

GREEN SHEET

California Department of Forestry and Fire Protection (CAL FIRE)

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



Firefighter Heat Exhaustion and Dehydration Near Miss

July 17, 2009

Mammoth Fire

CA-NEU-014435

California Northern 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.

Lookouts

Communications

Escape Routes

Safety Zones

SUMMARY

On Friday July 17, 2009 CAL FIRE units were working on the Mammoth Fire, an extended attack fire in the Middle Fork of the American River Canyon near Mammoth Bar Off Highway Vehicle Area. At 1320 hours, a firefighter from E 2160 exhibited symptoms of heat related injury. The firefighter was walked off the fire line and driven to a waiting ambulance. The ambulance transported the firefighter to Auburn Faith Hospital where he was treated for heat exhaustion and released at 1815 hours.

CONDITIONS

Temperatures ranged from 100 to 104 degrees

Humidity 15%

Winds were southwest 0-5 mph.

Fuels consisted of heavy brush with scattered Black Oak and Pine canopy

The slope is a south facing aspect varying from 30 to 40%

The fire was in mop up stage.

SEQUENCE OF EVENTS

At 0700 hours, ST 9210C was assigned to Division “C” on the Mammoth Fire in the Middle Fork of the American River Canyon in Placer County. After briefing, the engines assigned to ST 9210C spent the morning moping up on the upper drivable portion of Division “C”. At 1300 hours, firefighters from E2160 and E2180 began a hose lay from the ridge top toward the C/Z division break near Hoosier Bar.

After laying 1000 feet of hose, a firefighter from E2160 (FF#1) complained of dizziness. FF#1 took a short break and then rejoined the rest of the firefighters on the hose lay. Having exhausted all of the hose complement, all of the firefighters were instructed by the Fire Captain on the line (FC#1) to take a break. Shortly thereafter, additional hose and personnel reached the end of the hose lay. FC#1 continued down the hill, laying hose with the fresh personnel. After resting several minutes, FF#1 had not improved and exhibited symptoms of heat illness including: dizziness, cramping, nausea, vomiting, and diarrhea. A firefighter from E2180 (FF#2) evaluated FF#1’s condition and found the following: pulse of 180 beats per minute (bpm), oriented X4, pale and sweating.

FF#2 began cooling and hydration measures on FF#1 and contacted FC#1 advising him of the injury. FC#1 advised FF#2 to continue his treatment and check vital signs every two minutes. FC#1 attempted to contact Division “C” (DIV C) and his Strike Team Leader (STL) to request an air ambulance, backboard and straps. His radio communications were hampered due to his location deep in the river canyon. FC#1 then contacted the Fire Captain on E2160 to relay the information about the injury to DIV C and the STL. E2479, working from the bottom of the canyon at Hoosier Bar,

heard the request for medical equipment and sent personnel and medical equipment up the hill to FF#1s' location.

After making the request for medical transport and equipment, FC#1 then proceeded back up the hill 600 feet to FF#1s' location. Upon arrival, he found FF#1 to be pale, sweating profusely and to have a pulse of 120 bpm. A few minutes later, the personnel from E2479 arrived with medical equipment. After resting for 15 minutes, all personnel began walking down approximately 1000 feet to E2479 with FF#1. When FF#1 arrived at E2479 he was placed in the cab of the air conditioned engine and monitored. His condition was reported to be improving. Based on that report the STL who was at E2479 decided to cancel the air ambulance and transport FF#1 to the ambulance at Mammoth Bar. The STL could not transport the patient and the treatment personnel in her vehicle due to lack of space, so a van was ordered to that location.

The van arrived at Hoosier Bar at 1340 hours. The injured fire fighter (FF#1), FF#2 and FC#1 loaded into the van and were transported on a narrow jeep trail to the waiting ambulance at Mammoth Bar. The van arrived at Mammoth Bar at 1420 hours and FF#1 climbed into the waiting ambulance. FF#1 was transported by the ambulance to Auburn Faith Hospital. FF#1 arrived at 1442 hours and was treated for heat exhaustion. FF#1 was released from the hospital at 1815 hours and returned to full duty on July 19.

Human Factors

- The employee was on their second day of a regular work schedule
- The employee is a 2nd year seasonal firefighter
- The employee was in good physical conditions at the time of the incident
- The employee had no previous illness that would have contributed to the event
- The employee was not on any over the counter medications at the time of the incident
- The previous day's workload was not abnormally difficult
- Uninterrupted sleep occurred the night before the incident
- Normal meals were consumed during the previous 24 hours leading up to the incident
- The employee did not consume any caffeine or energy drinks prior to the event
- The employee has no previous history of heat related injuries

SAFETY ISSUES FOR REVIEW

Review Cal Fire policies regarding Hydration, Nutrition and Wellness

<http://cdfweb/FireProtection/Safety/2008/Hydration,%20Nutrition%20and%20Wellness%20Component.pdf>

- **Be able to recognize the symptoms of heat illness in yourself and others**
 - If you are feeling overexerted – STOP!
 - Hydrate and lower your heart rate. Oftentimes feeling ‘thirsty’ means that you are already dehydrated.
- If you still have symptoms, notify co-workers or supervisor immediately.
- Immediately treat heat illness if it occurs. Ignoring or delaying the need for medical attention could lead to permanent disability and even death.
- When managing an “incident within an incident” maintain ICS.
 - Establish an IC for the new incident
 - Designate radio frequency for new incident
- Drink at least one quart of water per hour during strenuous exercise or work. About one third to one half of the liquid consumed during a work shift should be a sports drink such as Gatorade, for the purpose of replenishing fluids, electrolytes and carbohydrates.
- Recognize the increased demand placed on your body when working in extreme temperature and steep topography and pace yourself accordingly.
- Make sure equipment is supplied with adequate amounts of drinking water and electrolyte replacement fluids such as Gatorade or approved sports drinks.
- “Energy drinks” such as Red Bull, Monster and Rock Star are **NOT** sports drinks.
- Monitor your hydration status by observing urine color: pale yellow or wheat color is normal. A lighter color is a sign of over hydration and can flush electrolytes from your system; dark yellow or brown urine is a sign of dehydration.
- Hydrate before, during and after exercise and continuously through the day. Don’t wait until you exert yourself before beginning to hydrate.
- Eat several small meals a day rather than three large meals for higher energy and more optimal metabolism. Place snacks such as granola or energy bars in your personal gear in the event that you are unable to eat regular meals.