



**TO :**

**FROM :** National Wildfire Coordinating Group

**REPLY TO :** NWCG@nifc.gov

**DATE :** 02/03/2011

**SUBJECT :** SAFETY BULLETIN : 72 Hour Report - Smoky Hill Wind Farm Fire Burnover

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Attached is the 72 Hour Report for the Smoky Hill Wind Farm Fire Burnover that occurred . Please see that it receives wide distribution within your agency . When available, other investigation documents, will be posted on the Wildland Fire Lessons Learned Center Database for incident reports and lessons learned analyses at <http://iirdb.wildfirelessons.net/main/Reviews.aspx>



72 Hour Report - Smoky Hill Wind Farm Fire Burnover.pdf

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## **72 Hour Report Smoky Hill Wind Farm Fire Burnover**

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02 February 2011

### **The following information is preliminary and subject to change**

Note: KFS does not supervise or have administrative authority over local fire departments; they are accountable only to their local elected and appointed officials. This information is provided as an informational summary only and does not constitute the beginning of an accident investigation.

### **Summary**

At 1543 hours on Saturday, January 29, 2011, a privately conducted prescribed burn escaped control, and Lincoln County authorities were notified of a wildfire on K-14 highway, 2 miles north of I-70, near the Smoky Hill Wind Farm. The fire spread quickly, eventually reaching 400 acres, and requiring the response of 120 firefighters operating 45 pieces of fire apparatus and supporting equipment. All 7 fire departments in Lincoln County were committed, and assisted by another 5 VFD's from Ellsworth County. No state or federal fire resources were involved. The fire was managed under a unified command involving Lincoln County Emergency Management (LCEM) and Fire Department personnel. The fire was declared controlled/contained at 1830 hours.

During initial suppression efforts, two firefighters in a brush truck (type 6 engine) experienced vehicle difficulties and became disabled in front of the fire, and subsequently sustained serious burns.

### **Conditions**

At the time of the fire, winds were SW at 15-20, temperature was recorded in nearby Ellsworth at 49 degrees, and humidity was approximately 43%. Most of Kansas has been unusually dry for at least 4 months, with KBDI in this area estimated at 500. Topography is rolling, hilly terrain in the Smoky Hills. Fuel included fuel model 1, Short grass (1'), fuel model 3, tall grass (3'), and eastern redcedar trees, probably best represented by brush/chaparral fuel model 4. Fire behavior was described as a wind-driven head fire, jumping containment lines and roads, with individual and group torching of cedar trees. 10' flame lengths were reported at the head of the fire, with a rate of spread estimated at 800 chains per hour/ 10+ miles per hour.

### **Sequence of events**

The initial responding engine entered the pasture involved, and went up to the top of a hill in an attempt to find access to attack from the back, in order to be able to work from within a safety zone. They were unable to find immediate access to the burned area, and for reasons as-yet unknown, their engine stalled. They got out, and were almost immediately overrun by the head fire. They ran laterally out of the head fire, back

towards where they had come from, which placed them in unburned fuel on one flank of the fire. At that point, a wind shift converted that flank to the new head, and threatened to overrun them again, as the rate of spread was too fast to outrun. The initial attack IC was nearby in a pickup, and was able to drive over and remove them before the new head fire again overran them. He estimates the time frame for this sequence of events was under one minute from onset until he had them in his vehicle and was driving away.

The first firefighter, who was going to be doing the direct attack, was wearing full structural bunker gear (not wildland PPE), consisting of boots, pants, coat, gloves, and helmet, except for his Nomex hood. He did have a "grass mask" on. He sustained 2<sup>nd</sup> and 3<sup>rd</sup> degree burns in the areas between his helmet, mask, and coat. He was treated initially at a local hospital, and is receiving outpatient treatment from the burn unit, but the area burned is small enough it did not require inpatient treatment. The other firefighter was the driver of the engine, and as such was only wearing bunker pants and boots over street clothes. He sustained burns on his face, neck, hands, and arms. Burns were initially identified as 2<sup>nd</sup> degree and have now been determined to involving some 3<sup>rd</sup> degree burns as well. He remains an inpatient in the burn unit in Wichita at this time.

