

Flat Ridge Escaped Prescribed Fire **Facilitated Learning Analysis** **Ashley National Forest**

October 2015



FACILITATED LEARNING ANALYSIS TEAM

Greg Burch - *Zone FMO* – Caribou-Targhee National Forest

Russ Bigelow - *Acting Forest Fuels Specialist* - Manti LaSalle National Forest

Kelly Cornwall - *District Fuels Specialist* - Fishlake National Forest

Riley Rhoades - *Zone Fuels Planner* – Salmon-Challis National Forest



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INTRODUCTION - BACKGROUND

The Reservation Ridge Sagebrush Prescribed Fire consists solely of U.S. Forest Service Lands located in the West FMU of the South Unit of the Ashley National Forest, Duchesne/Roosevelt Ranger District. This project is located within Duchesne, Wasatch and Utah Counties, approximately 20 miles southwest of Duchesne, Utah. The project area is broken into polygons located on Tub Ridge, Fossil Ridge, Horse Ridge, Flat Ridge and Reservation Ridge. The project consists of a 4,919 acre project area of which 2,000 acres are targeted for project implementation.

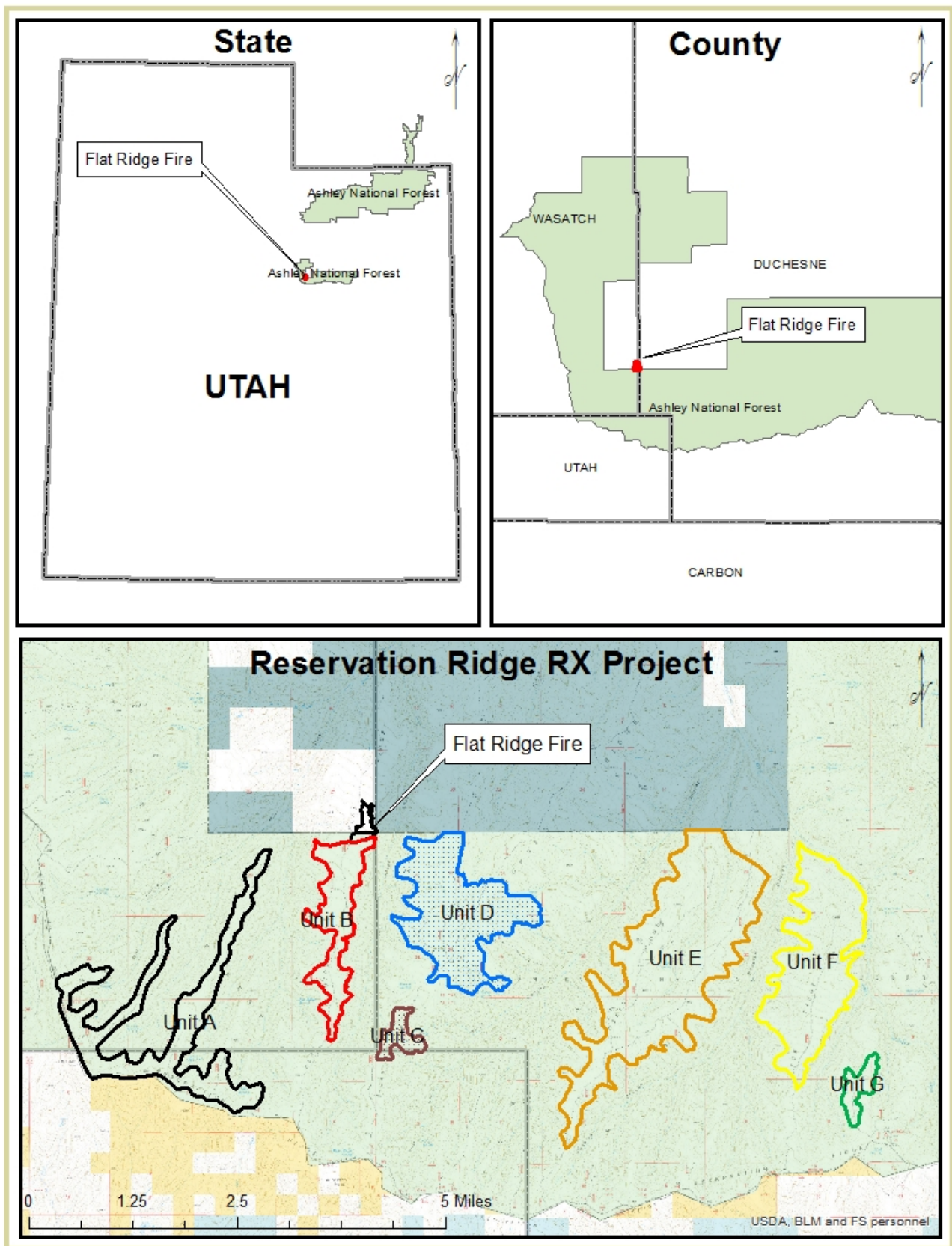
The primary purpose of the project is to enhance and diversify wildlife habitat by creating mosaic patterns in shrub communities with the use of prescribed fire. Mosaic patterns are both desirable and expected and would result in different age classes of shrubs that tend to support and appeal to a greater number of wildlife species. Fire would reduce or temporarily eliminate shrub canopies, which would result in the increase of vegetative ground cover and enhance the frequency and diversity of plant species. Expected secondary benefits from prescribed fire include deterring encroachment of pinyon, juniper, ponderosa pine and/or Douglas fir trees into shrub communities, fuels reduction and increased forage for ungulates.

