



2019 Pothole Fire: Dozer Burnover

Lessons Learned Review

August 2019



TABLE OF CONTENTS

NARRATIVE	2
MAP OF FIRE AREA	3
SEQUENCE OF SIGNIFICANT EVENTS	4
POSSIBLE CONTRIBUTING FACTORS	7
LESSONS LEARNED	8
RECOMMENDATIONS	8
COMMENDATIONS.....	9
APPENDIX A: RFPA BACKGROUND.....	10
APPENDIX B: CURRENT IDAHO RFPA MAP	11

NARRATIVE

In the early afternoon hours of August 6, 2019, Mountain Home Air Force Base Range Control reported a fire incident to Bureau of Land Management (BLM) in the Twin Falls District. The fire was located within and adjacent to the United States Air Force Saylor Creek Bombing Range approximately seven miles south of Hammett, Idaho. The property is owned by Department of Defense but is protected through agreement by the BLM. Numerous federal resources were dispatched to the incident. Cooperators, including Rangeland Fire Protection Association (RFPA) resources also reported to the scene after being notified by BLM. (See [Appendix A](#) for background on RFPAs, and see [Appendix B](#) for an Idaho RFPA map.)

Remote Automatic Weather Station (RAWS) data from a nearby site show conditions during the incident included the following:

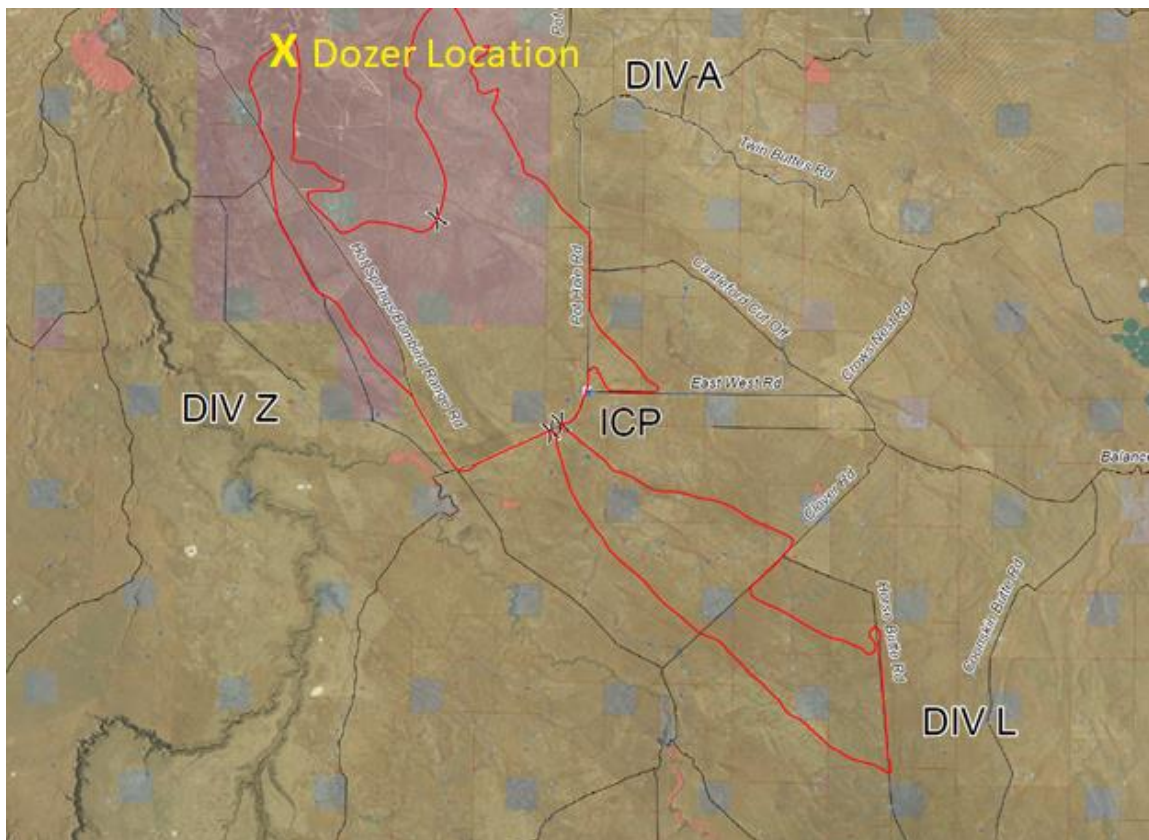
- Prevailing winds 4-9 mph out of the north/northwest with gusts up to 17 mph
- Afternoon high temperatures reached 100° F
- Relative humidity was around 15%

