

Redondo Escaped Prescribed Fire Facilitated Learning Analysis



Cibola National Forest, Southwestern Region
June 2018



*“Prescribed fire is not an exact science.
It is an inherently risky proposition and only a few are
qualified and willing.
Every time you commit to igniting an Rx, you accept that risk.
It is hard work, but it is the right work.” (FFMO)*

Introduction

This is not a simple story. It is a complex story, an overlapping story, an assortment of individuals’ stories, and a collective story. Each enters and exits the story at a different time. Experiencing a series of events through individual lenses, colored in part by the pressures we bring with us and the lessons we take away. The outcome of a story is never certain and sometimes is unintended.

A learning culture utilizes unintended outcomes as an opportunity to study, discover, and acquire knowledge to apply in future situations. The intent behind a Facilitated Learning Analysis (FLA) is to improve performance by capitalizing on the shared experiences of participants. Blame is replaced with respectful, contemplative dialog that can lead to organizational learning and improved future performance.

Pressures

- Early season prep
- Readiness review
- Flagship targets
- Smoke impacts
- Historic mining sites
- Logging operations
- Hiring
- Shared resources
- Changing conditions
- Short windows
- Equipment malfunctions
- Life outside work – health, family, school, finances, etc.

Location

The Redondo Prescribed Fire is located in the Zuni Mountains of the Cibola National Forest, Mount Taylor Ranger District (RD) near Grants, New Mexico (Figure 1). It is comprised of three burn units, encompassing 9,100 acres. This FLA tells the story of one of those burn units, referred to as the “Office” (Figure 2). Vegetation consists of mature ponderosa pine with small areas of pinyon-juniper. Evidence of historic mining and prior logging activities is present throughout the area and the ground is littered with milky white quartz that sparkles in the sunlight.



Figure 1: Redondo Rx Vicinity Map.

