Rapid Lesson Sharing

Event Type: Dudda Shop #2 Prescribed Fire

Date: January 28, 2023

Location: Miccosukee Reservation, Florida

Valuable Lessons from this Prescribed Fire IWI

Planning for the Prescribed Fire

The Burn Boss (RXB2) for the Miccosukee Tribe and the Regional Fire Management Officer (RFMO) for the Bureau of Indian Affairs (BIA) began looking for a burn window toward the end of the third week of January 2023 for the Dudda Shop #2 Prescribed Fire (Rx).

On the days leading up to this prescribed fire, they reached out to the Florida Panther National Wildlife Refuge (FWS), Everglades National Park (NPS), Big Cypress National Reserve (NPS), the Seminole Reservation, and Florida state cooperators.

Resources from the Cherokee Reservation in North Carolina (Cherokee Module) began a detail on the Miccosukee Reservation starting on January 27 and met with the BIA's Regional Fuels Specialist and the Regional Fire Management Officer (FMO) who were already in Florida.

Because the Miccosukee does not have a well-established fire program, they frequently use Casual Hires (known as ADs) for prescribed fires. On this prescribed fire, they ordered a Type 2 Burn Boss (RXB2) who was an AD and had worked for the Seminole Tribe and the State of Florida. He knew the area's burn history and was familiar with the fuels and tactics used here.

The UTV engulfed by fire on the Dudda Shop #2 Prescribed Fire. You cannot see the ditch that forced the UTV's sudden stop and subsequent stall. The ditch is located where the row of saw palmetto is standing in the upper right. Arrow points to FFT1's helmet that he lost when he jumped from the UTV.

The FMO and RXB2 were able to secure 22 personnel, four UTVs, a Type 6 Engine, a swamp buggy, and other support vehicles for the Dudda Shop #2 Prescribed Fire. The burn plan requires only three people to burn this unit. However, because the unit had not been fully prepped, they needed additional resources to help prep on the day of the burn.

They did not anticipate so many resources being available that day. This large number of resources added to the prescribed fire's complexity. As one of the firefighters recalled, *"It was the only show in town that day, so everybody came out."*

On January 27, the RXB2 brought the Cherokee Module to the prescribed fire unit. They scouted the roads and suppression lines in the operational area on UTVs. They discussed tactics, fuels, and hazards in the area. The RXB2 recalls pointing out the multiple ditches, hazardous cap rock (lime rock underneath a thin soil layer), and rock outcroppings. He said, *"Be aware that if you see a row of cabbage palm, there's likely a ditch they are growing in."*

The area where the crews burned that day was an active pasture for cattle grazing. The land had been previously cleared of Brazilian pepper and saw palmetto. Ranchers had dug through the cap rock to form straight canals and ditches for

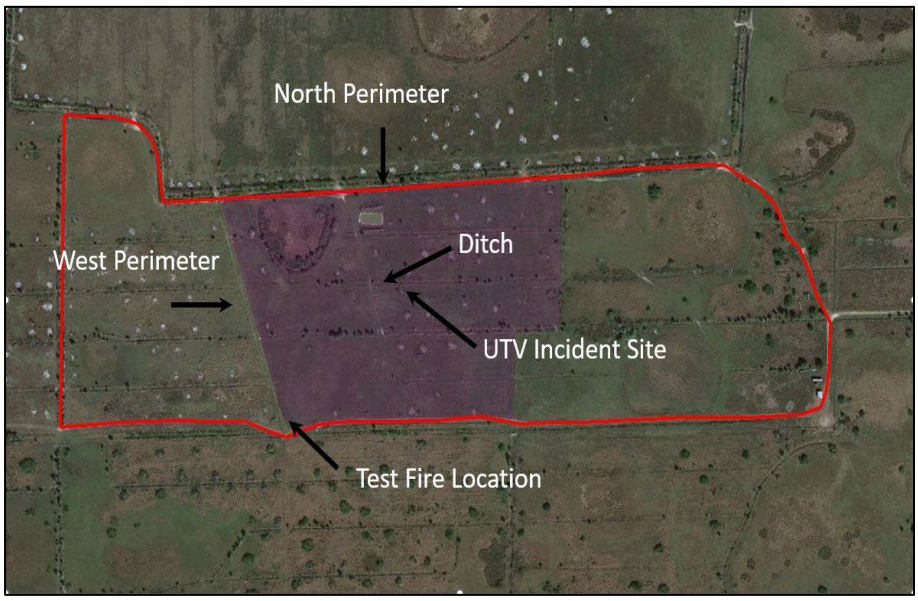
drainage. The ditch banks contain upturned soil and rock outcroppings that provide high, dry habitat for cabbage palm trees to grow. Perennial grasses including Bahia grass and the invasive smut grass grows in the pasture and were the primary fuels that were burned. Because the prescribed fire unit had been burned within the last five years, continuous light flashy fuels had flourished there, with some thinner "pockets" in the interior due to the active cattle grazing.