Initially the fire had two divisions: Division Alpha (A) on the east flank, and Division Zulu (Z) on the west flank; later in the incident, Division Lima (L) to the south was established. All divisions were staffed by a combination of federal, and cooperator resources, including RFPAs. The head of the fire was pushing to the southeast, and the heel of the fire was backing slowly to the north/northwest.

An RFPA Dozer arrived on scene in Division Z, and the Incident Commander (IC) instructed the dozer operator to begin direct line construction from Hot Springs/Bombing Range Road northward toward the heel of the fire. The operator reported to the Lessons Learned Review (LLR) team that the dozer had overheated two or three times while constructing the line. In each instance, the operator allowed the equipment to cool before proceeding. The operator stated that approximately three hours into the operation while attempting to cross a drainage filled with dry tumbleweeds, the machine overheated again and went into limp mode, de-rating the power. At the same time, the fire reached the dry tumbleweeds.

The fire intensity, heat, and flame length increased quickly and dramatically. Without sufficient power (in limp mode), the dozer was unable to move quickly enough to escape the approaching fire, and the operator jumped out and retreated to the burned (black) safety zone. The operator escaped with only singed hair on his hands and head.

MAP OF FIRE AREA



SEQUENCE OF SIGNIFICANT EVENTS

Note: These events are recorded from both the Pothole Fire Dispatch Log and statements from the individuals involved.

8/6/19:

1319 hours	dispatch log	Pothole Wildfire reported to South Central Idaho Interagency Dispatch Center. Location: Northeast corner of the Saylor Creek Range, seven miles south of Hammett, ID. Lat: 42° 46' 36.98" Long: 115° 31' 26.05", T7S, R8E, SENW Sec 33
1326-1433 hours	dispatch log	Multiple federal resources responded to the incident from both Twin Falls and Boise BLM Districts (engines, dozers, water tenders, overhead).
1344 hours	<i>statement</i>	Two local RFPAs are notified of fire, but are initially told the fire is within the restricted area of the Air Force Bombing Range and they would not be needed at this time.
1400 hours	dispatch log	Initial BLM Incident Commander (IC) from Hammett Guard Station (Boise District BLM) arrived on scene. Fire was estimated to be 250 acres pushing to the south/southeast.
1418 hours	dispatch log	Fire size updated to 500 acres.
1451 hours	dispatch log	Fire size updated to 1300 acres.
1514 hours	dispatch log	A new IC from Twin Falls District BLM assumed command of the incident and reported that the north side of the fire had minimal flames, and requested an additional dozer, water tender, and three additional engines.
1600 hours (approximate)	<i>statement</i>	RFPA Director received information that the fire was out of the restricted area and increasing in size.
1605 hours	<i>statement</i>	RFPA Dozer responded to the west flank of the Pothole Fire.
1620 hours	dispatch log	IC updated dispatch, fire crossed Bruneau Hot Springs Road and estimated fire size at 7,000 acres.
1625 hours	<i>statement</i>	RFPA Dozer unloaded where the west flank of the fire edge met the Hot Springs/Bombing Range Road in Division Z. Dozer operator received a briefing from the IC.
1625 – 1940 hours	<i>statement</i>	RFPA Dozer was cutting direct line to the north, on the northwest corner of the fire in Division Z. This area of the fire had only creeping and backing fire in light grassy fuels. Topography varied from flat areas on the canyon rim to multiple steep drainages into the main canyon where the fire had already burned. The dozer operator was operating alone.