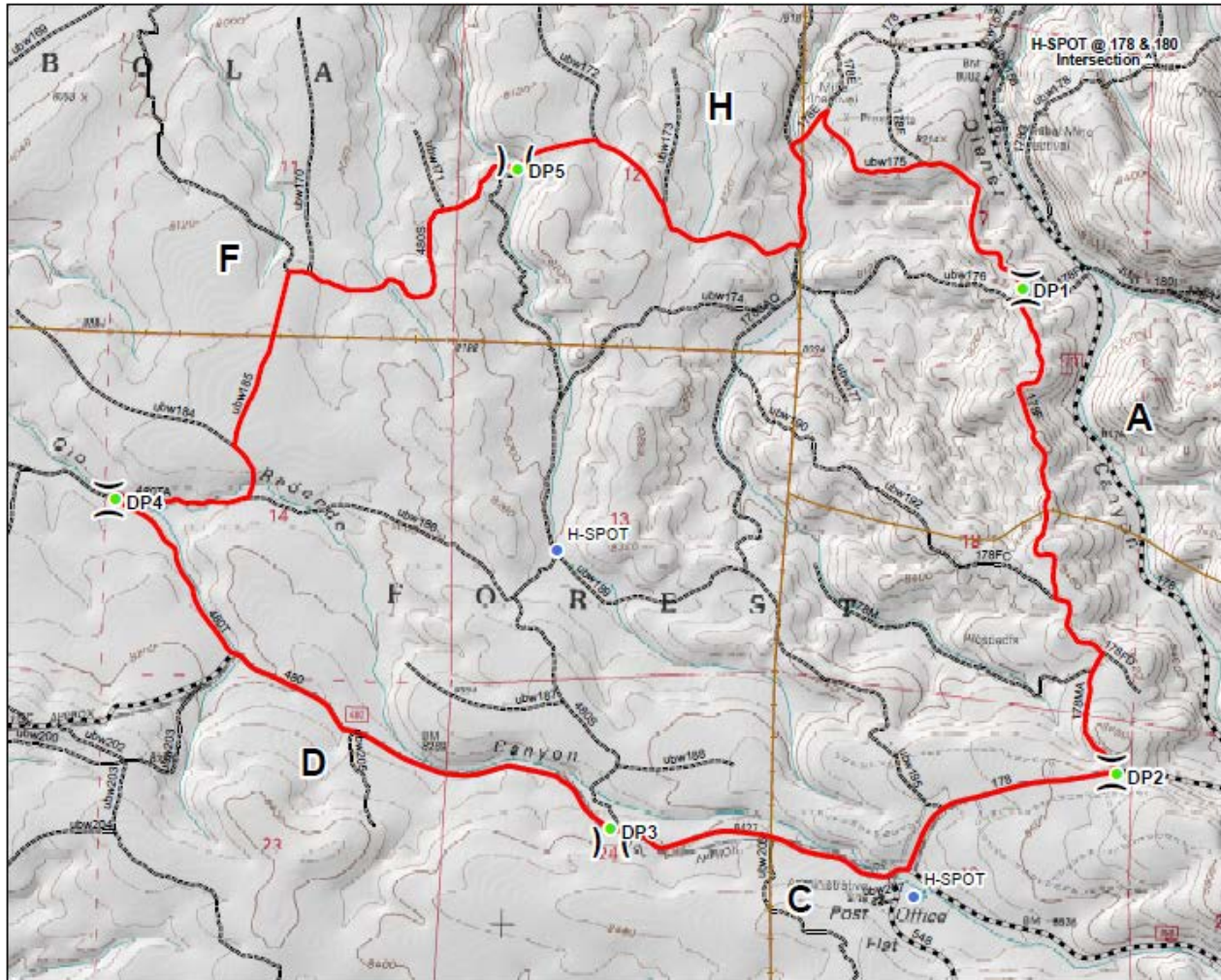


Figure 2: Redondo Rx, "Office" Unit.

A Story

A story can have many origins. The FLA team chose to begin this story with a brief review of the months prior to the April 9, 2018, test fire.

The 2017 fire season was long. The winter was mild with minimal snowpack. Nationally, an emphasis on landscape restoration supported by increased timber and prescribed fire activities was articulated into "Flagship Targets." Recognizing the benefits of sharing resources, the three northern New Mexico forests (Carson, Cibola, and Santa Fe) engaged in a joint effort to prioritize and collaborate on target associated work.

Meanwhile, the Mount Taylor RD had been on a journey to move from a fire program that traditionally "*chased activity generated fuels*," (i.e. followed timber operations) to a more

forward looking landscape scale prescribed fire program. The Redondo Prescribed fire (Redondo Rx) represents a significant step along this journey.

On Wednesday (April 4), prior to the Redondo Rx, the district burned a unit adjacent to the northern boundary of Redondo. The unit was part of the Andrews Rx. At the morning briefing, the RXB2 (Burn Boss Type 2) noted conditions were a month ahead from the prior year. Other than that, there was nothing particularly special about the fire.

“We had no holding concerns and we didn’t pick anything up. We moved slowly to make sure we had the results we were looking for.” (ENGB)

On Friday (April 6), off-district personnel from the Andrews Rx returned to their home units. The RXB2 (Burn Boss Type 2) learned at the office from a timber specialist that logging operations had moved into the Redondo Rx area; FR (Forest Road) 178 road could no longer be used as the eastern boundary. Local fire personnel worked through the weekend to prep for the Redondo Rx, paying special attention to the new eastern boundary along FR 178 MA / 178 F between DP-1 and DP-2.

While the burn plan called for 24 personnel, more than double that amount were on deck Monday morning (April 9), as all forest suppression resources were present to take part in a readiness review held in conjunction with the Redondo Rx. Conditions were perfect.

“I couldn’t have wrote a better day.” (RXB2)

Following the morning briefing, a test fire was ignited near DP-2. Dispatch received notice that all was well and hand ignitions along the south and east boundaries progressed. The plan was to begin aerial ignition in late morning, but the new Plastic Sphere Dispenser (PSD) machine kept tripping the breaker on the helicopter. With more than double the ground resources needed, crews were able to continue securing the line while an alternate machine was located. It arrived on site around 1700 hours and aerial ignition began shortly thereafter and extended to 1933 hours. Approximately 1,300 acres were burned. It was anticipated that some smoke would settle in the area due to late ignitions. All in all, life was really good that first day.

“I didn’t lose any sleep that night.” (TFLD)

The following morning (Tuesday April 10), because of the late afternoon aerial ignitions, a heavy layer of smoke had settled 360 degrees around the Rx, engulfing the surrounding communities and interstate for miles. Complaints were rolling in to the district office.

“There was a knot in my stomach as I drove out to the briefing, the smoke was so bad.” (RXB2)

The inversion was not lifting and there was concern about igniting more. The RXB2 coordinated with predictive services regarding smoke modeling and it was ultimately determined that a smaller area (approximately 500 acres) could be burned to tie off the west side of the burn. Once tied off, no further ignitions would occur. By 1300 hours the inversion had lifted. Hand

and aerial ignitions commenced for the next two hours. When ignitions stopped, some resources returned to town to restock supplies. Others remained on site to continue mop-up in anticipation of a wind event later in the week. That night, they camped nearby.

