

OVERVIEW
ENGINE BURN OVER
BEAVER RIM FIRE
FREMONT COUNTY, WYOMING
JULY 4, 2001

At 14:47 hours on July 4, 2001, Fremont County Sheriff's Office dispatched Atlantic City Battalion of Fremont County Fire Protection District to a reported wildfire in Red Canyon. At 15:07 hours Brush Engine 941 with one firefighter reported en route. While en route Brush Engine 941 was diverted by County Fire Chief Jerry Busby to a different fire reported to be on Sheep Mountain, east of Twin Creek. At approximately 15:40 Brush Engine 941 was met at the intersection of Twin Creek Road and Highway 789 by Battalion Chief Dave Geible who became the second crew member.

Brush Engine 941 traveled to the south end of Sheep Mountain where they were joined by Water Tanker 931 and Chief Busby in his command vehicle. All three units then traveled north along a mid-slope two track road on the west slope of Sheep Mountain in an attempt to access the fire from the south. Arriving at the end of the two track, the units were still approximately 500 to 600 yards south of the fire. Brush Engine 941 was parked on a spur ridge in a rocky area with light grass fuels. The two firefighters from Brush Engine 941 (Geible and Keiser) began a hike to the fire while Water Tanker 931 and Chief Busby traveled south back down the two track and then east around the ridge in attempt to access the fire from the east.

The two firefighters from Brush Engine 941 reached the fire edge (approximately a 30 minute walk) and observed the fire burning in grass, sagebrush and scattered juniper and limber pine. Most of the spread was down slope off the west aspect pushed by an east wind of 5 to 8 miles per hour. Meanwhile Brush Engine 141 had joined Busby and Water Tanker 931 on the east side of the ridge. However no access was found and all three units began moving back to the south.

At 17:50 Geible noted in his log the presence of a thunderstorm cell moving towards the fire from the northwest. Shortly after this observation downdraft winds were noted and the main winds shifted from the east to the northwest. Geible and Keiser began hiking south along the ridge line to avoid the new

direction of fire spread. Geible had earlier requested that Brush Engine 141 and Water Tanker 931 attempt to travel to Brush Engine 941's location and move it off the ridge. However, at approximately 18:00 Water Tanker 931 reported that they had arrived at a location where they could see Brush Engine 941's location and that it was most likely already burned over. With fire spreading rapidly to the south both Water Tanker 931 and Brush Engine 141 moved further south to a safe location and Geible and Keiser continued their walk south until they were no longer threatened by the fire spread.

SITE VISIT

JULY 10, 2001

An investigation team consisting of the following members traveled to the site on July 10th to make observations and take photographs before Brush Engine 941 was removed. Lander BLM Station Foreman Cal Anacker and Dave Geible accompanied the team.

Stephen A. Eckert
State Fire Operations Specialist
Bureau of Land Management
Cheyenne, Wyoming

Russell Wenke
Administrator/Fire Marshal
Park County Fire District 2
Cody, Wyoming

Shorty Lowdermilk
State Safety Officer
Bureau of Land Management
Cheyenne, Wyoming

The team made the following observations while at the site:

1. Brush Engine 941 had traveled north on a mid-slope two track road, then east up a spur ridge where it was parked facing north.
2. A rocky spur ridge separated Brush Engine 941 from the fire at the time it was parked.

3. Fuels in the area consisted of grass and scattered sage. Grass in the area appeared to have been left over from the previous growing season, since severe drought had apparently nearly eliminated all growth this season. Sagebrush stobs were evident approximately 30 feet downhill of Brush 941's location, but none were present directly under the engine.
4. With the exception of one tire, the front bumper, and the winch, Brush Engine 941 was totally destroyed.
5. While no one actually saw the burn over. The team concluded the thunderstorm winds most likely pushed the fire south to a location down slope of the engine, where it traveled up slope, igniting the engine.
6. Locations within 30 feet of the engine with similar fuel loading did not burn.

