LESSONS LEARNED REVIEW

UTVs and Railroad Tracks

Prescribed Burn, April 14, 2017

Bienville Ranger District, National Forests in Mississippi

Contents

A. Introduction / Objectives

On April 14, 2017 the Bienville Ranger District planned and executed a prescribed burn in Compartments 44, 45 & 55. During the course of the burn, several obstacles were encountered by the burn crew. Among the difficulties, two different Utility Task Vehicles (UTVs), at two different times, became temporarily immobilized on a railroad track. There were no injuries and no damages to equipment.

Prescribed fire operations in the southeast are often complicated by Wildland Urban Interface (WUI) issues. This prescribed fire was conducted around an active railroad line. Railroad lines have a unique set of risks and hazards associated with them. This particular railroad line is active with fast moving trains at speeds greater than 50 mph.

Currently on the Bienville RD the District Fire Management Officer (DFMO) position is vacant. The Assistant FMO is detailed into the DFMO position. It was a mid/late season burn with the district behind on prescribed burning goals. Some pressure was felt by the District to get burns accomplished.

A Lessons Learned Review Team was formed to explore opportunities for organizational learning at both the local level and any cultural or systemic factors that may be present Forest wide.

B. Narrative

What was planned / Preparations / Briefing

On the morning of Friday, April 14, 2017 personnel on the Bienville Ranger District made final preparations to burn 1,569 acres in three burn blocks, about three miles northwest of Forest, Mississippi. Burn Blocks 44 and 45 totaling 1,072 acres were to be burned together in the first phase of the burn. These blocks front the right-of-way (ROW) of Kansas City Southern Railway Company's (KCS) east-west line between Jackson and Meridian for three miles. That would be followed up by the 497 acres in Burn Block 55, which fronts the same railroad ROW on the south side for 1.5 miles as well as the north side of U.S. Highway 80 for two miles. Winds were predicted to be out of the southeast, keeping smoke from impacting Highway 80. Planned as an aerial ignition burn, resources on hand included; one helicopter, an engine, two dozers, four UTVs, a burn boss, burn boss trainee, firing boss, and 11 lighters (RXCMs). Personnel included employees from the Bienville Ranger District and detailers from the forest and out of state. About half of the personnel on the burn were from off district.

> *"We had a local Burnboss, a detailer Burnboss, and a detailer trainee Burnboss, but the FIRB seemed to be running the burn. It was hard to tell who was in charge."*
> *RXCM 5*

Over the past eight years the Bienville RD has had a series of short term FMOs, interspersed with periods when the position was unfilled. The position has now been vacant for about a year, which has led to inconsistencies in the burn program. This may have led to the firing boss being inadvertently excluded from the pre-briefing planning conference, forcing him to plan the burn on the fly when told of his firing boss designation immediately before the briefing.

