fire Engine Destroyed
One Fire Engine with Major Damage**

**July 7, 2007
Inyo Complex
Seven Oak Fire**

**Incident Number CA-INF-000784
Accident Investigation Incident Number CA-CSR-000068**

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 an incident that occurred on the “Seven Oak” Fire in which nine firefighters suffered minor burn and smoke inhalation injuries. One fire engine was completely destroyed and a second had major damage.

CONDITIONS

Location: Four miles northwest of the town of Independence off of North Oak Creek Road near the Mt. Whitney Fish Hatchery.

Fuel: **Type:** Fuels in the general area are a mix of widely spaced low shrubs dominated by Black Brush, Rabbit Brush, Great Basin Sage, California Buckwheat, Mormon Tea, Burro Brush, and other isolated shrubs with very sparse grass. The fuels at the accident site are heavy riparian with mature trees ranging from 10’ to 100’ in height with closed canopy. Tree species include Cottonwood, Live Oak, Poplar, Willow, Pine and Cypress. Also present were a heavy duff layer and other surface fuels.

Loading: Fuel in general area range in height from one to three feet. Loading is estimated at three to five tons per acre. Fuels in the riparian where the accident occurred create an extreme fuel load; no estimate of tonnage is available. Also present in the accident area and contributing to the fire load were multiple structures and stored man-made material of various types.

Continuity: Fuels in the general area are sparse, requiring winds for fire to spread. Fuels in the riparian are contiguous with 100% closed canopy.

Live Fuel Moisture: No live fuel moisture readings are taken for the area involved. Based on observed fire behavior, drought conditions and appearance, fuels are at critical levels. Riparian areas have normal fuel moistures but are historically very flammable according to local fire managers.

Dead Fuel Moisture: Fine dead fuel moisture indicated one hour time-lag fuel moisture of 1-2% The ignition probability of a firebrand landing in receptive fuel is 100%.

Weather: **Temperature:** 97 degrees Fahrenheit
Relative Humidity: 5%
Winds: Southwest 13 mph, gusts 32 mph
(weather observations from Oak Creek RAWS one mile NW of site)

Topography: Slope at the accident site averaged 7%. Steep slopes and escarpments 4000’ to the West contribute to strong erratic winds in the afternoons. Drainages to the West also influenced wind direction changes that occurred during accident.

Fire Behavior: Burning conditions observed on the incident were extreme at times. Causes of this extreme behavior include very low live fuel moisture due to drought conditions, high temperatures, low relative humidity's, and strong and gusty winds; though extreme, conditions were not unexpected.

SEQUENCE OF EVENTS

July 6, 2007, at approximately 2200 hours, Strike Team 9442C left Tuolumne/Calaveras Unit enroute to the Owens Valley Inyo Complex. The Strike Team consisted of engines E-4455, E-4461, E-4452, E-4480, and E-4466. They arrived at Owens Valley Camp at approximately 0200 hours and were assigned to the Seven Oak Fire. They were instructed to be at the Mt. Whitney Fish Hatchery, located northwest of the community of Independence, at 0800 hours; so, they slept for a couple of hours on the camp lawn.

STL 9442C received an in the field briefing by the Cal Fire Incident Commander who had worked the incident since ignition the day before. The Strike Team was assigned to Division "A" and notified that resources were limited. His area of responsibility, Fish Hatchery Road along with North and South Oak Creek Roads, was evacuated the previous day and the evacuations were still in place. The protection of historic Mt. Whitney Fish Hatchery was a high priority for the Strike Team.

STL 9442C conducted a thorough safety tailgate session with his crews before assigning them their tasks. He familiarized himself with the fish hatchery and then began scouting out other structures in the area. He was able to look at every structure in the area except for an old homestead just west of the fish hatchery. At approximately 1030 hours, his attention was drawn to an increase in fire activity up towards the end of South Oak Creek Road beyond the Bright Ranch. STL 9442C moved some engines into that area to address the threat.

Division "A" came into the area and did a face-to-face with STL 9442C. They formulated a contingency plan to possibly burn out the vegetation between the North and South Oak Creek Roads to reduce the threat to the fish hatchery if the fire continued to travel in that direction.

At approximately 1400 hours, the fire crested a nearby knoll and continued its northerly travel towards the Mt. Whitney Fish Hatchery and other nearby residences. The afternoon winds were picking up and it was just a matter of time before the fire reached the Hatchery. Division "A" authorized the use of fire on the South Oak Creek Road near the Bright Ranch to reduce the fuel along the road.

Division "A" arrived at the scene and utilizing a Los Angeles County hand crew began burning out North Oak Creek Road. The burning started approximately a ¼ mile from the North & South Oak Creek intersection and they took fire to the southeast towards the intersection. The wind conditions were favorable, and they continued burning around the intersection and up South Oak Creek Road a short distance. E-4480 and E-4466 were directed to support the burning operation. E-4455 and E-4452 were directed to enter the hatchery and prepare for any possible extension. E-4461 was directed to stage at the intersection to watch for spot fires.