Unit B, Flat Ridge would be the third of seven units treated during October 2015. Having successfully treating Units C and D on Horse Ridge earlier in the month, the fire organization was anxious to get started on Flat Ridge. Due to Clearing Index conditions, the burn on Friday the 16th was questionable. At 0530 the spot weather forecast came back with a clearing index of 550 at 1000, which was above the minimum requirement of 500 to implement. The Burn Boss begins to contact all resources that they will be burning on Flat Ridge that day.

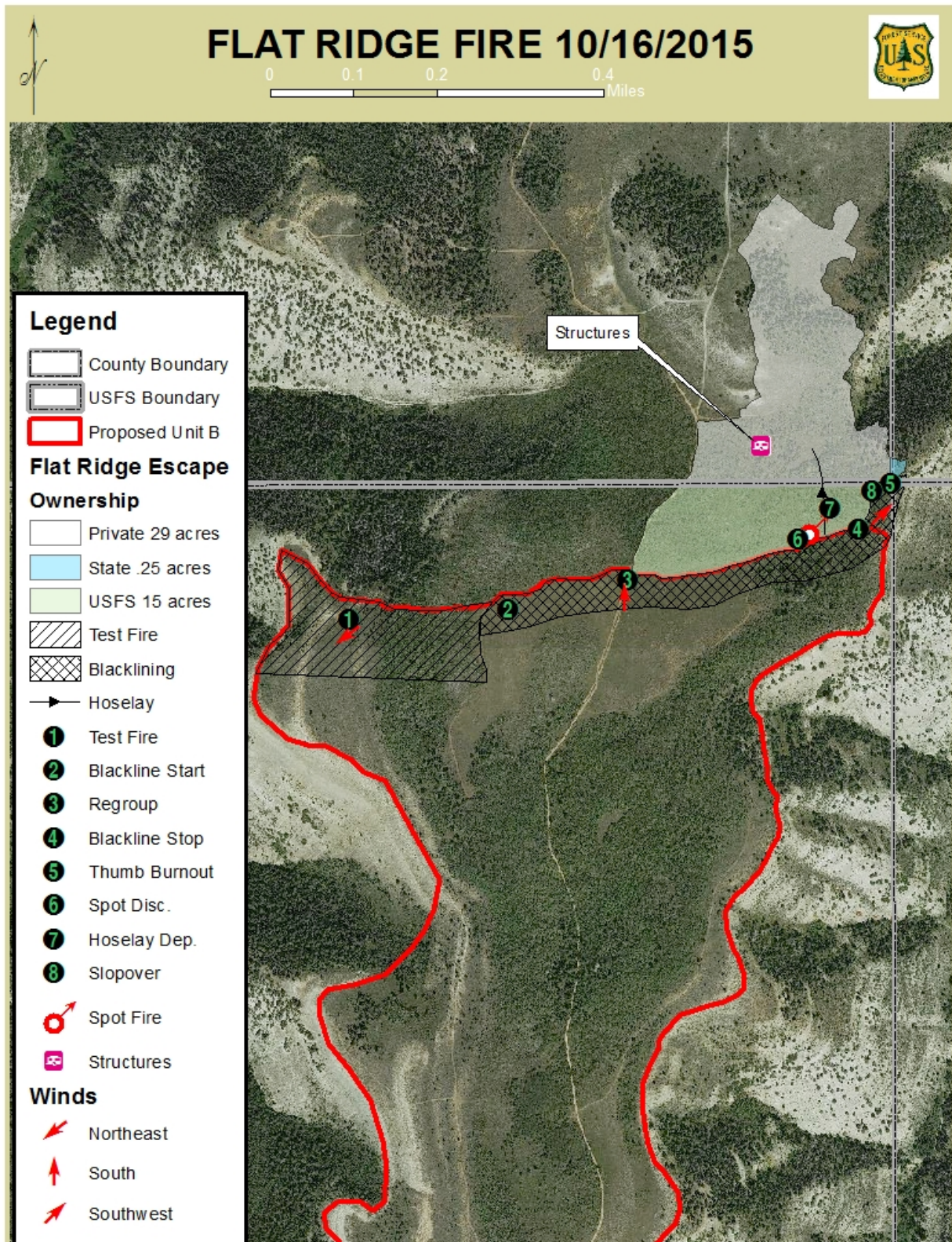
Resources begin arriving around 1000 and after a good briefing, a test fire is initiated. At 1100, with a successful test fire, ignition operations commence and lighting of Unit B begins on the north end of the unit. For the next 3 hours operations are progressing slow but smooth. At approximately 1400, the Holding Boss is notified that there is a spot over the line! In heavy smoke, the initial size up is that they have caught it, however a second call comes that it is starting to run! For the next seven hours a safe, aggressive and exciting fire suppression operation occurs.