8/6/19 Sequence of events, continued:

1725 hours	<i>statement</i>	RFPA Dozer began to overheat, and the operator pulled into the black to let it cool down before proceeding. During this cool-down, the operator talked with another RFPA member who was checking on their status.
1726 hours	dispatch log	Fire size updated to 25,000 acres.
1730 hours (approximate)	<i>statement</i>	An RFPA Engine was originally tasked to work in support of the RFPA Dozer; however, due to high fire activity en route, they were unable to reach the dozer location and were reassigned by another RFPA resource.
1815 hours (approximate)	<i>statement</i>	RFPA Dozer operator experienced a second overheating issue and had to stop operating to let the machine cool down again.
1935 hours (approximate)	<i>statement</i>	RFPA Director checked dozer operator's status, and they did not report any issues.
1940 hours (approximate)	<i>statement</i>	RFPA Dozer cut line adjacent to a ridge and down approximately 250 yards into a drainage. In the area where the dozer attempted to cross, an abundance of dead tumbleweeds likely camouflaged the actual depth of the drainage. The operator determined that more material (soil) needed to be pushed into the drainage to enable the dozer to make it across/through the drainage. The operator pushed one load of soil into the wash, backed up, pushed in a second load of soil, and then attempted to proceed up the opposite side.  <i>Tumbleweed-filled drainage, similar to where the turnover incident occurred.</i>

8/6/19 Sequence of events, continued:

1943 hours	dispatch log	IC estimated containment time at 1800 on 8/7/19.
1949 hours	<i>statement</i>	As the operator proceeded upward out of the wash, alarms began going off inside the dozer cab and the dozer entered limp mode, significantly decreasing the power to the machine. With decreased power and the fire quickly approaching in heavier fuel (thick dead tumbleweeds), the operator exited the dozer and retreated to the black/safety zone. The operator indicated that if they had waited any longer, within seconds they would not have made it. The operator's hair was singed on their hands and head, but they did not suffer any other injuries.
1953 hours	<i>statement</i>	RFPA Dozer operator notified RFPA Director (who was working another area of fire) via text message that "I lost the dozer." RFPA Director received the text via Garmin inReach.
2030 hours (approximate)	<i>statement</i>	RFPA Director contacted the IC by radio and indicated that the dozer in the northwest corner was disabled and other equipment was en route to take over. The RFPA Director did not indicate the severity of the incident because they did not want to divert attention from the firefighting effort as nobody was injured. The RFPA Director attempted to contact the IC and Division Supervisor (DIVS) by cell phone to give more details. Due to poor coverage, this took over an hour to accomplish.
2055 hours	dispatch log	Fire size estimated at 70,000 acres.
2203-2215 hours (approximate)	<i>statement</i>	• An engine supervisor learned more details about the dozer incident from the RFPA Director and contacted the DIVS-Z informing them to contact RFPA Director (and sent contact information via text). • DIVS-Z contacted RFPA Director who informed that a dozer had overheated, backed into the black and was destroyed, but the operator was okay. • DIVS-Z relayed this information to the IC. At this time, the head of the fire was 15-20 miles away from the dozer and the activity level was very high. • The RFPA Director, DIVS-Z, and the IC were all comfortable with the information that the dozer operator was okay and their attention was on the active fire and the safety of the individuals fighting it.
2233 hours	dispatch log	IC reports to Dispatch that an RFPA dozer broke down and pulled into the black and burned up; operator is ok but wants it in the log and would like to order a safety officer.

8/7/19:

0816 hours	dispatch log	Division reports to IC that fire is lined and knocked out.
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POSSIBLE CONTRIBUTING FACTORS

Equipment: 2007, John Deere Dozer, Model 750J

Despite being a well-maintained piece of equipment, this make/model has a history of overheating issues and entering limp mode while operating on fires. In 2016, a [Rapid Lesson Sharing document](#) was created addressing these issues (see recommendations section for web address and hyperlink).