Division "A" directed STL 9442C to carry fire further up North Oak Creek Road towards the campground. The winds were still favorable, and STL 9442C instructed the LA County Crew to go in 50 feet and fire parallel to the road. His hopes were to add depth to the fire break. The crew followed instructions and began burning out. Almost immediately the winds changed to a southwest wind, carrying the fire across the road into a riparian area just west of the hatchery which contained houses.

STL 9442C directed E-4480 to try to catch the slop-over. He directed E-4452 to come in and give 4480 a hand. E-4480 entered a driveway they had not been in before with the hopes of picking up the fire. Engineer 4480 backed in over a wooden bridge and positioned his engine in a small open area. He surveyed the area and felt uncomfortable with it, choosing not to go in any further. Engineer 4480 pointed out a small pond to his crew members and identified it as a safety zone. He directed his crew to stretch out two hose lays to pick up the fire. The crew members began laying hose when a private vehicle came out from around a structure. At about this same time, E-4452 was entering the property to assist. Both engines had to move out of the way to let the 77-year-old female civilian escape.

The engines continued to set up their suppression activities with the crew members from E-4452 assisting with the hose lays off of E-4480. One hose was laid to the west towards the outer boundaries of the riparian. The other was stretched to the northwest behind the structures where spots were visible. Captain 4452 maneuvered his engine around 4480 and crossed a second wooden bridge where he backed up into a small opening north of the pond. At first, things were looking pretty good and the firefighters felt they were going to be able to pick the fire up. Then, the intensity suddenly increased and the fire got up into the trees. The firefighters off E-4480 recognized that they were in trouble and began heading to the pond identified earlier as the safety zone. The crew from E-4452 saw what was happening and followed suit. Captain 4452 was separated from his crew and sought refuge in the cab of the engine as the fire raced in. Engineer 4480 entered the pond and notified STL 9442C that they were being overrun with fire. Fire shelters were deployed in the pond and held over their heads for extra protection.

At 1505 hours, the Federal IC, advised of the burn-over and requested air support.

In the pond, roll call was taken and the crews continued to communicate with each other and STL 9442C. Structures, vehicles, and trees were burning all around them as they attempted to stay calm. Captain 4452 maneuvered his engine around trying to keep it away from the heat. He would periodically exit the vehicle and utilize his hard-line in an attempt to keep things cool. Air support arrived and began dropping on the area.

After things calmed down, the crew exited the water and moved towards E-4452. They gathered in a group and used their fire shelters around them as a shield. Those who had lost their shelters in the water were placed in the middle, protected by the group. They reached E-4452 and assembled here. The house adjacent to the engine was on fire and fire was burning the trees to the north. The decision was made to return to the pond, and Captain 4452 joined them. Eventually, things cooled off enough for the crew to exit the pond and they discovered E4452 had been consumed by the fire. The crew then walked out to the road.

At 1551 hours, it was announced over the radio, that those involved in the entrapment were out and OK.

After determining that the injuries were minor, Engineer 4480 retrieved E-4480 and drove it out. The crews were loaded in the remaining engines and transported to the Independence Airport for a medical evaluation. The personnel involved were examined by local paramedics at the airport.

After being evaluated, it was determined to transport two firefighters and Engineer 4480 to the burn center in Fresno. Arranging air transportation was difficult and timely due a mechanical failure with one aircraft and response times from Fresno for the helicopters. Those injured were taken by ground ambulance to Lone Pine to await a flight. Two of the crew members were picked up by a Mercy Air helicopter at 1940 hours and the last by a CHP helicopter at 1955 hours.

July 9, 2007, Safety Officers from the Serious Accident Investigation Team arrived at Mammoth Lakes to inspect the PPE involved in the burn-over. The TCU Unit Chief and Division Chief were also at the motel. During discussions, other minor burns were discovered and some crewmembers complained of having difficulties breathing. Collectively, the decision was made to seek additional medical attention for the remaining six employees involved in the burn-over. They were taken to the local hospital for evaluation then flown to the burn center in Fresno as per CAL FIRE policy.

July 10, 2007, the remainder of the Strike Team was released to return to their home unit.

INJURIES/DAMAGES

Injuries

- One firefighter suffered inhalation injury and eye irritation, and was transported to Fresno University Hospital
- One firefighter suffered a minor burn to the right earlobe, and was transported to Fresno University Hospital.
- One firefighter suffered a minor burn to the left cheek, and was transported to Fresno University Hospital.
- Six firefighters suffered delayed symptoms including minor burns and inhalation injuries. They received initial evaluation and treatment at Mammoth Lakes Hospital, and were subsequently transported to Fresno University Hospital.
- All firefighters have subsequently been treated, released, and have returned to full duty.