VICINITY MAP



INCIDENT MAP



WHAT WAS PLANNED

On October 16, 2015, the Duchesne Ranger District planned to burn the 500-acre Flat Ridge unit (unit B) of the Reservation Ridge project. Grazing pastures within the project area were rested for 1-2 years prior to ignition to increase grasses to assist in maintaining fire spread to meet burn plan objectives. Prescribed fire attempts in previous years have been unsuccessful due to heavy grazing and lack of grasses to sustain fire spread throughout the sagebrush and aspen stands. Earlier in the month, previous entries of prescribed fire were successfully implemented on adjacent units. The objective of the burn on October 16 was to burn the grass and sagebrush throughout the unit. Ignition of the unit was to start on the northwestern corner of unit. Ignition was to continue from the northwest corner along a road to the east to create a blackline along the northern unit boundary that is near private property boundary. There was a small contingency section of aspen between the road and the Forest Service boundary fence line. Once the blackline was complete, it was planned to continue ignitions throughout the rest of the unit. This project was considered a moderate-complexity burn. The Burn Boss, Firing Boss and Holding Boss had previous experience burning on this project.



**Flat Ridge Road (FS 323)
running through the center
of the burn unit.**

WHAT HAPPENED

On October 16th, after burn approvals were obtained, initial prescribed fire resources arrived on-scene to the Flat Ridge Unit. A briefing was completed for on-scene burn personnel on the northern edge of the unit. On-scene resources at that time consisted of two type 4 engines, one type 6 engine, and prescribed fire overhead. After briefing, pre-burn line preparation was completed on northwest and southwest corners of unit. A test fire was conducted in the northwest corner of the unit while further line preparation was completed ahead of anticipated blacklining to the east along a road used as northern boundary of unit. Burn Boss, Holding Boss and Firing Boss watched test fire and talked about any future holding concerns and the ignition sequence. Test fire was favorable with low to moderate fire behavior for fuel type with winds light out of northeast. An additional anticipated type 6 engine arrived on-scene and was briefed by burn boss and met up with Holding Boss for assignment. Ignition was initiated and progressed west and stopped at F.S. road 323 that bisected burn unit. Ignitions continued south along road 323 to secure the western half of the unit. Ignitions on the western half of unit

continued until ignitions started to transition to a heavier aspen and conifer component to the sage and grass. Ignitions and holding regrouped at northern edge of unit on the 323 road before continuing east. A wind shift to south-southwest was noticed at that location. Ignition continued at a much slower pace to the east due to wind pushing smoke across boundary road.

The Forest Fuels Specialist arrived on unit and was briefed by Burn Boss and assigned to continue ignition south along the western edge of unit with the support of a type 4 engine. Ignitions headed east on the northern edge of unit was further slowed when they reached a sparse aspen and conifer stand that was interior of the burn unit. As ignitions were approaching the eastern edge of the unit, ignition sequence was adjusted in response to a corner in the boundary road. An engine crewmember that was patrolling behind ignitions found a spot fire, notified the Holding Boss, and initiated suppression actions on the quickly growing spot. Ignitions were halted at this time and all resources focused on holding of unit and suppression of spot. A type 4 engine ran a hoselay along the eastern edge of spot and was halted and withdrew when another spot fire was reported further to the east, flanking back to the west toward the first spot and the hoselay.