Briefing at the Travel Plaza on January 28

At 0900 on January 28, the burn parameters were within prescription. The resources were in route to the Miccosukee Travel Plaza (providing gas stations and convenience stores) located off Interstate 75. This Travel Plaza, located about two miles south of the prescribed fire location, was identified as a meeting area because it is a well-known central location.

The RXB2 provided an initial briefing at this location and then directed resources to a staging area adjacent to the burn, where he gave a second more in-depth briefing. The RXB2 verbally covered information from the burn plan, including: overall objectives, operations, the ignition plan, weather, and safety information. There was no Incident Action Plan (IAP) handed out at the briefing. Resources were therefore expected to take notes during the briefing.

Although the RXB2 referred to a printed area map, the image of the burn unit on the map was small and the number of people at the briefing was large, making it difficult for people to see details on this map. Rather than straining to see the printed map, resources individually referred to an Avenza map on their phones during the briefing, enabling them to see specific edges of the burn perimeter, trees, and agricultural ditches. At the end of the briefing, resources began to clone their radios and make their way to the test fire area at the southwest corner of the burn perimeter.



The Dudda Shop #2 Prescribed Fire area. The red line is the burn perimeter where ignitions had been planned on the unit. The shaded area shows the area where resources burned on January 28.

Resources Burn the Western Perimeter

Four UTVs, a swamp buggy, and a few overhead trucks all drove one mile farther down a dirt road to the test fire area.

The RXB2 gave an additional briefing at the test fire to further explain the tactics, firing and holding concerns, and to remind everyone, once again, of the previously identified hazards.

They lit a successful test fire, radioed the Florida Interagency Coordination Center (FICC), and began their ignitions.

The Firing Boss (FIRB) organized resources for holding and firing and told them to follow the fence line to the north. The swamp buggy was in the lead and began putting in a mash line (line implemented by "mashing" down the grass with the buggy wheels to compress the fuels and reduce the light flashy fuels), and a wet line on top of that.

Resources began firing using drip torches as they walked north on the western perimeter. Two UTVs equipped with small pumps and tanks ("water capable") sprayed down the line, following the swamp buggy. Firefighters on foot used flappers to pat down the grass along the perimeter and around the fenceposts.

A third UTV, located on the west side of the fence, followed behind to monitor the line and watch for spots. Resources had no real concerns, although one of the UTVs briefly became high-centered on a rock outcropping. Crews quickly dislodged the UTV and resources continued to burn to the north. The fourth UTV, a 12-year-old Kubota, was designated as a support vehicle for logistics. Two firefighters drove it to a nearby canal to set up a portable pump and then drove back to the test fire.

During the next hour, firefighters successfully burned the west line up to the northern perimeter, turned east, and began to fire the north line.

As the swamp buggy continued to fire, the first UTV continued to hold. The FIRB tied-in with the second UTV and asked them to fire Pyroshots (incendiary plastic spheres launched from a hand-held, spring-powered gun) into the interior of the burn, increasing their responsibility from just holding to both holding and firing.