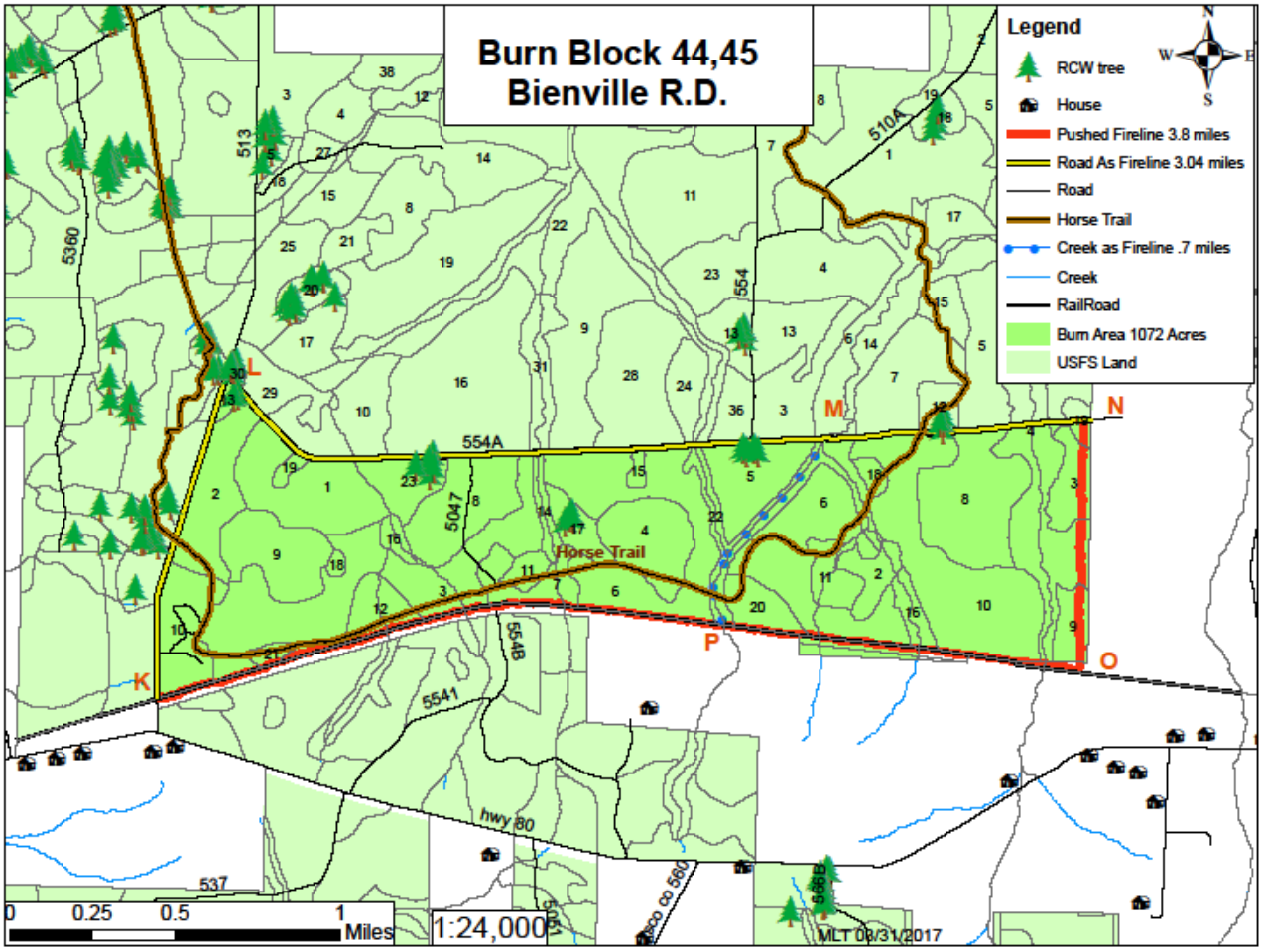
The briefing was held at 0900 in the conference room of the district's work center in Forest, conducted by the burn boss trainee. Afterwards, all resources travelled to the burn area, where they found two large horse trailers/campers in the Shockaloe Horse Trail Base Camp 1 just northeast of Point **K**. Fearing that horse riders may be on the trail, within the burn unit, the entire trail within the burn area was traversed by UTV. In addition, personnel were posted at each point where the trail crossed the burn perimeter to prevent entry.