Damage

- E-4452 was a total loss
- E-4480 suffered major damage estimated at \$20,000.

SAFETY ISSUES FOR REVIEW

- Identify escape routes and make them known to all employees.

The LT FAE on E4480 had observed a small pond adjacent to his engine and made it known to all firefighters that this was their safety zone if their position was compromised. However, the Accident Investigation Team has identified the pond as a “REFUGE OF LAST RESORT” meaning the pond does not meet the definition of a “safety zone.” Eventually, their position was compromised and the crews had to retreat to the pond. The crews jumped into the pond, deployed shelters and road out intense heat and fire conditions. Their core training, the

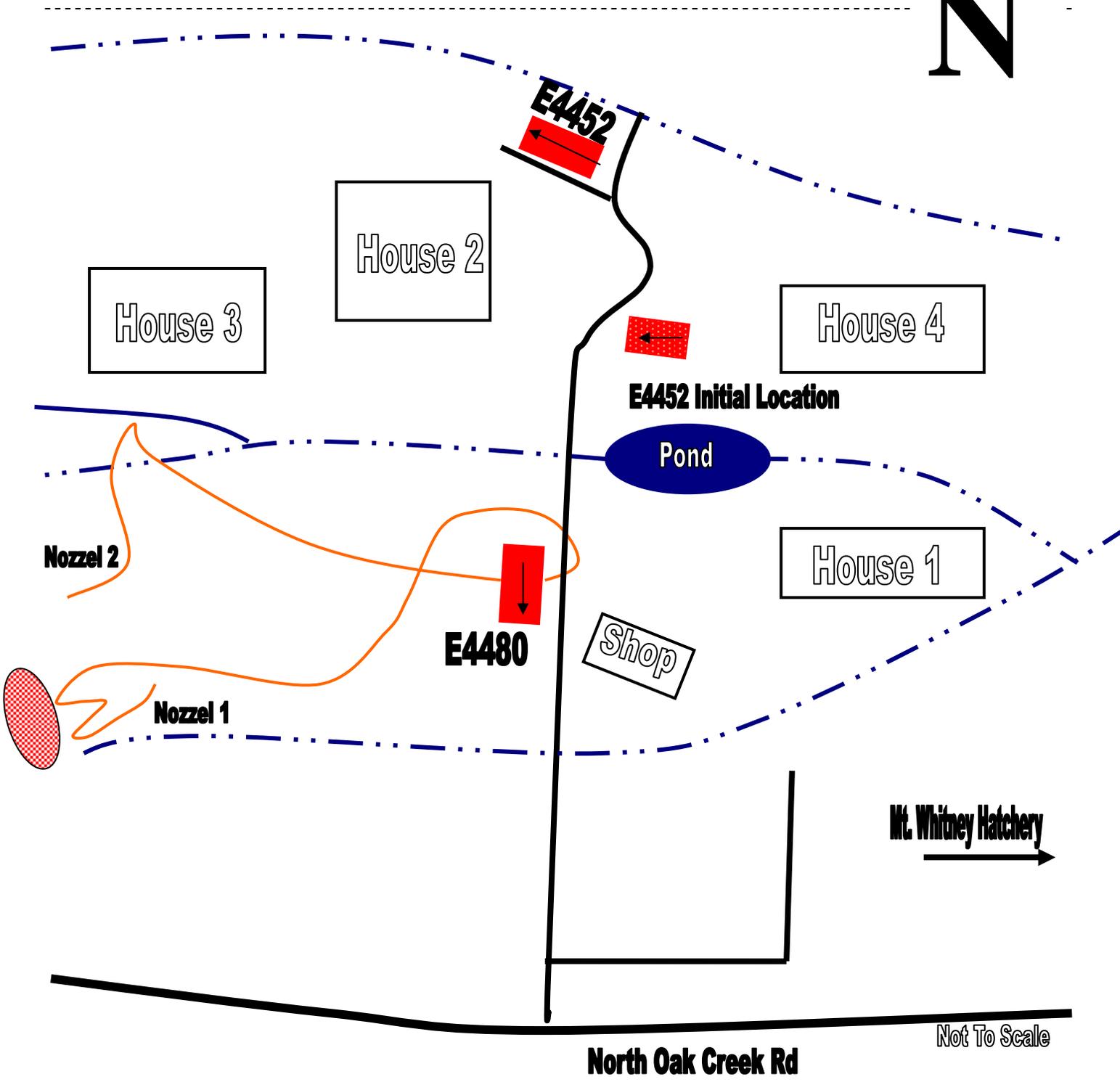
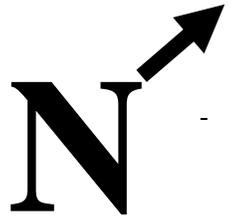
command presence of the Company Officers keeping everyone together allowed them to survive a deadly situation with relatively minor injuries.

