Report on High Voltage Power Line Incident within an Incident
Big Roundtop Fire 11/17/2009
By Steve Roark, Area Forester

On November 18, 2009 a wildfire occurred in Claiborne County near what is locally called Roundtop, located on Highbury Road south of Tazewell. Campbell County fire crew responded to the fire with 7 personnel and a dozer unit operated by Ronnie Collins. Gary Mundy was Incident Commander.

The fire was contained around 1200 at 25 acres and the crew was doing mop-up. The fire burned near a high voltage power lines that carried 161,000 volts on each line. A yellow poplar dead snag was burning near the containment line and threatened the containment line, power line, and Highbury road, so Collins attempted to push it over and away from the power line. The tree unexpectedly snapped off at ground level and fell backwards over the cab of the dozer and struck 2 of the 3 large power lines. The lines began to arc between themselves and produced a series (maybe 4) loud booms about 15 seconds apart. The trunk of the tree burst into flame where it made contact with the 2 lines. The scene felt like a fireworks display.

Mundy immediately instructed Collins to sit still in the dozer and not touch anything. The concern was that significant voltage was being carried down the tree trunk to the dozer, and if he tried to move or step out of the dozer he could be electrocuted. Mundy immediately called the 911 dispatcher and the district FRC to report the emergency and to contact TVA to shut down the power line and Powell Valley Electric to come to the site. This took around 15 minutes. The lines were finally de-energized, and Collins cautiously pulled away from the tree, which remained hung up in the lines. The utility crew came shortly thereafter and cut the tree down. Forestry personnel stood by until the area was deemed safe and finished mop-up.

There's plenty of documentation showing that electricity can travel through trees, and it's assumed that the more water in the tree, the more likely it can carry voltage. The tree Collins pushed over was dead, so this may have been fortunate in that it did not allow significant voltage through it to the dozer that a live tree might have.

This incident once more points out the inherent dangers of wildland fire fighting, and the added hazards that power lines pose. There were no mistakes in tactics that led to this situation; the tree needed to be removed, but its sudden break-over in the opposite direction was unexpected. Lessons to learn from this incident are that high voltage power lines are serious business to work around, so assume that the worst could happen. Personnel on the ground were well clear of the dozer when it was pushing over the tree, but it's possible that while safe from the falling tree, the power line created a larger hazardous perimeter that should be mitigated by staying well away from the power line while equipment was being used around it. Other possible hazards include a line going down and falling on or near a firefighter, and being struck by a line that suddenly breaks. High voltage lines are heavy and have a great deal of tension on them that could snap back with a force that could easily kill.

See the attached overview of safety concerns near power lines.

Report Reviewed by:

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Gary Mundy, Forestry Technician **Date**

Safety Around Power Lines:

- If you are involved in an incident that drops lines across your vehicle, remain in the vehicle until advised by utility personnel or other emergency responders that it is safe to exit. If the vehicle is burning or otherwise endangered, you need to get out quickly without touching the car and the ground at the same time. Sit on the edge of your vehicle seat, facing out with the door open and your feet on the bottom edge of the door opening. Take off your coat so it doesn't catch on the vehicle. Cross your arms across your chest, and then quickly jump from the vehicle to the ground. Remember do not touch your vehicle and the ground at the same time. After exiting, walk away by shuffling your feet (taking short steps) so they are both on the ground at all times, until you are a safe distance of about 100 feet from your vehicle. This is because the ground near a downed power line can carry current, and keeping both feet on the ground reduces the potential of current entering your body.
- If you should come across downed power lines while driving, stop at least 100 feet away from the line. A downed line can energize the ground, depending on the moisture in the soil and surface, up to 100 feet from the line itself.

- Lines that you believe are dead can be re-energized from a number of sources. Utility computers can automatically try to re-energize lines after a failure. People with improperly connected home generators can energize a line when they start up their generators. So stay at least 100 feet away from any downed lines, even if you believe they are dead.

- One electrocution from downed power lines occurred when an individual touched a strand of barbed wire a quarter mile away from where a downed line energized the barbed wire. Death was instantaneous You never know what areas may be energized by downed lines.
- Electricity travels at the speed of light. One wrong step and your dead before you know it.

Power Line Hazards Fireline Handbook 1998 (Chapter 5 Fireline Safety, Page 53)

- If possible, the power company should deactivate lines in the fire area that may endanger firefighters.
- All personnel should be cautioned against directing water streams or aerial retardant into high-tension lines.
- They should be made aware that smoke may become charged and conduct the electrical current.
- Deactivated transmission and distribution lines may continue to pose a hazard due to conduction.
- Identify, map, and discuss at briefings all electrical lines on the incident.

When around power lines:

- If a power line falls on your vehicle, **DON'T** leave vehicle until the power company arrives. If the vehicle is on fire or fire is near, jump clear, **DON'T** hang on;
- Minimize operation of heavy equipment under power lines.
- **DON'T** drive under power lines with long antennas