Wednesday (April 11), was a holding day. There was plenty of water available and crews were working throughout the burned area focusing on mopping up along the perimeter and cleaning up interior pockets.

*“Knowing a wind event was coming, there was a focus on the road between DP-1 and DP-2. The line was solid, we went through that piece multiple times.”
We went pretty late that night. We had plenty of water.” (ICT4(T))*

There were no holding concerns and at the end of the day the RXB2 transferred command to a qualified ICT4 (Incident Commander Type 4) that had been serving as a holding resource. Approximately 12 personnel (two engines and a fire use module) remained through the night while others, including the RXB2, went back to town with the intention of returning the following morning.

On Thursday morning (April 12), around 0830 hours, the ICT4 and ICT4(T) took a spin around the perimeter, checked historic cabins in the interior, and inspected the northern hand line near the previous Andrews Rx and a historic mine site. They mapped some duff heat close to the line along the north end and asked for a spot weather forecast from dispatch. No spotting was observed. At 1015 hours the ICT4 and ICT4(T) met with the on-site personnel and laid out a plan for the morning that included monitoring the eastern holding line between DP-1 and DP-2 as well as the historic mine site along the northern boundary. The spot weather forecast was received. It predicted a very windy day with 20 foot winds out of the Southwest at 16-26 mph with gusts to 36 mph; increasing to 30-40 mph with gusts to 46 mph in the afternoon.

Meanwhile, at the Mount Taylor RD, the RXB2 was still in town dealing with two new wildfires reported that morning. Thus, some of the personnel that had intended to return to the Redondo Rx were diverted to initial attack (IA) at the Mount Taylor and Bonito wildfires.

Wind

The bulk movement of air

We knew the winds were going to increase in the days after the burn.

We made a concerted effort to ensure holding lines were strong.

We didn’t anticipate winds so strong it would be hard to stand. We didn’t anticipate pebbles coming off the ground and hitting us in the face. We didn’t anticipate gusts in excess of 65 mph or semi-trucks blowing off the interstate. We didn’t anticipate three human caused fires and a potential arsonist. (RXB2, ICT4(T), TFDL, AA, FFMO)

The world changed later that morning. Around 1045 hours, personnel staged on the eastern boundary of the Redondo Rx reported two spots and requested water. Shortly thereafter, a 5' X 5' spot was reported by personnel staged on the northern boundary near the historic mine site. Around 1115 hours, a second 20' X 20' spot was reported on the northern boundary and quickly grew to about ½ acre. At 1130 hours, two more spots were reported on the eastern holding line between DP-1 and DP-2.

“It blew my mind when I found out they got spots. It was clean. It looked solid. It got hit by wood haulers. The night before there wasn’t a smoke showing within a chain of the line.” (ICT4)

Around this same time, as the winds were picking up, rumors of a suspected arsonist were spreading faster than wildfire. Resources devoted to initial attack on Mount Taylor and Bonito were unable to assist the holding crews on the Redondo Rx. Around noon, the ICT4 made a decision to disengage on the northern and eastern boundary in order to regroup and ensure all personnel were accounted for.

The RXB2 arrived on site around 1230 hours and tied in with the ICT4. Coordination calls were made. Loggers in the area were contacted and their equipment evacuated. Resources were ordered. A local BIA Hot Shot crew could not be assigned to the Rx due to lack of a payment mechanism. Ultimately, a plan was made to swap the BIA crew with an agency Hot Shot crew currently on IA at Mount Taylor. The BIA crew drove by the Redondo Rx enroute to Mount Taylor.

There was a vehicle with a flat tire and no jack near DP-2 that had to be dealt with. There was a report of a red pickup truck with handicapped plates lost in the smoke. There were a couple puzzling upwind spots along the western Rx perimeter. There was a suspected serial arsonist starting fires across the district and some questioned whether this same arsonist was responsible for the multiple fires that were appearing across what had been a well-secured black line for the past three days. A third wildfire, Blue Water, was reported by an engine enroute to the Rx. This fire grew quickly and resulted in evacuations of nearby communities.

As with the Mount Taylor and Bonito wildfires, choices had to be made regarding placement of resources. The values at risk associated with the Blue Water wildfire far outweighed those associated with holding the eastern line on the Redondo Rx. Thus, after thoughtful consideration and in the midst of an extreme 11-hour wind event, at 1608 hours the Redondo Rx was declared a wildfire.