- Supervisors need to be sure all employees are aware of critical fuel conditions and associated fire behavior, and modify tactics accordingly.

The Strike Team Leader had briefed his strike team on the fuel and burning conditions at the incident. The Strike Team had the opportunity to observe the extreme burning conditions prior to the two engines being assigned to attempt to pickup the slop-over and spots from the firing operation.

- Back equipment in for a quick escape if necessary. Park in a cleared safe area.
- Utilize 1½” nozzles on active fire.
- Examine bridge load limits and watch for wooden bridges that may ultimately be consumed by fire.

**Hatchery Accident Investigation
Site Map
07/07/2007
Independence, CA**



Lookout

Communications

Escape Routes

Safety Zones

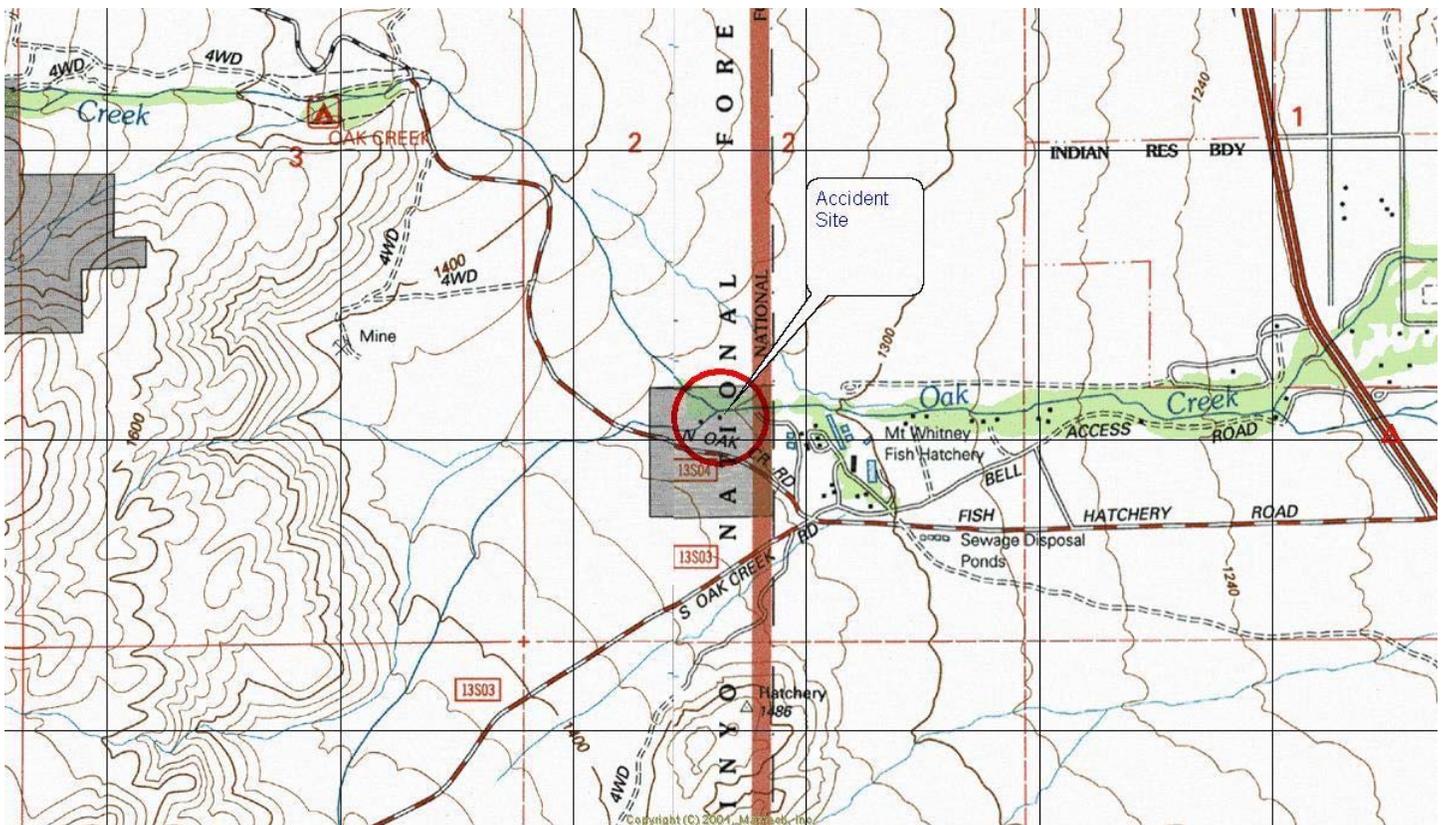
Hatchery Accident Investigation

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