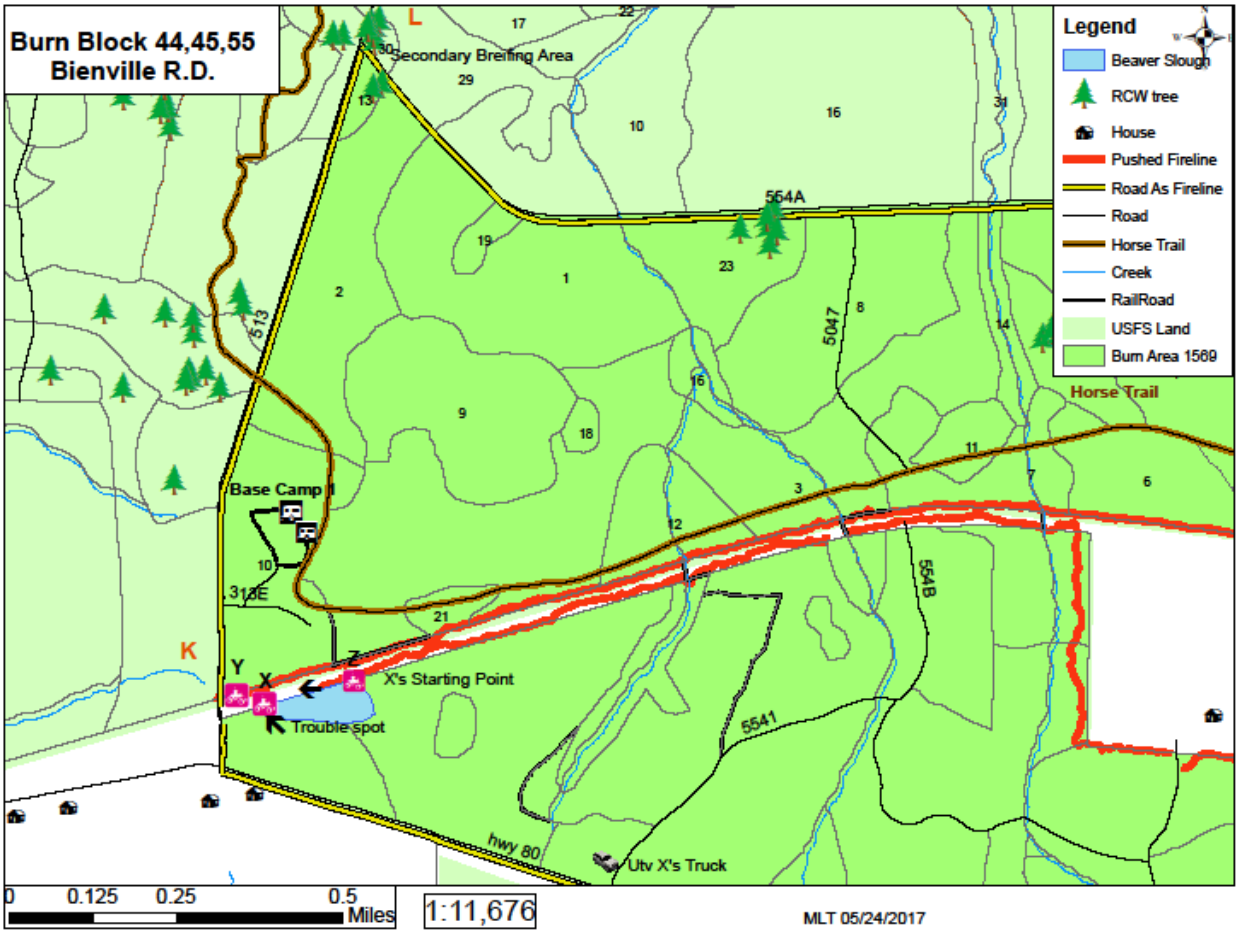
Test Fire / Ignitions / Helicopter Unavailable

A test fire was started at Point **L**; once that proved satisfactory, firing operations began on the north line.

Just after the north line of Burn Blocks 44 and 45 (Forest Service Road 554A) was fired, the burn boss was notified that the helicopter was experiencing mechanical problems and would be grounded for the day, necessitating the need for the burn to be completed by hand. The firing boss quickly instructed all ground personnel to report to Point **L** for a hand burn briefing.

As the burn was transitioning from aerial ignition to hand ignition and resources were being redirected, the burn boss, burn boss trainee, and firing boss were all stationed at Point **K**, the southwestern corner of Burn Blocks 44 and 45. That vantage point affords a view along the railroad ROW to the east of about a mile before the tracks take a gentle turn to the right.





UTV 3 was staged at Point **Z**, about 100 yards east, and within plain view of, Point **K**. Point **Z** was the western termini of the pushed line along the south side of the railroad ROW. From Point **Z** to Point **K** the ROW ran through a beaver slough.