That day, and in the days to come, there was significant public confusion surrounding the relationship of the Redondo Rx and the multiple other wildfires. Initially, many believed spot fires from the Redondo Rx were responsible for the other wildfires; this was not the case. In fact, it was because resources were on hand for the Redondo Rx that they were able to be diverted to timely IA on other human caused wildfires... but this is another story.

Brief Timeline

- April 9 Redondo Rx Day 1 (Mon). Approximately 1,300 acres burned via hand and aerial ignition. It was anticipated that some smoke would settle in the area that night.
- April 10 Redondo Rx Day 2 (Tue). Heavy smoke resulted in delayed ignitions. Ultimately a smaller area (approximately 500 acres) was burned to tie off the west side.
- April 11 Redondo Rx Day 3 (Wed). A holding day. Mop-up occurred on the perimeter and interior pockets were cleaned up. That evening, command was transferred to a qualified ICT4 that had been serving as holding resource in the prior days.
- April 12 Redondo Rx Day 4 (Thu). Two human caused fires are reported that morning, diverting resources to initial attack. Winds reach extreme intensities. Multiple spots occur across the holding line. At 1608 hours, the Redondo Rx was declared a wildfire and renamed “Diener Canyon.”

Summary

A well designed, well implemented 2,600 acre prescribed fire was impacted by mechanical failure, a larger than expected inversion, an 11-hour wind event with gusts in excess of 65 mph, and a suspected serial arsonist. The actions taken by the leadership of this incident included applying Life First Principles, open and frank communications between all levels of the organization, and a willingness to make the wildfire declaration at the appropriate time. This incident was a real-life sand table exercise and the FLA team wishes to commend those involved for their professionalism. The FLA team would also like to recommend to the Agency Administrators and Burn Bosses that this case be used for training and refreshers.

Areas of Improvement

As with any organizational review, a close examination after an incident can reveal areas of improvement. Based on the open and honest dialog from personnel involved, the FLA team captured the following recommendations:

- Re-examine and improve documentation processes, especially for IQCS qualified individuals to ensure no administrative lapses in qualifications occur.
- Consider using dispatch/ROSS to formally assign all resources to an Rx to ensure they are effectively tracked and only appropriately qualified individuals are assigned roles in your prescribed fires.
- While the technical review for this Rx burn was excellent, consider using off-Forest resources to perform these reviews to ensure a fresh perspective is incorporated into your Rx program.
- The FLA team recognizes the creativity and value of a readiness review occurring on a live incident, however, we suggest that the required administrative section of these reviews be conducted in the traditional office setting to ensure critical administrative /fiscal components of a fire program are properly examined. These administrative components could be accomplished by off-District personnel to reduce the burden on the Supervisor's Office and as a developmental opportunity for other district leaders in the fire organization.
- This Rx was designed with aerial ignitions as a critical component, the FLA team recommends that if an Rx is designed this way, two tested and functioning PSD machines be on site prior to test burn ignition.

Agency Administrator Best Practices

The following best practices are meant to assist Agency Administrators (AA) to more effectively engage with burn bosses during the development and implementation of a burn plan and complexity analysis:

- Recognize you are sharing risk with the burn boss; asking hard questions is not micromanaging. Ensure risk is commensurate with reward.
- Engage early and often with the burn boss to ensure risk is shared and important questions are asked and answered.
- Recognize fires have risk; ask yourself if the burn is needed to meet objectives and/or targets prior to making the decision to proceed.
- Meet with implementation personnel prior to ignition in order to understand the nature of work being done and potential risks.
- Recognize there is a varying amount of pressure an AA may place on personnel to accomplish targets; the pressure can affect tactical decisions of the burn boss and/or implementation personnel.

- Make a wildfire declaration on an escaped prescribed at the appropriate time; as an AA you will be supported by those up the chain-of-command.
- Build a network of knowledgeable and experienced people to ask questions when you are outside your comfort zone.
- Engage your publics, stakeholders, and governmental officials in the need for prescribed fire.
- Develop a strong pre-season communication plan; supplement with specific Rx information closer to event.
- Bring key individuals to a prescribed fire briefing.

Successes

During the FLA, the team witnessed strong communication, team work, and peer support among the fire personnel. The following were some of the successes observed:

- Good engagement with Deputy Fire Staff Officer and Burn Boss (FMO) in the development and technical review of the burn plan.
- Solid communication between District and SO personnel assessing the multiple human-caused starts (IA) while engaged with the Redondo Rx.
- ICT4 applied Life First Principles by prioritizing safety of the crew over trying to save a historic mine site.
- ICT4 and ICT4(T) effectively documented the incident and their actions.
- The communication between Burn Boss and Fire Staff Officer was very effective when declaring the Redondo Rx a wildfire.
- An early call for an AA coach was made once the wildfire declaration occurred.
- The district fire personnel were able to successfully participate in another prescribed fire two weeks later on a different district with full support of the RO.
- The Fire Staff Officer recognized the impact of the escape prescribed fire on district employees and their families and offered support in a meaningful way.

