

### Background

Task Force 6 has always been heavily engaged in fuels mitigation work. Due to the heavy underbrush in the Lost Pines region, fuels mitigation is key to reducing the potential for catastrophic wildfires. Fuels breaks give firefighters the space they need to operate safely. One of the most effective methods of reducing understory fuels is to operate a masticator (mulcher). Utilizing a mulcher in a thick understory reduces the number of staff needed and decreases the amount of time spent on the project.

### Narrative

Over the last few months, the Task Force has been assigned to a fuels project along Park Road 1C in Buescher State Park. The project area (28 acres) consisted of Yaupon, Juniper, Oak, and scattered Loblolly Pine. Once completed, the area will provide a break in fuels for several private and public properties that have been threatened by wildfires in the past.

#### Incident One

On Wednesday, March 27, Operator Tim arrived at the project site to begin mulching. Tim had spent the previous two days mulching with the Vermeer FT100. This machine has been utilized by the Task Force for several years and Tim has about 2.5 years of operating experience on various mulching machines. Generally, the Task Force tries to send two individuals to each mulching project. One serves as an operator and one serves as a swamper. The swamper flags hazards and assists the operator with maintenance. On this day, the swamper called in sick but Tim felt comfortable operating the machine by himself.



Picture 1: Vermeer FT100 Mulcher

After a few hours of mulching, Tim smelled smoke, maneuvered the machine back onto the road, and shut it down. However, he realized that the boom was still lifted, blocking his exit from the cab. He started the engine up, lowered the boom, shut it back down, and exited the cab. After exiting the machine, he noticed light smoke and flames but then heard a pop and noticed that the amount of smoke decreasing. Then, he hiked up a hill to get cell service. He called 911, his supervisor, and made a call over the radio to his home unit. He grabbed a fire extinguisher from his truck and returned to the machine. When he arrived at the machine, he noticed that the fire intensity had increased and began burning mechanical parts. He tried using the extinguisher but it was ineffective due to the location of the fire.

After receiving the call, the home unit decided to send a Type III engine to the site. The local Volunteer Fire Department (VFD) sent two engines. The Type III arrived and suppressed the fire before the VFD engines arrived on scene. Suspected cause of the fire is debris build-up in the engine compartment.

## Incident Two

On Tuesday, April 16 at 09:00, Operators Bob and Tim arrived at the project site to begin mulching. Bob and Tim had worked on the project the previous day using a Takeuchi TL150 Supertrak. The machine has been utilized by the Task Force for 15 years and Bob has about 3 months of operating experience on various mulching machines.

The plan for the day was for Tim to serve as a trainer/swamper. Bob began working by clearing Juniper. After an hour of operation, the machine lost engine power but the dash lights were still on. As soon as the machine lost power, the cab filled with smoke. After some difficulty opening the cab door, Bob exited the machine. Tim heard the machine shut down, looked over and saw smoke. After checking with Bob, Tim hiked up the road to get cell service. He called 911, his supervisor, and his home unit. While Tim was making calls, Bob watched the machine billow white smoke and become fully engulfed. Bob states that this all occurred within a minute and a half of exiting the machine.



Picture 2: Takeuchi fully engulfed on April 16

Again, the home unit and local VFD both sent engines. The fire extinguisher had not been replaced after the last use but due to the intensity of the fire, it is suspected that the extinguisher would not have made a difference. The home unit's Type VI and local VFD engine arrived at about the same time. Due to pump issues on the VFD engine, the Type VI ran a hose line and suppressed the fire within a few minutes. Suspected cause of the fire is due to mechanical failure.

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*When we were scouting the site – we talked about how it would be a bad day if the machine fell into the creek.*

*-Bob*

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## Lessons Shared

- *Development of Standard Operating Procedures*

Fuels projects are unique. There are documents that guide training, qualifications, and operations as they relate to wildland fire response and prescribed fire. Some of these procedures apply to fuels projects but most of them do not. We have set standards for prescribed fire and chainsaw projects, but we do not have anything specific to mulching projects. What is the difference between these? Are there different levels of risk?

- *Maintenance*

There is no set standard for mulcher maintenance. We have multiple mulchers across the state and each office utilizes a different approach. It would be beneficial for experienced operators to work together in developing a standard maintenance program.

- *Training*

We have all types of training for different positions. From saws training to incident management, but there is no standard for mulcher training. Most employees learn how to operate a mulcher from 'On The Job' training, which is valuable but needs to be used in conjunction with a formal training program.

- *Safety Briefs*

Briefings are a part of life in this business. Whether we are on an incident or a project, we preach 'safety'. Since mulchers are a specialized piece of equipment, it would be a good idea to review our Job Hazard Analysis (JHA) and curtail them to the specific hazards that mulchers present.

- *Contingency Plans (Incident within an Incident)*

There should be a plan in place to get the operator to safety in the event of a fire or accident. The operator should know how to escape the cab, a suppression unit should be available, employees should know the medical plan, and a communications plan should be in place. Could the IRPG be used for project work?

- *Staffing*

During the first incident, Tim was operating the mulcher by himself. While this may be perceived as adequate, having a second person on hand to help with scouting, maintenance, and contingency plans would be beneficial.

- *Reporting System for Equipment Issues*

We do not have a system in place for tracking equipment issues that provides visibility. It would be beneficial for supervisors and operators to be aware of recurring issues happening to similar types of equipment in other parts of the state.

## Outside Expertise

The FLA team reached out to private industry to find out what their maintenance standards are. Below are some of the common practices:

- Clear debris build-up from machine twice a day or more if necessary
- Full wash; minimum once every two weeks
- Pretreat any debris that can't be removed from belly pan with water
- Operate it like you're personally paying for any repairs



Picture 3: Operator's seat in Takeuchi after incident

Machine	Vermeer FT100 Mulcher	Takeuchi TL150 Supertrak
Date of Incident	3/27/19	4/16/19
Total Hours Logged	923	1757
Year	2015	2004
Belly Pans Dropped	3/25/19	2/8/2019
Hours Operated since Belly Pans Dropped	4	13
Operator Experience	2.5 Years	3 Months
Repair Cost	\$11,000	Total Loss

Table 1: Differences between Vermeer FT100 and Takeuchi Supertrak