Abandoned hoselay on east side of the escape



The Burn Boss notified and completed size-up of spots to dispatch and requested the contingency resources. Dispatch notified the NE Area State FMO who had jurisdiction over the State and Private Lands with in this area. Dispatch also notified the District Ranger of the situation. As the spots began to burn together the Burn Boss requested that the Holding Boss take over as the IC of fire that was outside the burn unit. The new IC called dispatch and requested an additional engine and a water tender. This was in addition to contingency resources and a county water tender that was already ordered. The fire crossed onto private property and was threatening private structures. The private structures consisted of a small cabin, 2 camp trailers with separate roof structures, and miscellaneous small outbuildings. The on-scene type 6 engines were requested to provide structure protection. The two engines completed a wetline around structure and withdrew due to fire approaching structures. After the fire passed the structures the type 6 engines returned and continued mop-up around the structures. Engines were getting low on water with 1.5 hour minimum turnaround time for refill with water. Firing operations along roads were completed to secure lines around fire that resulted from spots. The Forest Fuels Specialist functioning as the Forest Duty Officer had begun conversations with the Forest Supervisor and District Ranger about the prescribed fire. The NE Area State FMO arrived

on-scene. Impacts to private property outside of natural resources considerations consisted of burns to fiberglass ladder, a small plastic slide, and scorch to portions of trailer skirting and foundations.



Impacts to ladder

**Impacts to a children's
slide**



**Example of scorch impact to trailer
skirting**



**Private property natural
resource impact considerations**

As the burning period was coming to an end, fire behavior moderated considerably. Burn Boss was informed by Forest Duty Officer that a wildfire declaration had been made by the Forest Supervisor and District Ranger. Burn Boss informed dispatch and on-scene resources of wildfire declaration. Mop-up and securing of fire lines continued until an after-action-review (AAR) was completed by the Burn Boss. The majority of resources were released with the IC and one engine staying on scene overnight. The prescribed fire was monitored for the following day with light moisture occurring that following night.



**Structures on the private
property north of the burn**

**Point of the spot fire where it
crossed over the two track
road to the north.**



CHRONOLOGY OF EVENTS

Date & Time	Event
7/14/2009	Flat, Fossil, Horse, and Tub Ridge Prescribed Burn Project Decision Memo Signed by Duchesne District Ranger
10/2/2014	Burn Plan signed by the Duchesne District Ranger.
9/23/2015	Agency Administrator Ignition Authorization signed by the District Ranger.
10/14/15	
1000-1400	RXB2 and acting ZFMO travel to Flat Ridge to scout Unit B. Discussed holding and ignition concerns along with structure located to the northeast.
10/15/15	
1000	RXB2 notified dispatch that they would probably be burning Flat Ridge-Unit B on 10/16/15.
1030-1100	Required Burn Plan notifications are made by RXB2 and dispatch. Dispatch informs RXB2 of two contingency engines with delayed responses available. RXB2 said "Ok".
1100-1630	RXB2 acquired the following resources and people available to burn on 10/16/15. 2 Type 4 engines, 2 Type 6 Engines, 2 W.F.M. Crewmembers and 1 Overhead. Burning is contingent on clearing index and will notify at 0600 if it is a go.
10/16/15	
0530	Spot forecast is complete with clearing of 550 after 1000.
0600	RXB2 contacted all resources that they will be burning today.
0730	RXB2 notified dispatch that they have clearing index of 550 and we will be burning. Notifications and contingency resources confirmed with dispatch.
0800	RXB2 contacted the District Ranger to inform they will be burning approx. 500 acres in Unit B on Flat Ridge.
1000-1030	On-Site briefing conducted.
1030-1100	Prepped holding concerns off two track roads (NW and SW corners of the units). Hose lay through aspen trees along two track.
1100	Begin Test Fire on NW corner of unit boundary. Winds out of NE
1130	RXB2 notifies dispatch of test fire meeting objectives with about 15 acres ignited. We are continuing with the Rx. RXB2 briefs Type 6 Engine that came in late.
1150	Fire is holding and Winds are favorable to continue.
1200-1230	Ignition black line is finished from the NW corner of unit down two track road tying into FS323 with no issues. Forest Duty Officer made contact with RXB2 saying he is on Horse Ridge and is making his way to their location.
1230-1300	Resources are repositioned and firing is continued from FS323 to the NE corner of the unit. Wind shifted blowing out of the south. Smoke is observed blowing across the two track road and started getting some embers across the road.
1300-1400	Ignitions and Holding progress was slow. Resources begin rotating in and out of smoke while patrolling for fire across the two track road.
1400-1410	Engine crewmembers while patrolling located a spot fire across the two track road at 20x20and growing rapidly.
1419	RXB2 notifies dispatch of spot across the two track road about two acres in size. Doing Structure protection, Ignitions have stopped.
1421	NE State FMO notified by dispatch of slop over on private land.