Facilitated Learning Analysis Team

Team Lead	Jim Gumm - District Ranger, El Rito Ranger District, Carson NF
Subject Matter Expert – Fuels	William Basye - Regional Fuels Specialist, Southwestern Region
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Story Teller – Writer/editor	Rita Skinner - Chief of Staff, Southwestern Region

TO: Current and Future Burn Bosses

FROM: An Old Type 1 Burn Boss

As an Old Type 1 Burn Boss, I've had the opportunity to work with a ton of great people and do what I believe is a lot of awesome work within our fire adapted ecosystems. This was my first time serving on Facilitated Learning Analysis (FLA) team. If you have the opportunity, I encourage you to participate on an FLA team. Please don't wait as long as I did to get involved. Never stop learning, never stop communicating, and always strive to **BE A STUDENT OF FIRE**.

As a Prescribed Fire Burn Boss you operate in a very complex and ever changing environment. You spend months preparing for an event, and all along you need to be gathering situational awareness:

- Who will be on that hill at a specific time?
- Did I order enough blue houses?
- Will the food be on time?
- What piece of equipment will break down?

Oh, and don't forget your day-to-day job requires a facility check next week and a hundred other things.

As a current burn boss, spend as much time as possible with future burn bosses. Teach new burn bosses to document everything, even if they think it is trivial. Why? Because to truly move forward with a learning culture, you have to be able to tell your story, and trust me, notes are golden.

As an Old Type 1, I want to share my experiences with you. Some learning was easy, some came the hard way. I'm sharing with you today with the hopes that you may learn from my scars.

- COMMUNICATION – COMMUNICATION – COMMUNICATION. Up, down, sideways. Never stop.
- Utilize the District as an ID Team to ensure your complexity analysis and burn plan is robust.
- Build an organization around yourself for support.
 - This could be as simple as utilizing the type 3 militia.
 - Find the person that can locate anything, anywhere, and get them to assist with logistics.
 - Make sure you have plenty of drivers.
- Use an Incident Action Plan (IAP) and take the time to update all the blocks. The IAP will become your most critical piece of documentation.
- Invite overhead in at least two shifts prior to ignition. This will ensure everyone is familiar with the plan you've been working on for the past six months.

- Challenge these overhead resources to read the plan, to find what is missing, to poke holes in it – so that your plan becomes their plan, and is better for it.
 - Make time for a small command meeting before your first briefing. This will allow you to gauge the employees you have on hand and provide a chance to identify any resources/needs that are lacking.
 - CHECK RED CARDS.
- Partner with your dispatcher – they are extremely important to your success.
 - Use ROSS to track assignment and qualifications of your people.
- Be in constant communication with your Agency Administrator (AA).
 - During the writing of the burn plan and complexity analysis, have meaningful dialogue with your AA. They are sharing the risk with you. If you can't have a meaningful conversation or you don't feel comfortable they are sharing the risk, STOP–THINK-TALK-THEN SIGN. Remember this is not about just checking a box.
 - If possible, have the AA on site for the entire event, or at a minimum during the critical shifts.
 - The AA is your partner during the burn; if you are not getting what you need, ASK – make some noise – get what you need.
- During the technical review process, ask for honest feedback and don't take comments personally. Honest feedback helps you learn and makes for a better plan.
- Smoke is so very important, don't just look at what the smoke is doing around the fire - look to where it will be that afternoon and where it will settle during the night.
 - Look at the area you could affect and double it.
 - Get the word out early and often.
 - Make sure you know who your smoke sensitive individuals are.
- Create a partnership with your district and/or forest PIO. Use the winter to provide information to the public and tell the good story about prescribed fire. Perhaps go with your AA and do some media interviews.
- Always look at ordering a FEMO for your prescribed fire events. This person is your weather and fire behavior documentation leader.
- Look at bolstering your fuels program. A strong fuels specialist will take your planning to a new level.
- REMEMBER:
 - BEING FLEXIBLE IS WAY TOO RIGID
 - YOU CAN ONLY BURN AS FAST AS YOU CAN HOLD
 - EVERYONE IS WILLING TO HELP, YOU JUST NEED TO ASK!

Thank you for all your hard work and never forget it is an honor to be a Burn Boss!

- Old Type 1 Burn Boss