After the FIRB tied-in with the swamp buggy, he reorganized to send the swamp buggy and the third UTV to the southern perimeter to begin firing east from the test fire location. Because the resources on the southern perimeter were holding from a wider road, they were able to move and fire faster than the resources on the northern perimeter.

Crews light and hold from the test fire area to the north. In the background, multiple UTVs and a swamp buggy assigned to the prescribed fire can be seen.

Burning the Interior Green Pocket

The resources on the northern and southern perimeters could see each other and tried to synchronize the pace of their ignitions as they moved east. The RXB2 asked the FIRB to begin strip firing the interior. The FIRB identified a green pocket in the interior, approximately 50 yards wide, with a ditch running through the middle.

He briefed two FFT1s with drip torches and told one of them to lay strip fire north of the ditch and the other to lay strip fire south of the ditch. Although the FFT1 on the south side of the ditch had successfully fired four strips in this green pocket, the RXB2 wanted to increase the pace and scope of the interior firing by using the logistics UTV.

The RXB2, unaware that the FIRB was no longer on the UTV, directed the UTV to be used for interior firing operations. The FIRB, who was managing multiple firing operations, tied-in with FFT2, who was operating the logistics UTV, and FFT1, who was firing on the south side of the ditch.

FFT1 joined FFT2 on the UTV and the FIRB briefly explained that they were to fire "north and south, moving toward the east." As FFT2 drove, FFT1 used a drip torch off the side of the UTV to ignite the light flashy fuels.

UTV Encounters Ditch, Stalls, Catches Fire

They fired one strip from the north to the south in the green pocket then turned and began to fire north. The UTV operator recalled thinking that he was supposed to drive all the way up to the burn's northern perimeter. Unaware of the ditch running east-west through the unit, he had to quickly stop to avoid hitting the ditch. FFT1, focusing and continuing to fire off the side of the UTV, was unaware that they would experience this sudden stop because of the ditch. When FFT2 attempted to back up, the UTV stalled. Knowing there was active fire located directly behind them, he tried to restart the UTV to get away from these growing flames. However, the machine would not start.

FFT2, realizing they needed to abandon the machine, yelled at the FFT1, "Come on, let's bail!" FFT1 jumped out the passenger's side. Because fire was encroaching on the driver's side, FFT2 also jumped out on the passenger's side. He grabbed a handheld radio and the fire extinguisher that was mounted above the passenger side seat.

FFT2 then crouched down to discharge the fire extinguisher under the UTV. It let off "one quick burst," but did not fully discharge its contents. As FFT2 realized the extinguisher was inoperable, he looked up to see FFT1 on the ground. The FFT1 felt so hot from the radiant heat that he was concerned that he had been hit by active flames and was on fire. FFT2 ran over to the FFT1 and yelled, "We need to get out of here." As he helped FFT1 stand up, FFT2 assured him that he was not on fire. FFT1 later recalled that he didn't remember what happened during that time frame.

FFT2 then saw FFT1 go back to the burning UTV to retrieve his pack. FFT2 recalled thinking to himself, "Gear can always be bought back, a life can't."

They both started to run to the north flank. FFT2 called the FIRB and told him the UTV was on fire and asked that they cease firing operations. The FIRB acknowledged this radio communication and proceeded to call the RXB2 to let him know they had an incident and needed to stop firing operations. The RXB2 then looked up and saw the black column coming off the burning UTV.

Firefighters Perform Initial Medical Assessments

The two firefighters who had been firing the Pyroshots on the northern perimeter saw the black column of smoke when the two firefighters from the UTV fire made it to the northern perimeter. The Pyroshot crew drove east down the line in their UTV to tie-in with them. As they approached, they noticed that one of the firefighters on foot was not wearing his helmet—and realized that something had gone wrong.

As they drove closer, they heard radio traffic about a UTV fire and that the FIRB was ceasing firing operations. They realized that the two firefighters on foot were the ones who were involved in the UTV fire and that they would likely need medical attention.

They immediately tied-in with them and asked, "Are you okay?" FFT2 replied that he thought he was okay. FFT1 (concerned about his airway) said that he may need medical attention. Both firefighters grabbed water and began dumping it on themselves, saying they were both "extremely hot."