1421-1430	NE State FMO Notifies State PIO
1430	Forest Supervisor is notified by State PIO of fire on private lands.
1430	Forest Supervisor contacts District Ranger with new info from Forest Duty Officer.
1432	RXB2 notifies dispatch of transition of IC duties to the Holding Boss (ICT3) and says "I will take the burn". IC Ordered water tender and additional engines. FIRB calls Carbon/Emery County Warden to request water tender from Helper.
1445	RXB2 and FIRB scouts two track roads for a place to cut the fire off and any additional structures. Engines thought the structure was lost due to current fire behavior. RXB2 takes UTV to confirm but structure is still standing. Engines began structure protection.
1514	Dispatch notifies District Ranger of the spot fire.
1530	Forest Duty Officer begins conversations with District Ranger and Forest Supervisor about the incident. Fire behavior around slop over and structures subsides. Started firing operations off FS323 to secure the lines. IC contact dispatch and orders Water Tender and Brush Truck.
1541	Dispatch requests spot weather forecast from NWS.
1600-1630	Forward fire spread is stopped.
1632	IC updates dispatch. Water tender on scene and briefed. All resources accounted for. Structures are secure and fire has been stopped to the north/northwest and west. They will begin work on the east side.
1636	Dispatch Relays update to District Ranger. District Ranger request acreage when they get it.
1730	NW and NE State Area FMOs on scene as state reps. District Ranger discussed with Forest Supervisor the impacts to private property and considerations for declaring wildfire.
1740	Forest D.O. relayed information to District Ranger via phone about impacts to private property and documentation of impacts.
1742	Forest D.O. confirmed with District Ranger declaration of wildfire.
1752	RXB2, IC, Forest D.O and State FMOs met up. Confirmation that District Ranger and Forest Supervisor made decision to declare fire as an escape.
1836	IC notifies dispatch that 2 engines and water tender are on scene and briefed.
1839	RXB2 notifies dispatch converting it into a wildland fire at 1752.
1846	RXB2 notifies dispatch of 29.4 acres for slop over and 200 acres on Rx.
1854	Dispatch notifies District Ranger of updated acreage.
2015	IC notifies dispatch of the release of resources.
2111	IC notifies dispatch of resources released, and overnight staffing of him plus one engine.
2236	IC notifies dispatch of scout mission along east flank, looking good. Will check at 2300, 0100, 0400, and 0700.
2332	IC notifies dispatch that all is well on the fire.
10/17/15	
0127	IC notifies dispatch that fire behavior has died down nothing new to report.
0402	IC checks in with dispatch, ops normal, fire has really died down in past few hours. No contain or control problems.

LESSONS LEARNED

I. Human Factors

Prescribed fire units on adjacent ridge were completed earlier in the month with little problems encountered. They experienced spots outside of the units, but they were easily contained and private property values at risk were not present. Most of the same resources that were present on the Flat Ridge unit had also participated in burning the adjacent ridge units. Complacency could have been a factor on the Flat Ridge Prescribed Fire. It may have been assumed that the same timing, tactics, resources, weather conditions that existed and worked on the other units would work on this unit. This may have led to a “misjudgment of assignment risks”. The private property and structures were known to the key resources; Burn Boss, Firing Boss, and Holding Boss. The private property and structures that were adjacent to the Flat Ridge unit were located north of the eastern half of the unit. Ignition blacklining operations started on the northwestern corner of the unit and continued to the east along the northern boundary. Blacklining operations continued to the eastern half when the risk to property and risk of escape were greatest due to distance to private property, a wind shift occurring, and being in the middle of the burn period. The risk was further increased when ignitions moved out of heavy sagebrush and into an area with scattered conifer trees with torching potential. The margin for error at this time was very low. This increased risk may not have been recognized by on-scene resources due to past successes on other units.

Pressure to complete the unit from management was not perceived by key resources. However, once ignition operations start there always seems to be some form of “production pressure”. Ignitions increasingly commenced slower than expected as they moved further east. They slowly were getting closer and closer to completing blacklining. When the first spot occurred, ignitions on the northern boundary were very close to being completed. That pressure to complete operations with the hours of the day slipping by and very little left to complete can be very strong and may have led to significantly increased risk.