The engine involved experienced significant body damage, but after the fire had moved past, it was discovered with its pump still running, and the interior was intact. It was started and driven back to the fire station after the fire.

#### ***Actions taken to date***

The Unified Command immediately provided for medical care and evacuation of the injured. The initial IC, who rescued the injured firefighters, turned command of the suppression efforts over to another individual and focused on patient care and evacuation until that was finished. One firefighter was treated and released in a Salina hospital and continues outpatient care, the other was flown to Wichita and remains in the burn unit there at report time.

LCEM notified KFS of the burnover and injuries, and submitted data for the ICS 209, which KFS forwarded to Pueblo Interagency Dispatch Center. LCEM subsequently provided additional details for this report.

LCEM continues to investigate the circumstances of the accident, some details of which are still not clear as those directly involved remain hospitalized.

KFS has offered our assistance to LCEM and other local officials, and relayed an offer of assistance from Bill Waln, USFWS FMO, Mid Plains Fire Management District, to assist with either an accident investigation or a Facilitated Learning Analysis to assist in preventing a recurrence of this accident, and to help others learn from what went right and what went wrong. As stated above, this decision lies with the involved fire department and their elected and appointed officials.

KFS has offered to provide additional wildland fire training for any of the involved departments that may desire it.

### ***Items for further evaluation, with initial findings:***

Note again, this is based on initial findings, and is subject to change if/when more detailed information becomes available.

- LCES – how could the firefighters have had better escape routes and safety zones?
  - It appears they were intending to “attack from the black”, but got burned over before they could find access to the burned area. Perhaps a different route of approach and better situational awareness might have prevented them from being ahead of the head fire. When it came to an escape situation the initial information is that firefighters were burned almost as soon as they exited their vehicle, and then went into a flight-mode response and were simply trying to get away, without evaluating the best escape route. In all likelihood, they could have escaped the opposite direction into the black, and eliminated the threat of a second burnover. Fortunately, the IC was able to get to them quickly and remove them in a pickup before they were burned a second time.
- Did PPE work as it was supposed to, and would full, proper PPE have prevented most or all of the injuries?
  - While these firefighters were wearing structural, not wildland PPE, it appears those areas that were protected were unharmed. The driver, the more seriously injured of the two, heavily damaged his bunker pants, yet his lower body was unharmed. Bunker gear is not recommended for fighting wildfires, but for many Kansas VFD’s this is what they have available, and it appears to have protected well in this situation.
- How did the engine fare, and would the firefighters have been better off riding out the brief flame front in the engine?
  - In hindsight, it appears this would have been a better option. The interior was essentially unharmed, and it appears to have suffered mostly external cosmetic/paint damage. It is not possible to determine if the atmosphere inside would have been compromised at any point, but the duration of the flame front, estimated to have been under one minute, should not have created an untenable atmosphere inside the cab.
- In this situation, would the use of a fire shelter have been practical, and would it have been a better alternative to actions taken or to sheltering in the engine? (Shelters are not commonly carried by Kansas VFD’s, but should they be?)
  - Based on information provided, once the firefighters exited their engine, they were burned almost immediately and would not have had time to deploy a shelter if they had had them. Once they ran through the flame front to unburned fuel, and were threatened with a second burnover, there *might* have been time to have deployed. Since they were immediately evacuated after that, it was not necessary, but might have provided an advantage at that point. Shelters also might have provided some protection during the escape. It is questioned whether shelters would have been used if available, since it appears from initial actions that there was a blind flight response, and not an organized decision-making process at this point. Based on this information, sheltering in the engine would have been preferable to fire shelter deployment. This does not negate the value of a shelter, but it appears it would likely not have helped in this situation.

- Had these involved firefighters had specific wildland suppression training, and if so, did it include PPE and LCES as part of that training?
  - That is not known at this time.

Report completed in consultation with Lincoln County Emergency Management, Rodney Job Coordinator.

/s/ Eric Ward