Although the Pyroshot crew couldn't see any burns or blisters on FFT1, they observed he was missing his helmet, his flame-resistant pantlegs were discolored, he had ash on his face, some singed beard hair, and he was very red. They therefore grew more concerned, especially about potential airway damage. They quickly loaded both firefighters into their UTV to transport them to the test fire area to tie-in with the Burn Boss.

When they arrived at the test fire area, the RXB2 immediately asked if they needed medical attention. FFT2 said "No." FFT1 did request medical assistance due to potential airway damage from smoke. The RXB2 asked the two Pyroshot firefighters (cooperating agency employees) who performed the initial medical assessment to take charge of the Medical Incident Response (MIR) and complete the required paperwork (hard copies of the CA-1 and CA-16). Because it was unclear in the medical plan, these cooperating agency firefighters and the RXB2 discussed if they should call 9-1-1 or transport FFT1 to the hospital themselves.

In the absence of a host unit Duty Officer (DO), the cooperating agency firefighters contacted their DO to report the incident and, together, they created a plan for the injured FFT1. The DO searched Google to learn that Westin was the closest town with medical facilities. They also located the nearest burn center, several hospitals, and nearby urgent care facilities. At the same time, the agency firefighters informed the RXB2 that they would transport FFT1 to medical care. The Pyroshot crew and the FFT1 were then released from the burn, gathered all their equipment and vehicles, and began the hour-long drive to Westin. FFT2 remained on a Type 6 Engine for the duration of the prescribed fire implementation.

The RXB2 realized that they would not be able to finish the burn as planned, due to the IWI, and found the closest cattle road to "hang it up." All crews monitored the prescribed fire for the next hour to ensure containment. After the RXB2 was confident with their holding lines, he gathered everyone together for an AAR near where they had off-loaded the UTVs that morning.

During this AAR, they discussed what they did well and what they needed to improve on, concerning general operations. Because they didn't have all the information regarding the UTV Incident Within an Incident (IWI), they only briefly discussed this event. However, they did discuss immediate corrective actions to ensure that they were: using the proper equipment with the right tools; that personnel had the appropriate qualifications for their assigned roles; and that personnel changes on equipment will be properly reported.

At the Urgent Care Center

FFT1 was treated and released from the urgent care center in Westin with minor burns on his nose, cheek, and legs. The Pyroshot crew encountered difficulties associated with sharing the electronic version of the CA-16 with the urgent care facility. Because the CA-16 was being sent through a government email and contained Personal Identifying Information (PII) it could not be forwarded from a government phone by the Pyroshot crew lead. The crew lead then used his phone to air drop the CA-16 to his personal phone and forwarded it from there. After a long afternoon, the crew knew they would not make it home within their shift. They therefore overnighted in Westin and drove the two hours back to their station the next morning.

Lessons Learned and Lessons Shared

I. Toward More Effective Fire Communication

A. Develop and provide a current Orientation Packet or Detailer's Guide for incoming resources. Having the "canned knowledge" available for any off-unit resources will ensure that consistent and current information is provided. An example of a detailer's guide can be found at: https://wildfirelessons.blog/wp-content/uploads/2023/03/SA-Sample-Briefing-Packet.pdf.

B. Burn Plans covering landscape areas need to address site-specific information (additional personnel, logistics, complexity and risk analysis, or any other elements that can change on the unit the day of the Rx) by using supplemental "packages" or an IAP.

1. Develop and use a supplemental "package" or a standardized IAP that clarifies the elements from the landscape burn plan for a site-specific location. While this Rx did have a complete and signed burn plan, many of the elements needed more clarification. Pre-developed IAPs for the unit would have helped resources identify critical elements (smoke management, communications, logistics, medical, etc.) that may be needed.

2. One crucial site-specific consideration includes the medical plan. The medical plan that was approved in the burn plan did not address the site-specific location or transport times to definitive care from this area. Had the Dudda Shop #2 Prescribed Fire been identified in a sub-area in the burn plan, resources could have referred to the burn plan or IAP to determine hospital locations and quickest transport options.