Lessons Learned:

- a. Recent past successes in prescribed fire have positive and negative influences in current and future activities. This is especially important when working in same area, fuel type, and weather conditions of past successes. The negative influences can come in the form of complacency leading to misjudging current risks.
- b. When operations start, continually evaluate the risks of the mission. Recognize that risks may quickly rise over time and space even during a slow moving operation. The pressure and desire to complete a mission, especially when approaching completion, can negatively impact situational awareness and proper judgement of risk.

II. Holding and Contingency Planning

Interviews and informal discussions identified the potential need for a review of the holding plan and capabilities of the on-site resources regarding the contingency plan identified in the burn plan. With the rest from grazing and the abundance of moisture from this past season's record rains, the grass loading exceeded previous years. When the fire crossed the two track road and headed to the north, the on-site resources were unable to catch the slop over prior to reaching the private land.

"We probably should have done a little more prep work with weed eating along the road and limbing of the conifers"
(Holding Boss)

Due to the long distance required to refill engines, Facilitated Learning Analysis (FLA) participants identified that water conservation was needed.

The contingency plan was somewhat generic and doesn't address many options. Were contingency resources really available? One of the contingency resources identified was doing project work 3+ hours away. With the current and predicted fire behavior, were the identified contingency resources appropriate?

Lessons Learned:

- a. Review the Behave runs and associated fuel types to adjust for changes in the fuel loading to better represent what holding and contingency resources are needed.
- b. Due to travel distance for engines to refill with water, have on-site fold-a-tanks or water tenders.
- c. Ability to utilize closest resources such as State and County will improve contingency planning.

III. Rationale for Converting the Prescribed Burn to a Wildland Fire

When the spot fire began to outpace the holding crews and move onto private property, the Burn Boss designated the Holding Boss as the IC of the fire. The IC took the assumption that the fire had been declared a wildfire at that time. The IC began ordering additional resources. Although the Burn Boss was concerned about the fire moving onto private property, onsite resources were beginning to make head way in the suppression of the slop over. The Burn Boss was also under the impression that they had 24 hours to contain the slop-over before they had to declare it a wildfire. At this same time, the Forest Fuels Specialist (who was also the Forest Duty Officer) began taking photos of property damage and communicating via cell phone with the Forest Supervisor and the District Ranger discussing if they should declare it a wildfire. Due to fire being on private property and impacts to private values, the prescribed fire was declared a wildfire by the District Ranger and Forest Supervisor. This occurred prior to any discussions with the Burn Boss. The discussion with the State Area FMOs of how to fund the state and county resources was a secondary consideration as to converting it from a prescribed fire to a wildfire.

"How are you going to pay for these resources?" – State FMO

The lessons identified by the District will help strengthen relationships between the Prescribed Fire Team, Fire Management staff, Forest leadership, and adjacent cooperators during prescribed burn operations.

Lessons Learned:

- a. The Burn Boss needs to have a good understanding of the Contingency Plan and Wildfire conversion elements in the Burn Plan to know the boundaries of his or her decision space.
- b. There should be open dialogue between the Burn Boss, Agency Administrator and Forest Duty Officer when the contingency plan is implemented and leading up to the decision to convert to a wildfire.
- c. Contingency Resources should be agency resources if no agreements are in place. Delays in identified contingency resources should be addressed during planning for implementation.

IV. Prescribed Burn Planning and Implementation

Interviews and informal discussions brought to light the differing interpretations of what was written in the burn plan and the 2014 Interagency Prescribed Fire Guide in regards to who has authority to declare a wildfire and when to convert to a wildfire?

Comments from the Facilitated Learning Analysis (FLA) participants unveiled multiple interpretations of when a wildfire should be declared. Differing interpretations existed such as: having 48 hours to contain the slop over, having 24 hours to contain the slop over, having until the end of the next burn period to contain the slop-over, having to declare it a wildfire as soon as it crossed onto private property and having to declare it a wildfire to be able to pay for interagency resources such as state and county that responded to the incident. The different interpretations caused a misunderstanding and some confusion between members of prescribed fire team along with forest leadership as the fire moved onto the private property.

“I didn’t hear that the fire had been declared a wildfire, but assumed it had because I was asked to be the IC” (Holding Boss)

Discussions with the Facilitated Learning Analysis (FLA) participants also showed confusion as to who has authority to declare a wildfire and who actually declared the Flat Ridge as a wildfire and when this happened.

The lessons identified by the District will help strengthen relationships between the Prescribed Fire Team, Fire Management staff and Forest leadership in planning and implementing prescribed burn operations.

Lessons Learned:

- a. Know what is written in the burn plan. Burn Boss, Firing Boss, Holding Boss, and Agency Administrator should review the burn plan for consistency among themselves prior to ignition.
- b. Burn Plans should be reviewed and updated regularly for consistency with the Interagency Prescribed Fire Implementation Guide and Agency Administrator direction.
- c. The District Ranger should have clear delegation that outlines and details that position's roles and responsibilities for prescribed burns, and wildfires.