UTV on Railroad

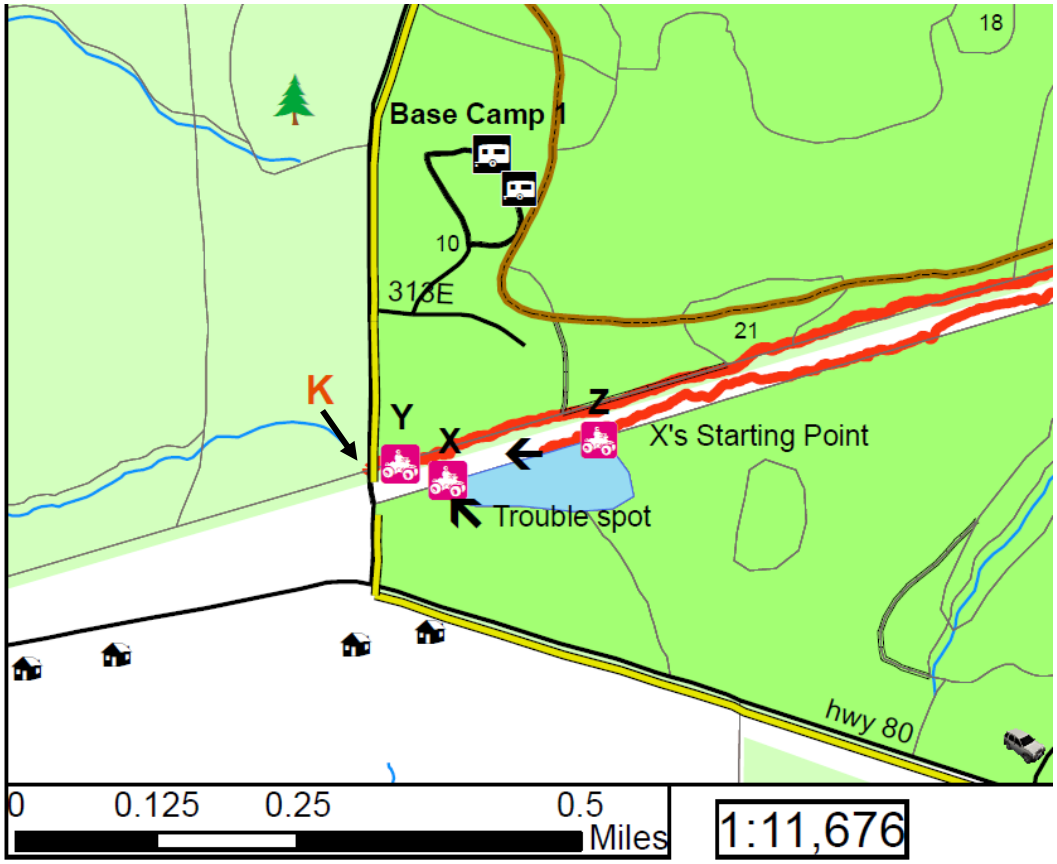
Feeling the pressure of time with the late start and the helicopter now out of service, and seeing UTV 3 so close, the firing boss asked the operator of the UTV to traverse the short distance from Point **Z** to Point **K** by driving along the railroad ROW. The firing boss stated on the radio that was not standard operating procedure and he would not normally ask him to do that. However, the alternative was for the UTV to spend 30 to 45 precious minutes back-tracking all the way around the perimeter of Burn Block 55.