C. When a paper IAP is unavailable for briefing, you still need to ensure resources have all necessary information. Firefighters are accustomed to having a paper IAP during briefings.

1. Use a QR code that links directly to an IAP, the detailer's guide, a medical plan, and other important documents.

2. Be explicit that you are providing a verbal IAP and inform crews that no paper copy will be available. Firefighters who are accustomed to having an IAP at briefing may not be prepared to capture all the information. The RXB should direct them to pay attention to the briefing and avoid focusing on other tasks (like worrying about CTRs). The RXB should highlight critical information and follow-up to ensure that this critical information is understood.

D. Maintain a current Job Hazard Analysis (JHA) or Risk Assessment (RA) for all firefighting activities and discuss the hazards and mitigations during briefings. Either JHAs or RAs are required for fire operations, UTV use, and other associated tasks. While the current burn plan on this unit does have a JHA, it did not cover UTV operations. A UTV JHA would provide a list of hazards that could be shared during briefings.

E. The U.S. Forest Service Risk APP is a publicly available tool that individuals can download to assist in more effective communication when discussing personal risk. During this incident, resources recalled not "being on the same page" during conversations and briefings. This or similar tools are effective pieces to communicate during real-time risk activities. Click HERE for the link to the Forest Service Risk Calculator App.

II. UTV Operations

A. Determine what the UTV capabilities and limitations are when making operational assignments. Many of the makes and models of UTVs are not designed to handle certain operational assignments. On this incident, the logistics UTV was able to shuttle back and forth on the road. However, it was a low-clearance machine that was not equipped for interior firing operations. **Consider the following when assigning a UTV:**

1. Machine specifications. Can this machine handle the terrain, clearance, weight capacity, maneuvering, etc. for the assigned mission? Is this make and model adequate to handle the job?

2. Additional equipment. Will this machine need a pump, hand tools for firefighters, a larger fire extinguisher, mobile radio, etc. to complete the mission and provide for safety? Is this equipment available for the machine?

3. Condition of the machine. Is the machine an older model that may not meet the demands of the mission? Has it had previous maintenance issues? Has it been inspected and rehabbed appropriately?

B. Have a clear conversation regarding experience and qualifications and realize that the two are not always interchangeable. Depending on the operation (such as higher complexity) more experience may be necessary for both the operator and passengers on the machine.

1. UTVs that are used for a higher-risk task may need to have a more experienced firefighter (such as a single resource) to assist with tactical operations. Informing the RXB of operator or firefighter experience level will help make the most risk-informed decision. Although fire can be laid down quickly when firing from a machine, firefighters need to recognize that this leaves little time to react if the UTV stalls, especially in light flashy fuels.

2. Firefighters who are operating on a UTV and are unfamiliar with one another should initiate conversations about assignments and hazards that go beyond operational briefings. It may seem redundant to reiterate the instructions that are provided, but this allows for misunderstandings or discrepancies to surface. For example, saying, "So, we are headed to the north perimeter," would give the listener a chance to voice a different understanding, such as "No, we are going to turn around at the ditch," and alert the driver to an unknown hazard.

C. Train on UTVs to include emergency scenarios. The UTV operator had trained on and used the specific machine to train and qualify on. However, the machine was left in "M" (the drive gear) and cannot restart in that gear. Training for an emergency will help to reinforce basic operations during stressful moments, including the appropriate use of a fire extinguisher.

D. Ensure that UTV fire extinguishers are inspected regularly, mounted properly, and are the right size for the operational assignment. Passengers should use fire extinguishers to assist with exiting the machine in the event of a fire.

1. Fire extinguishers that are mounted in or on UTVs may not have frequent enough inspections and are susceptible to **"caking,"** a phenomenon that occurs quite commonly on UTVs due to the vibration of the UTV that forces the dense powder to pack down inside the fire extinguisher. This phenomenon can occur in a very brief duration of time and requires more frequent inspections (at least every 30 days) to ensure the material is not "caked." Upon inspection of the fire extinguisher used on this UTV, it showed that there was "caking" inside the extinguisher, and it did not expel all its contents. See this USFS Region 8 Safety Bulletin- (R8-FAM-RM-2021-20) for more information about portable fire extinguishers and "caking."