RECOMMENDATIONS

I. Develop clear & defined process for declaring an escape.

- Update burn plan language to current policy. 2014 Interagency Prescribed Fire Implementation Guide pg. 36- wildfire declaration: Only have until the end next burn period, not 48 hours to contain.
- Review and Update Burn Plan Element 18: Wildfire Declaration to ensure that criteria and conditions for making wildfire declaration decisions are clear and specific to the unit being burned. Some situations may call for containment actions to go on outside of the intended burn unit for a period of time before declaring a wildfire is necessary or prudent while other situations may demand a more immediate decision be made at the first sign that containment has been jeopardized. The burn plan should clearly describe the Agency Administrator's intent for the specific burn project as each will present its own risks and opportunities.
- The Agency Administrator should have clear delegations that outlines and details each position's roles and responsibilities for prescribed burns, and wildfires (See Element 2A). It is recommended the Burn Boss and Agency Administrator review the burn plan for consistency among themselves prior to ignition.

II. Burn Plan – Critically review older burn plans to see if they adequately reflect current conditions. Modify and update them to meet specific needs.

- Determine whether current fuels conditions are accounted for (e.g., increased grasses from pasture resting and heavy spring rains). Determine whether any fuel conditions changes warrant further changes in the plan (e.g., Fire Behavior Modeling that may warrant increase onsite resources due to increased grasses).
- District Fire Management Officer or Burn Boss should review/update the burn plan annually with the approving Agency Administrator, see FSM 5142.6 - Prescribed Fire Plans paragraph 1.

- The Burn Management organization and Agency Administrator should thoroughly review the burn plan prior to implementation to understand what the burn plan requires and to understand the decision space provided within the burn plan. Consider conducting a sand table or Google Earth scenario if an on-site visit is not feasible.
- Take an objective look at all burn plans through third-party (off-Forest or off-District) technical reviews.
- Conduct Annual reviews of current *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (PMS 484) and FSM Chapter 5140 – Hazardous Fuels Management and Prescribed Fire.

III. Communications before, during, and after prescribed burning projects.

- Define roles & responsibilities for Agency Administrators, Duty Officers, Prescribed Fire Burn Bosses through clear letters of delegation with clear expectations, responsibilities, & authorities.
- Develop substantive annual Burn Boss Refreshers that would include the following recommended topics:
 - Agency Administrator's definition of expectations and leader's intent.
 - Presentation of planned projects for the upcoming season.
 - Identification of communication processes and procedures internally and externally.
 - Review FLAs in the same area and/or fuel type.
- Review or develop standard operating communication protocol between Burn Boss, Duty Officer, and Agency Administrator.
- Conduct After Action Reviews (AAR) with Agency Administrator, dispatch, & cooperators.

IV. Cooperator's Agreements

- Designate accounts for RX with agency land owners to pay for multi-agency resources. It is recommend the local unit have agreements in place in advance to pay for non-agency resources so that is not an issue; Also FS Grants & Agreements policy specifically allows up to 30 days after the fact to establish an agreement in order to pay cooperators; see FSH 1509.11 Chapter 10, Section 15.81 - *"However, for prescription fire activities and exigent circumstances, where an agreement was not executed and funds were not obligated prior to commencing work, a ratification may not be necessary if an approved agreement is executed and funds obligated in I-Web within 30-calendar days of the start of work. Anytime thereafter, the ratification process must be followed."*
- Develop Memorandums of Understanding (MOUs) or agreements with land owners prior to burning adjacent to their property.

APPENDIX A

2014 Interagency Prescribed Fire Planning and Implementation Procedures **Guide: Declared Wildfire Review**

The FLA team found the fire personnel at the District and Forest level to be professional, experienced and knowledgeable of the burn area site and the local conditions (social and environmental). The Complexity Analysis met the 2014 Complexity Rating Guide. However, Element 18; Wildfire Declaration does not meet the requirements within the 2014 Prescribed Fire Planning and Implementation Guide due to the wording that exceeds the time frames of what the guide allows. The following five elements address the Interagency RX Guide's escaped prescribed fire review requirements:

I. An analysis of seasonal severity, weather events, and on-site conditions leading up to the wildfire declaration.

- Local seasonal severity is tracked with monthly live fuel moisture sampling. The live fuel moisture in the sagebrush, although dry, was not outside of a normal range for the time of season when the burn was implemented.
- The District fire personnel have a good working-relationship with the weather service and concur that spot weather forecasts are usually fairly accurate. The Burn Boss was aware that the spot weather forecast called for the RH's 20-22%, Temperature 66-69 and Wind 5-14 mph on the day of the burn. All of which were in the desired fire intensity prescription. The burn overhead team also had identified several places where the burn could be secured if ignition needed to be halted for any reason.
- The overhead and local fire management personnel have burned this fuel model multiple times. Although they are very familiar with the fuels, and local terrain-weather interactions, they may have underestimated the fire behavior due to the higher production of grass in the unit.

