



Lessons Learned: Burn Incident, FLNF Prescribed Burn, Fall, 2013





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**Setting the stage:** timeline is approximately

On November 1<sup>st</sup>, 2013 the Fire Management Officer (FMO) and Resource Advisor (READ) went to scout a few of the project areas. They assessed, discussed the situation and alternatives since the project areas received slight precipitation, ranging from .10"-.25" inches, as well as sustained winds 10-20 mph. Some of the project areas were not be ready to burn since the grasses had not yet fully cured out. Some project units would be available to burn within a day or two with drying conditions and favorable weather. The FMO and the READ determined that there was sufficient work and training opportunity to continue with the operational plan for the following week.

On November 3<sup>rd</sup>, 2013 Prescribed Fire Crew Members (RXCM) assembled at the Finger Lakes NF. The operational mission was to implement prescribed fire operations during a 4-5 day burn window, targeting approximately 400-600 acres of fuels treatment. Additionally, the crew was going to "push-back" the encroaching fence line vegetation along approximately one mile of a forest road system. The road bisects two project range allotments. To accomplish this task, the crew was going to use a Humvee mounted terra-torch.

On November 4, 2013

0800 RXCM were prepping a 270-acre unit adjacent to private property (west) to burn later that week.

1330 decision was made by the FMO and RXB2 to burn a smaller 26-acre unit in the vicinity. The FMO and RXB2 notified the Firing Boss (FIRB) and the Holding Specialist of the intent to ignite the smaller unit. Note: The FMO and RXB2 had a discussion regarding the given fuels and weather conditions, that the day-time burn window maybe open for a short duration.

1500 after the briefing, RXCM began their assigned tasks of either firing or holding group.

1502 the FMO was in contact with the Agency Administrator (AA), starting "test fire". The prescribed fire was "self-extinguishing" after removing the drip torch from the fuels, it seemed that the fuels were dry enough but the soil moisture was too high with the recent precipitation. Even after incorporating multiple RXCM igniter's and altering the firing patterns, the fire would still not carry.

1540 a No-Go consensus was determined by the RXB2, FIRB, FMO and to suspend ignition operations on the burn. Prescribed fire was not meeting objectives. There was still time left in the day and given fuel conditions to conduct terra-torch training for equipment familiarization, for use later in the week along the fence lines. RXB2 notified the RXCMs about the No-Go on the burn, but would still conduct equipment training. The RXCMs were all inadvertently gathered up under a power line and after initial testing the terra torch, moved to a more favorable location at the "test fire." All RXCMs were then paired in groups of two.

1600 the event took place (see map X).

1630 FMO notified the AA that three acres were burned and RXCM would be returning to quarters after AAR.

1700 conducted tailgate After Action Review (AAR) and finished refurbishing tools and storing equipment.

Hindsight: It wasn't known that a burn injury had occurred until the next day.



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### A-House Rx 29 Acres



**X**= location of the burn injury/test fire location





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### The Event:

The first RXCM pair was given a briefing by a qualified Terra Torch Operator (TTO). RXCM #1 was holding the terra torch burn wand and RXCM #2 was assisting with the hose and coordinating terra torch pump operations. All had the proper Personal Protective Equipment (PPE), RXCM #1 was also wearing a face/neck shroud, although it did not cover his nose. Hindsight: RXCM #1 stated that, “covering my nose makes my eye protection fog up, thus impeding my vision.” Shortly after restarting the torch at the new location on the other side of the 26-acre unit, the trigger malfunctioned. The trigger was stuck in the open position. RXCM #1 was unable to stop the continuous flow of fuel. It created a short duration of intense heat; sufficient enough to cause other RXCMs standing nearby to automatically step back. RXCM #1, an experienced firefighter, kept the torch pointed in a safe direction away from others, and the TTO went to assist. The torch was immediately and successfully shut down and evaluated. It was determined that the terra-torch would need further diagnostics and training was then suspended.

The consequence of the malfunctioning terra torch wand, in combination with the placement of the face shroud, was that RXCM #1 sustained a 2<sup>nd</sup> degree burn on his nose. Evidently the burn injury wasn't fully communicated until two days later. Although RXCM #1 felt the radiant heat on his face, “I thought it was similar to a sun burn,” and didn't think much of it. Note: RXCM #1 also has experience with structure fires and stated that he “had taken more heat than that in a structure fire” and “was surprised by the blistered scab on the second day.”

The following day, the RXCM was taken into an urgent care facility for observation, was administered some topical ointment and release within a two hour period.



### What Worked:-participant's feedback

- A good, thorough pre-operations briefing.
- Safety mindset was present: such as relocating away from power lines, RXCMs sharing the location of safety equipment (such as a burn blankets) before the training started.
- Situational Awareness was a key facet in the training activity on all levels of supervision and experience.
- Medical protocols were followed once it was discovered that an injury had occurred.
- Safe travel to and from the project area.
- Time was spent effectively for conducting field training exercise.



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### Contributing Factors and Opportunities for Growth of our Safety Culture:-participant's feedback

- PPE was not fully utilized to the full possible extent.
- Some RXCMs may have become somewhat complacent while assignments shifting from firing operations to “just” conducting training.
- The wind change resulting from the location change was not consciously monitored.  
Hindsight bias discovery during FLA process: When the terra torch was first tested under the power line, the wind was blowing the heat away from the operator. In the northeast corner of the tract, the wind was blowing the heat onto the operator. (May or may not have contributed to injury)
- NWCG Qualifications for operating a terra torch do not require much experience beyond FFT2.



### Steps to Take Moving Forward: Lesson Learned

#### Personal Protective Equipment

- Use PPE as it is designed and intended – every time. Must be effective for the user.

#### Communications

- Have an alternate plan of action when the injured employee is the EMT.
- Intent is only clear when it is clearly communicated and understood by the audience. Eye contact with the audience helps make sure that is the case. Get an affirmation in response or “challenge response”.
- If someone doesn't fully understand, they should speak up immediately in the group setting – there may be other who don not understand as well.
- It is okay to take a time out to make sure you understand what you are about to do.

#### Medical Incidents

- Report all injuries all the time. Call it to the supervisor's attention immediately, even if it seems minor. Burn injuries can take 72 hours to mature.
- Follow the medical plan prepared for the project or in JHA.
- Have the EMT or other responding emergency medical personnel determine if an injury warrants further examination or treatment and, if so, how to transport the injured party



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### The Value of Experience

- Engage and involve experienced crew members because they “catch” problems, anticipate them, and follow SOP’s. Mix experienced personnel with those having less experience.

### Equipment

- Equipment and tools need regular maintenance as specified by the manufacturer. Maintenance logs for equipment should be considered.
- Specialized equipment requires specialized training and skills. If they are not available within the staff, they should be procured so safety is not compromised and the investment in that equipment is protected.
- Maintain proficiency and training in the use of specialized equipment.



End of Report.