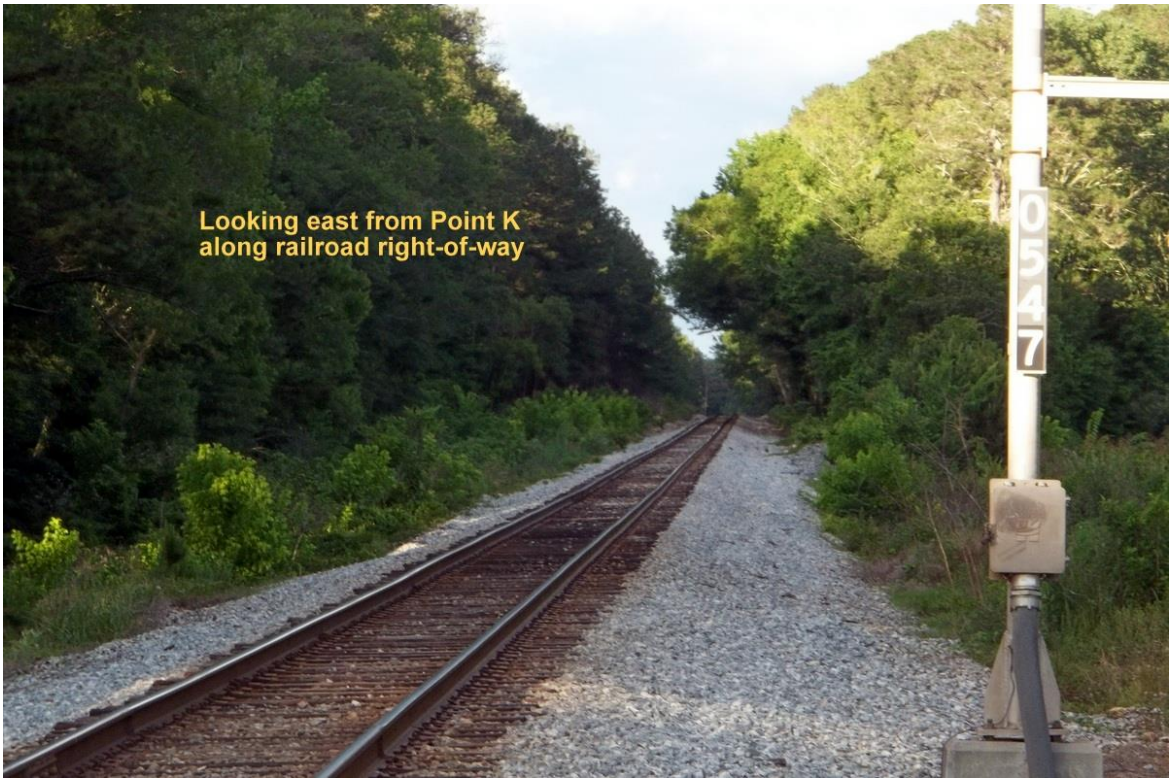
"We normally don't do this, but find a place to get to the railroad tracks and come out to the road crossing. I have a new assignment for you."
FIRB

Although not totally convinced he should do it, the operator of UTV 3 complied and headed along the ballast-covered slope of the right-of-way, above the slough but below the tracks. About halfway along, at Point **Y**, the slope steepened slightly and the UTV began to slide. The operator did not feel safe continuing and stopped and exited the vehicle. At Point **Y** the track rails are approximately 10' to 12' above the water level in the slough. The vehicle was stuck about two-thirds of the way up the slope. At about the same time, UTV 2 reached Point **K** from the pushed line on the north side of the tracks and was directed by the firing boss to travel along the ROW to assist UTV 3. As this was happening, the burn boss called KCS, explained the situation, and requested any trains approaching to slow down to allow the UTVs to clear the ROW. UTV 2 winched UTV 3 just a few feet and both were able to quickly return to Point **K** under their own power. At about this time the lights of an approaching train could be seen from a mile or more away. At this point it was clear to the operators of UTVs 2 and 3, to stay off the ROW. After the first UTV required assistance to get clear of the railroad ROW, leadership on the prescribed burn felt the instructions for everyone to stay off the railroad was clear. With the focus on transitioning to a hand burn, no clear direction was issued to the operator of UTV 1 to stay off the railroad right-of-way.

"If the RXB2 had not called the Railroad Company to slow down the train, it could have been a close call."
UTV Operator 3.

Just after UTV 2 headed out to aid UTV 3, the firing boss had proceeded to Point **L** for the hand burn briefing. The new plan was for lighters to walk, spaced six to eight chains apart, from FSR 554A into the wind to a pushed line along the northern edge of the railroad ROW, where they would be picked up by UTVs and shuttled back around to FSR 554A.