II. An analysis of the prescribed fire plan for consistency with agency policy and guidance related to prescribed fire planning and implementation.

- The plan was originally written in 2010. In 2014 it was redone to match the new template.
- Element 2: Agency Administrator Ignition Authorization was reviewed and signed September 23, 2015.
- Other than Element 18, the plan was consistent with the 2014 Prescribed Fire Guide
- The burn plan has very specific wording to identify when a prescribed burn will be converted to a wildfire. "The Prescribed Fire Burn Boss will have the authority to declare the prescribed burn a wildfire when the assigned Burn Boss determines that one or more of the following conditions or events has occurred or is likely to occur, and if these conditions cannot be mitigated within 48

hours by implementing the contingency actions in the prescribed fire plan by on site holding forces and listed contingency resources staged during these operational period”:

- a. The Prescribed Fire leaves the planned unit boundary.
- b. The fire behavior exceeds limits described in the prescribed fire plan and/or the fire is threatening to leave the planned Prescribed Fire Area boundary.
- c. The fire effects are unacceptable.
- d. Smoke production must be immediately reduced because of adverse air quality impacts.

III. An analysis of prescribed fire implementation for consistency with the prescription, actions, and procedures in the prescribed fire plan.

- Implementation was consistent with the burn plan.
- On the day of the burn, they were within prescription:

Environmental Prescription	Acceptable Prescription Range			Outside area at critical holding point Minimum Acceptable Moisture
	Low Fire Intensity	Desired Fire Intensity	High Fire Intensity	
Temperature (*F)	<50	50-80	>80	
Relative humidity (%)	>40%	10-25%	<10%	
Mid-flame wind speed	0	2-14	>14	
Wind direction (azimuth*)	Any	Any	Any	
1-hr fuel moisture (%)	>10	4-9	<3	3
10-hr fuel moisture (%)	>11	6-10	<5	5
100-hr fuel moisture (%)	>12	8-11	<7	7
1000-hr fuel moisture (%)	>12	6-12	<6	9
Live fuel moisture (%)	300	100	<60	60
Duff moisture (%)	n/a	n/a	n/a	n/a
Soil moisture (%)	n/a	n/a	n/a	n/a

Test Fire Documentation	
Location:	NW Corner off two track road
Date and Time:	10/16/15/ 10:00 am

Weather/Fuels Condition	
Temperature	59*
Relative humidity	18%
Fine Dead Fuel Moisture	6
Wind Speed	ENE 1-4 mph
Fuels	

Test Fire Results	
Flame Length	3 to 4 ft
Rate of Spread	10 to 15 chains per hour
Smoke Dispersion	Good 500 to 600 ft Direction SW
The test fire meets the prescription parameters	Yes XX No

- Additional wording in the Contingency Plan calls for the Burn Boss to assume the role as the IC. The assigning of the Holding Boss as IC was different from the plan's identified process.

IV. A review of the approving line officers qualifications, experience, and involvement.

- The previous Duchesne/Roosevelt District Ranger approved the burn plan in 2010; and the current District Ranger approved the reformatted plan to the new template on October 2, 2014.
- Per IQCS Master Record, the District Ranger meets the requirements for a Journey Level Agency Administrator, and had previous experience with signing Burn Plans.
- Element 2: Agency Administrators Ignition Authorization was signed on September 23, 2015.
- The Forest Supervisor had given a blanket Authorization to all the District Ranger's. However, the Duchesne District Ranger did not have a specific letter of delegation on file.

V. A review of the qualifications and experience of key personnel involved.

- The Agency Administrator Go/No-Go checklist met the requirements and was signed by the Burn Boss, Ignition Boss and Holding Boss.
- Per IQCS Master Records, the prescribed burns overhead were qualified for the positions that they were performing in. The Burn Boss was RXB2 qualified with 15 assignments. The Firing Boss was qualified as FIRB with multiple assignments. The Holding Boss was qualified as a TFLD with multiple assignments.
- All other key personnel assigned to the prescribed burn were qualified for the positions they were performing.