WATCHOUT SITUATIONS PRESENT

1. FIRE NOT SCOUTED AND SIZED UP. Brush Engine 941 was parked to allow the crew to scout the fire. This method of scouting the fire was the only option due to the terrain and a lack of an aerial platform.
2. IN COUNTRY NOT SEEN IN DAYLIGHT. Did not apply.
3. SAFETY ZONES AND ESCAPE ROUTES NOT IDENTIFIED. Safety Zones were identified as the flat, rocky ridgetop and the escape route was taken to the ridgetop, south. They did not have any trouble avoiding the fire as it spread south. In retrospect the engine was not parked in a safety zone. However, the team was not at all certain that this would have been obvious.
4. UNFAMILIAR WITH WEATHER AND LOCAL FACTORS INFLUENCING FIRE BEHAVIOR. Did not apply.
5. UNIFORMED ON STRATEGIES, TACTICS, AND HAZARDS. The strategy at the time was for the crew from Brush Engine 941 to scout the fire while the remaining units tried to find another access.
6. INSTRUCTIONS AND ASSIGNMENTS NOT CLEAR. Did not apply.
7. NO COMMUNICATIONS LIKE WITH CREW MEMBERS OR SUPERVISORS. Did not apply, in fact communications seemed to be very good.
8. CONSTRUCTING LINE WITHOUT A SAFE ANCHOR POINT. Line construction has not yet begun.
9. BUILDING FIRE LINE DOWNHILL WITH FIRE BELOW. Line construction had not yet begun.
10. ATTEMPTING FRONTAL ASSAULT ON FIRE. Did not apply.

11. UNBURNED FUEL BETWEEN YOU AND THE FIRE. This factor definitely had an affect on the burn over. However, at some point during any initial attack this situation is present.
12. CANNOT SEE MAIN FIRE, NOT IN CONTACT WITH SOMEONE WHO CAN. Brush Engine 941's crew left the engine, and hiked to the fire edge, in order to size-up the situation. Since no one was at the engine, no action could be taken when the increase in fire behavior was observed. If one individual had stayed with the engine or if there would have been a third crew member left at the engine, the engine may have had time to prevent the burn over.
13. ON A HILLSIDE WHERE ROLLING MATERIAL CAN IGNITE FUEL BELOW. Present, but probably not a factor in the burn over.
14. WEATHER BECOMING HOTTER AND DRIER. Present, definitely influenced fire behavior.
15. WIND INCREASES AND/OR CHANGES DIRECTION. Definitely a major factor in the burn over. The change in wind direction changed the fire spread from westerly to southerly which allowed the fire to then make an up slope run to the engine.
16. GETTING FREQUENT SPOT FIRES ACROSS LINE. Did not apply.
17. TERRAIN AND FUELS MAKE ESCAPE TO SAFETY ZONES DIFFICULT. Present but did not influence burn over.
18. TAKING A NAP NEAR FIRELINE. Did not apply.

FIRE ORDERS

1. FIGHT FIRE AGGRESSIVELY BUT PROVIDE FOR SAFETY FIRST. The crew's safety was not compromised.
2. INITIATE ALL ACTIONS BASED ON CURRENT AND EXPECTED FIRE BEHAVIOR. The action of parking the engine at this location was based on current fire behavior. It is possible that the subsequent fire behavior could have been predicted. However, during initial attack with only a two person engine crew, the choice was made to have both crew members scouting the fire, leaving the engine unattended.
3. RECOGNIZE CURRENT WEATHER CONDITIONS AND OBTAIN FORECASTS. Geible did recognize the thunderstorm approaching. Apparently no requests were made for a spot weather forecast but even if a request had been made and the forecast received, it may not have influenced the tactics.

4. ENSURE INSTRUCTIONS ARE GIVEN AND UNDERSTOOD. Did not appear to be any confusion about instructions.
5. OBTAIN CURRENT INFORMATION ON FIRE STATUS. The crew of 941 was responsible for obtaining this information.
6. REMAIN IN COMMUNICATION. Communications were in place.
7. DETERMINE SAFETY ZONES AND ESCAPE ROUTES. Safety Zones were identified as the flat, rocky, ridgetop and the escape route was taken to the ridgetop,
8. ESTABLISH LOOKOUTS IN POTENTIALLY HAZARDOUS SITUATIONS. The crew from Brush Engine 941 was acting as lookouts for the other resources. Terrain did not allow for positioning lookouts elsewhere.
9. RETAIN CONTROL AT ALL TIMES. There were no indications that control was not retained.
10. STAY ALERT, KEEP CALM, THINK CLEARLY, ACT DECISIVELY. There were no indications that this fire order was not followed.

RECOMMENDATIONS

1. More consideration should be given to committing one staff firefighter to stay with the engine during IA/size-up or moving the engine to a location when there is little probability that a combination of fuels, terrain and weather could threaten the engine.
2. Even though current national policy allows for two person staffing of most engines, there are some obvious advantages to three person staffing. There will always be situations during initial attack, where engines are not fully staffed, or when a decision is made to commit all staffing to fire suppression, and leave a vehicle parked.

ATTACHMENTS

Appendix A: Geible's written statement.

Appendix B: Site Photographs