Recent History of Known Issue

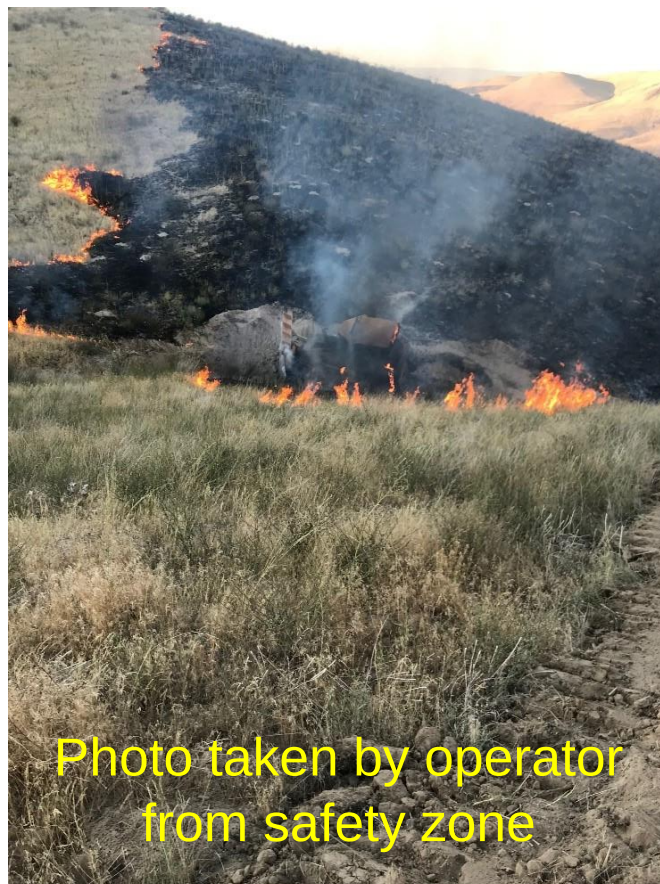
This same dozer had similar issues and went into limp mode in 2018 on the Cat Fire. After this instance, it had major repair work done. Since these repairs, it has operated on two previous fires this year, without issue.

Fuel Conditions

At the location where the dozer attempted to cross the drainage to continue cutting line, there was an abundance of dead tumbleweeds. The tumbleweeds likely camouflaged the actual depth of the drainage. As the dozer entered the drainage, the fire behavior was described as creeping and backing fire in light grassy fuel. The tumbleweed-filled drainage was a major change in fuel type, which intensified the fire activity.

Experience Level

The operator's qualifications meet the requirements for an RFPA resource; however, firefighting knowledge and experience level may have been a contributing factor in the turnover.



LESSONS LEARNED

Addressing Equipment Issues Immediately

If frequent equipment issues (such as overheating) are experienced during suppression operations, they should be addressed appropriately. Cooling the engine temperature by continually stopping and starting operations is not adequate. With persistent problems, consider replacing the equipment, changing tactics, or discontinuing the operation.

Communicating Relevant Details

When an accident this severe in nature occurs, it needs to be communicated accurately to everyone within the chain of command so that the situation can be addressed appropriately and timely. During the course of this incident, unclear information was provided, and the IC was unaware of the severity until several hours later.

Operating Alone

The initial plan for the operation was to have an RFPA Type 6 engine operating with the dozer for support. The engine was diverted, and this resulted in the dozer operating alone. Although the dozer had communication with others throughout the incident, having additional personnel to assist would have been beneficial.