Base Camp 1
18
10
313E
21
K
Y
X
Z
X's Starting Point
Trouble spot
hwy 80
0
0.125
0.25
0.5
Miles
1:11,676


Looking east from Point K
along railroad right-of-way
0547


Looking west from Point Z;
Point K, where tracks cross
FSR 513, is in background


Looking east from Point Z; soil under rocks
is showing where rear downhill UTV tire lost
traction and became stuck

Second UTV on Railroad

A short while later as the firing boss was overseeing the start of stripping operations from FSR 554A, the burn boss asked him, over the radio, who was on the tracks. The burn boss was at Point **K** and had spotted a UTV 50 yards to the east, at Point **X,** stuck straddling one of the rails. The firing boss explained he was too far from Point **K** and was in the middle of firing operations, and asked the burn boss to take care of the UTV on the tracks since the burn boss was so close. The UTV stuck on the rail turned out to be UTV 1; unaware of what had transpired earlier on that same section of ROW, the operator had chosen to use it instead of the pushed line on the north side of the tracks to reach the point where lighters were to be picked up. At the time UTV 3 had got stuck on the ROW, UTV 1 was at the east end of the burn unit. It's quite possible that UTV 1 could not receive the radio traffic from that distance. Once again UTV 2 was assigned the rescue mission. From the north pushed line UTV 2 winched UTV 1 from the track, and both UTVs resumed their mission of shuttling lighters.

After Action Review (AAR)

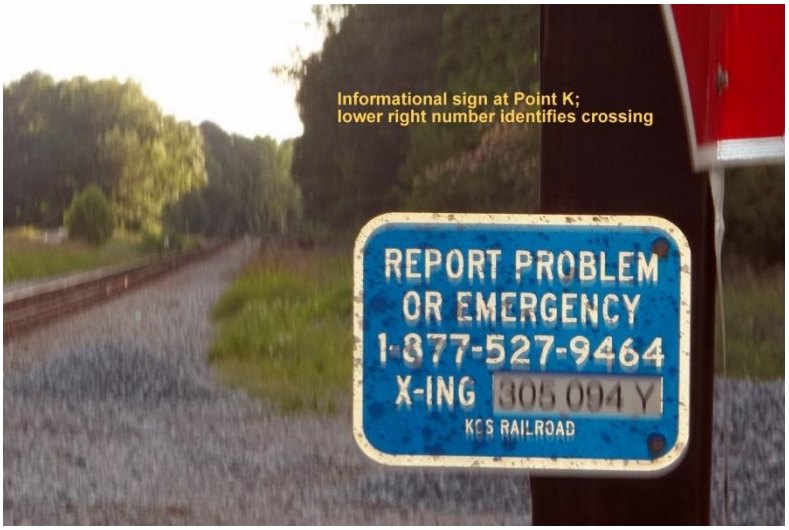
Burn Blocks 44 and 45 were burned out without further incident and Burn Block 55 was postponed given the circumstances. During the AAR, the only discussion concerned the horse trailers/campers and that was given only brief mention; no other topic, such as the two railroad right-of-way incidents, were brought up.

C. Lessons Learned by the Participants

- ✓ Pressure, real or perceived, influences decision making. Time constraints, change in plans, and unplanned events all add to the pressure. When looking back and considering the decision point at the railroad, FIRB and UTV 3 operator both agreed that the extra time it would have taken to go around the long way would not have impacted the burn operations in the long run. The leadership and UTV 3 operator allowed the distractions of accounting for the potential presence of campers/horseback riders, and the unplanned event of the helicopter not being available to change the perception of time available to complete the burn. Both the FIRB and UTV3 operator agree that the time saved wasn't worth the risk of taking the UTV down the short distance of the railroad track. The planning and implementation of the hand ignitions became the focal point.
- ✓ Communications before briefings, during briefings, during operations, and during AAR's, are critical.
- ✓ The use of "detailers" (off district personnel) can both decrease and *increase* risks. The use of detailers is also beneficial to reduce workloads and mitigate work/rest ratios. However, bringing in off district personnel on prescribed fires can introduce uncertainties. Communications can be awkward between unfamiliar crew members in many ways. Crew cohesion, effective communication, and hazard identification can all be impacted. The

sharing of resources and fireline leadership between districts, forests, and regions is ultimately beneficial for all levels but, positions need to be included incrementally and with caution, especially when placing them in leadership roles.

