



Clay Springs Fire

Engine Burn Over

June 27, 2012

An engine burn over occurred during initial attack, on the Clay Springs fire, a 107,000 acre fire, reported June 27, 2012 at 14:15 hours, south of Oak City Utah. The burn over occurred shortly after engines from the Oak City fire department arrived and began flanking the fire. The fire was burning on the east side of a paved two lane highway. The first resource to arrive at the fire was an engine from the Oak City Fire Department, a military 5 ton truck converted into a type 4 wildland engine staffed with two people. Red flag weather conditions were forecast that morning for gusty southwest winds and low relative humidity.

At the fire, a strong southwest wind was rapidly pushing the fire northeast. A coordinated flanking attack was deployed with the military 5 ton taking the lead, hot spotting from the highway around the south end of the fire and then northward along the east flank, followed up by a military Gamma Goat converted into a type 6 engine which was holding and improving the fire edge. The fuels consisted of a mixture of sage and grass with pockets of Pinyon and Juniper to the north. The area in which the fire was burning was relatively flat with a hill rising on the east side. They were experiencing extreme fire behavior with 30 – 35 foot flame lengths and rapid spread. As the military 5 ton progressed north along the fire line, on at least two occasions, they had to loop around and catch the fire as it broke out behind them and begin to flank them before the gamma goat could secure their flank. On the second loop to catch the fire behind them a person from the Gamma Goat joined the military 5 ton, bringing staffing to three firefighters, the driver and two nozzle men, both nozzle men working from the left or fire side of the truck, riding on a platform mounted high on the side of the tank.

The military 5 ton had progressed about 450 yards around the heel of the fire and northeast along the east flank of the fire when the wind shifted to the west, driving flames into the truck; and quickly driving a head of fire over the line behind them. The driver veered away from the flames and looped around to catch the slop over. They quickly discovered the slop over to be more than they could handle and cutting off their escape route. To the east they were trapped by the rising hill and to the north they were trapped by a patch of Pinyon and Juniper. With the intense slop over to the south just seconds away the driver decided the best option was to drive west, through the flank of the main fire and into the black. This was done with the two nozzle men still standing on the platform on the left side of the truck. The nozzle men reported that the flaming flank was surprisingly deep and required them to go 100 - 150 feet before they got through to the black. The driver reported flames coming into the cab through the gear shifter port in the floor. At one point he stopped to check on his nozzle men when one called out "go go go". It was still too hot. The driver, knowing that the nozzle men were injured, continued another 200 yards through the black toward the two lane highway while calling for an

ambulance. Upon arrival at the highway they reeled in a hose that had become unwound and was dragging behind the truck. They then proceeded north on the highway to meet medical help.

The driver suffered second degree burns on his left arm and on both ears. The first nozzle man suffered second degree burns on his entire face, arms, left hand, buttocks and back of his right leg. The second nozzle man also suffered second degree burns to part of his face, elbow, buttocks and backs of both legs. His nomex pants were burned to a brown color down the backs of his legs. After transport to the local hospital in Delta, UT, the two nozzle men were flown by helicopter to the burn center in the University of Utah Medical Center in Salt Lake City Utah. The driver declined treatment at the burn center and received care from the local hospital. At the time of this report, July 6, 2012, the injured persons have been released from the hospital but will be months healing.

The 2012 fire season in Central Utah has been characterized by very light winter snow pack and less than .1 inches of rain in the last two months. Under such drought conditions fuels have cured early and fuel moistures are very low. The ten hour fuel moisture was recorded at 4% at the Sevier RAWs station. The ERC for the area has been consistently tracking with the ten year maximum. Under these conditions fire behavior is uncharacteristically extreme and not within the experience of many firefighters. The driver reports that he was surprised at the fire's intensity, spread rate and resistance to control. He said that in his twenty years as a volunteer firefighter he has not experienced these conditions.

The Clay Springs fire was the second large fire for the local area in a week. The Grease Fire, just five miles west of the Clay Springs Fire, started five days earlier on June 22, 2012, ran to 16,000 acres in the first burn period. This was similar to other starts in Utah around the same time period. New ignitions were characterized by intense burning and rapid rates of spread.

Not experienced in these extreme conditions, the operators of the military 5 ton were not prepared for what happened. They were having uncharacteristic difficulty in suppression the fire along the flank, dealing with frequent flare-ups behind them. When they experienced a wind shift from southwest to west, a common denominator of tragedy fires, they were quickly outflanked and lost their escape route, being trapped between the slope over to the south, the hill to the east, a Pinyon and Juniper stand to the north and the main fire to the west. The resulting tragedy can be a lesson to **all** firefighters that under drought conditions and in Red Flag weather special attention must be given to insuring the viability of escape routes and safety zones.