RECOMMENDATIONS

- Current guidance addresses medical incidents but not major equipment incidents such as this. We recommend fire management/leadership discuss what defines when an incident within an incident should be declared.
- Current policy does not require cooperator equipment to operate with support personnel (such as a swamper). In this instance, the dozer operator met the qualification standard identified in the RFPA agreement and had communication with the IC and the RFPA Director, but no other resources were working directly with him. It is recommended that whenever possible experienced personnel be assigned to support heavy equipment, act as a lookout/scout, watch for slop overs, and advise on tactics.
- Continue to seek and provide additional training opportunities for fire organizations who regularly operate together. This will enhance firefighting knowledge, skills, and abilities while continuing to foster relationships. This could include district equipment workshops for heavy equipment and engines. RFPA members are encouraged to attend NWCG courses at local wildfire academies.
- The Review Team heard several times that the fire was “just backing and creeping in light grass.” The nearest RAWS recorded temperatures around 100° F and relative humidity in the mid-teens. Review the “*Common Denominators of Fire Behavior on Tragedy Fires*” Incident Response Pocket Guide 2018, page 5. How would you apply the common denominators to this situation?
- Review the 2016 Rapid Lessons Learned documents for resources operating this type of equipment. <https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=5f6bbf7f-d909-116c-adc9-b6e62b8b2056&forceDialog=0>

COMMENDATIONS

All resources involved in this incident are commended for their willingness to cooperate in the Lessons Learned Review. It is apparent that the working relationship between the BLM and RFPA resources is strong and each benefits greatly. Without the RFPA equipment, strong cooperation, and assistance, the fire could have been significantly larger.

Pothole Fire Dozer Burnover Lessons Learned Review Team:

Rick Finis – Team Lead (Southern Idaho Fire Program Liaison, Idaho Department of Lands)

Mike Guerry – Cooperator Representative (Chairman, Three Creek RFPA)

Mike Hislop – Subject Matter Expert (Equipment Specialist, BLM)

Bruce Hillman – Subject Matter Expert (Dozer Operator, BLM Utah)

John Fitchner – Subject Matter Expert and Team Scribe (Equipment Specialist, BLM)

Amy Johnson – Editor (Technical Writer, Idaho Department of Lands)

APPENDIX A: RFPA BACKGROUND

Rangeland Fire Protection Associations (RFPAs) have been active in southern Idaho since 2012. Prior to 2012, ranchers were not able to safely engage on fires with cooperators. Legislation was passed in 2013 to provide a process to allow the RFPAs to "...enter into an agreement for the detection, prevention or suppression of forest and range fires with the state of Idaho..." (Title 38 Idaho Code, 38-104B). Once an RFPA has an agreement with the state, they are then able to enter into agreements with federal agencies.

The RFPAs are non-profit, all volunteer associations and do not receive compensation. Idaho BLM Districts provide NWCG fire training for all RFPA members including S130/190 and RT130. The trained members are "red carded" through Idaho Department of Lands. Their qualification is RFPA Firefighter.

Firefighting equipment is provided through the member ranch operations as well as equipment provided through the State of Idaho and BLM programs.

The following is quoted from Mike Guerry, Three Creek RFPA Chairman:

"Saylor Creek and Three Creek RFPAs began operating in 2013, with some reservation and concern from both BLM IA Firefighters and Ranchers. In that first year, it only took a couple responses to fires with both sides operating in a professional manner for the partnership to grow and flourish. As the years have passed, our confidence and trust in each other has created an environment where our coordinated attacks have become safe, effective, and well organized.

Much of the credit for this growth goes to the fire leadership in the BLM Twin Falls and Boise Districts. They have provided not only strong leadership for us to emulate, but have set us up for success with their training, communication, and command skills. Success is also due to RFPA members and their desire to improve on their tactical and safety skills. Therefore, we have truly become a team that works hard for success.

RFPAs are not dispatched through the agency dispatch centers. Often, fires are reported to the dispatch center by the RFPA, which has also initiated a response by members. If the RFPA has not reported the fire, they are often notified by the responding Incident Commander.

To highlight this partnership, on a fire a couple years back, the IC on scene made his first request for resources. He requested dispatch contact Three Creek RFPA to see what assets they could make available for the incident. No hesitation and no concern; just please respond as rapidly and effectively as you can. As has been said in more than one instance, it comes down to three things: One, it is about the partnership, two, it is about the partnership, and three, it is ultimately about the partnership!"

More information about the Idaho RFPAs can be found at the Idaho Department of Land's website at www.idl.idaho.gov/fire/rfpa.

APPENDIX B: CURRENT IDAHO RFPA MAP