- ✓ Railroad lines and their ROW's should be treated as any other private land. Railroads, and other WUI influences need to be covered during the briefings. Discussions should include legal and safe crossings, and risks posed by the railroad.
- ✓ Bringing in a representative of the railroad to discuss the hazards and share information with the district would be helpful. District safety meetings would be an excellent opportunity.
- ✓ There are signs at designated railroad crossings with an identifier number and a phone number that can be used to contact the railroad in the event an obstruction is present or the railroad is otherwise compromised.



- ✓ Communications of hazards and making them known to all personnel is essential. The second UTV operator didn't get the message about staying off the railroad.
- ✓ Leader's intent for personnel who will be working in close proximity to railroad lines needs to be clear. Ensuring that all personnel assisting with the burn understood that utilizing the railroad for access is not allowed would have been helpful.
- ✓ After Action Reviews are only useful if leaders and personnel are engaged and willing to bring up events, even if everyone present knows what happened. Being tired, or ready to go, or just not wishing to be the person who brought it up are not good reasons to leave things unsaid at AARs.
- ✓ The public who utilize the forest needs to be better informed and engaged by the District or Forest. Social media outlets would be a great way to notify the public of planned burns the day before or the morning of implementation.

- ✓ Discussions after the burn with agency administrators are critical. Agency administrators need to be aware of incidents, near misses, and some events that aren't perceived as reaching those thresholds. Risk sharing requires for all parties to know enough to be able to help mitigate risks.
- ✓ Fire leadership positions that are left vacant impacts the ability of a burn program to operate safely and effectively. When leadership roles are in a state of flux there is a trickledown effect that ultimately impacts decisions made on the ground.

D. Summary

Prescribed burning itself is inherently hazardous. There are certain risks involved in using UTVs however, there may also be additional risks when *not* using UTVs. The participants involved, and the review team, all agree that UTVs are valuable tools that enhance our operational efficiencies on prescribed burns and wildfire suppression. They greatly reduce fatigue, and reduce the risks of escapes and other incidents.

The UTV incidents were just a part of all the challenges that were encountered by the burn crew on Burn Block 44, 45 & 55. Helicopter problems, communications issues, unclear leadership, campers in the burn unit, possibly horse riders within the burn unit, and a complete change in firing tactics, all created many opportunities for unintended outcomes. With all these challenges, the entire burn crew remained mindful and considered risk management throughout. There were many instances throughout the day where employees made rational decisions, under stress, that likely prevented additional incidents.

- Good recognition and quick mitigations of the possibility of horse riders within the burn unit.
- UTV 2 noticed the phone number for the railroad company and gave it to the RXB2.
- RXB2 quickly called the railroad and requested the oncoming train be slowed down.
- Good preplanning allowed the burn crew to cut off a portion of the burn when the helicopter became unavailable.
- FIRB quickly and effectively implemented a contingency firing operation to complete the burn within a tight smoke management window, without a helicopter.
- There were no injuries and no damage to equipment.

It's easy for anyone, including all those involved, to look back on the events and now recognize that some different decisions could have been made. However, those judgements are not helpful. What is useful are the forward-looking ideas that were generated for future operations. Those ideas will reduce the risks of unintended outcomes on the next burn, or the next burn season.

The participants also identified several indicators of systemic influences that may have contributed to the situation. The importance of good communications and crew cohesion

cannot be stressed enough. Accidents in field crews are inversely correlated with the cohesion of the crews. In other words, the greater the crew cohesion, the fewer the accidents (Driessen, 2002, p.7). In addition, many of the indicators, as well as the lessons learned, can be addressed by; very quickly filling fire leadership positions with experienced and skilled leaders, and continuing as a Forest, to progress towards a learning culture.

E. Lessons Learned Review Team

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