2. The **size** of the fire extinguisher on the machine was adequate for standard operations (5 pounder). However, for firing operations, a larger fire extinguisher may be required for safety and egress.

3. Fire extinguishers on board UTVs or other vehicles are intended for personal safety and egress. On prescribed or wildland fires, firefighters may need to use the fire extinguisher to create an escape route.

III. The Need to "Overcommunicate" During Transitions should be considered by resources at the appropriate time and at the appropriate level.

A. While transitioning in either complexity or risk – Both the complexity analysis and the risk analysis need to be reviewed and discussed on the day of the burn by both the Burn Boss and the Agency Administrator. The complexity analysis and the risk analysis are similar. However, the risk analysis changed with the number of personnel on site for this Rx from 3 required to 22 assigned personnel. While the complexity analysis would not have changed from "Moderate" to "High" (from a Type 2 Rx to a Type 1 Rx), the risk analysis would have changed to "High" due to span of control, experience level, knowledge of the local area, and unfamiliar tactics. Communicating the mitigations prior to the briefing would maintain the determined complexity and reduce the potential risk from the transition.

B. While transitioning roles – Due to the dynamic nature of fire, roles are often changed to meet the operational needs. In this event, FFT2 went from setting up a pump to taking weather to shuttling drip torch fuel, and, finally, transitioned to internal firing operations. Overcommunicating and exchanging information would ensure that managers know where personnel have been reassigned and who they have been reassigned to.

C. While transitioning tactics – As firefighters were able to secure the western line, resources were reassigned to include additional firing on the perimeter, Pyroshot operations, and interior ignitions. Although there was a sense of understanding, "overcommunication" would ensure that all the moving resources have received and understand the change in tactics. As firefighters went from hand-lighting to lighting off the UTV, overcommunication would have aided in situational awareness as well as tactical assignments.

D. While transitioning to an IWI – As FFT1 and FFT2 made it to the north perimeter, resources began to navigate the IWI while contacting their home units. Resources shifted from firing to holding, while others began patient care and transport. The change in assignments and roles required additional briefings to communicate the change in the plan to limit the size of the Rx.

IV. Develop Fire Staff Management for Prescribed Fire. Local fire management staff is critical for the success of a prescribed fire program. **Fire management staff is necessary:**

A. To develop capacity, partnerships, and resources for Rx – Due to the fire frequency and return interval (3-7 years) in South Florida habitats, management relies on partners to assist with the large amount of prescribed burning. These relationships take time to foster and effort to maintain. During this incident, the RXB2 worked with Regional Office fire staff from Nashville to gather enough resources to burn several units over the next few weeks. Ultimately, 22 people were gathered for the Rx, however they were not familiar with each other or the area they were burning in, as they had not built prior relationships within the unit.

B. To support Agency Administrators – Fire management personnel are the "subject matter experts" for Agency Administrators on the unit. Fire managers work with leadership to plan and implement prescribed fires and provide the reporting requirements during an incident. As this IWI unfolded, the RXB2 asked cooperating agency employees to manage the IWI as he was not sure how he could facilitate that role as an AD. The Regional FMO was on scene and facilitated the critical notifications normally handled by a unit FMO. Both of these positions covered the extra workload and stress for the unit that a fulltime position would have normally managed.

C. To support Burn Bosses – Burn Bosses manage many duties that require the support of the host unit. Full time fire management staff (FMOs, AFMOs, Dispatch, fuel and fire planners, etc.) support Burn Bosses by managing the agency requirements within a burn plan, as well as functionally support the Burn Boss the day of the Rx. For example, the medical plan (ICS 206) attached to the Dudda Shop #2 burn plan has hospital information identified in locations farther away than where the closest hospital emergency room was located (Westin). Fulltime fire staff would be responsible for this type of information, coordinate with Dispatch in the pre-season for any IWI response, and make the information known to resources when writing burn plans and implementing Rx.

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