

Rapid Lesson Sharing

Event Type: Crush Injury During Winching Operations

Date: February 5, 2022

Location: National Forests in Alabama,
Oakmulgee Ranger District, Compartment 68 Rx

Hand Crush Incident During Winching Operations

The operator unintentionally engaged the winch in gear, immediately crushing the swamper's hand in between the roller ball and the winch cable. He was able to quickly pull his hand away, but not before his left index and middle finger were crushed.

Incident Description

On the morning of February 5, 2022, the Oakmulgee Ranger District was preparing multiple compartments for prescribed fire by using several dozers at different compartments.

Compartment 68 was one of the designated compartments the unit was preparing to burn the next week. During the morning operational briefing, two firefighters were assigned to work Compartment 68's 915 acres on a John Deere 450J.

With the large number of detailers that were from other forests and other regions, the Fire Management Officer (FMO) gave a thorough safety briefing that covered specific concerns on the Ranger District, to include winching operations that were likely to occur with the wet and soft soils that he had been seeing.

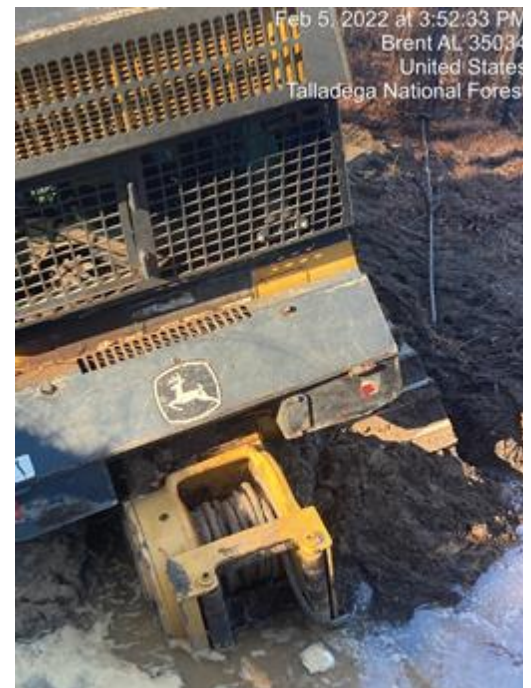
The dozer operator that was assigned to the Compartment 68 was a detailer. During the safety briefing, the FMO therefore discussed the winching capabilities on that specific dozer with the operator, as well as with the entire group. In the past, the winch on that specific dozer was known for not having enough power to pull itself out of some situations. Additionally, that winch did not have a "let out" gear as do many other dozer winches, requiring the swamper or operator to manually pull the cable out. As part of the safety briefing, the group also discussed general winching safety that is part of the unit's Job Hazard Analysis (JHA) for dozer operations.

Dozer Becomes Stuck

Following the briefing, the swamper and dozer operator called into dispatch, and went to work on Compartment 68. As the operator and the swamper were unloading the dozer, they noticed some ground moisture—but nothing that concerned them about "prepping" the line. After about two and half hours of line prep, they had made significant process, until the dozer became stuck in some soft dirt and could not



John Deere stuck in the mud on the C-68
Prescribed Fire line prep.



Picture shows the winch cable under the
dozer tracks, winched to a tree in front
of the machine.

crawl itself out of the hole that the back of the dozer had created. The dozer operator was not concerned and called the swamper over to help so they could recover themselves.

The original plan was to winch to a tree directly behind them. However, when they started to pull the winch in and turn the tracks, the dozer sunk deeper into the dirt. The second attempt was to winch to a tree off to the side and use the blade to help “walk” over the dozer, but the dozer sunk further to a depth of 3-4 feet at the back end. The team then tried to winch to a tree in front of them and pull forward while using the blade to help “walk” out of the hole.

Swamper’s Hand is Crushed

During the third attempt, the winch cable was routed from the back of the dozer, where it was mounted, to a tree right of center as it was the only one large enough and close enough to winch from. This made the winch cable run parallel to the dozer tracks on the right of the equipment. As the dozer started to wind the winch cable in, the cable slid under the tracks, and became buried in the mud. The team knew that they were not going to be able to winch forward on top of the cable from that tree and planned on trying to route to another one that would keep it from sliding under the dozer tracks.

The operator immediately jumped out of the dozer and started to provide first aid. They started toward the chase truck, located about a half a mile away, and informed dispatch that there was an injury and they were heading to Bibb County Medical Center.

The swamper then jumped down into the hole the dozer had made in the dirt and started to try and pull the cable out manually, standing just behind the dozer track and to the side of the winch box. The operator was having a hard time engaging the winch into freespool, and had to “slam” the actuator lever into place. With the winch cable coming directly off the roller bar and caught under the dozer track, it left the swamper only about two feet of cable to hold and pull on, forcing him to hold the cable right next to the roller bar on the winch box. As he grabbed the cable and attempted to pull it out, the operator unintentionally engaged the winch in gear, immediately crushing the swamper’s hand in between the roller ball and the winch cable. He was able to quickly pull his hand away, but not before his left index and middle finger were crushed. He quickly yelled to the operator that his hand had been crushed, showing him his hand where the glove was torn.



Picture shows the small amount of winch cable to pull, the tight area the swamper was working in, and how the cable was pinned under the track.

The operator immediately jumped out of the dozer and started to provide first aid. They started toward the chase truck, located about a half a mile away, and informed dispatch that there was an injury and they were heading to Bibb County Medical Center. The swamper called the FMO at the same time and informed him that he had probably severed several fingers and they would be in route to the hospital. The FMO met the swamper and the operator at the medical center and the firefighter was able to receive immediate care.

The initial medical diagnoses was that the swamper had crushed two fingers and would require surgery to place pins in the broken bones of those fingers, with an optimistic outlook that there would not be any permanent damage to his fingers.

In addition, a Hospital Liaison was assigned to the swamper to assist him in working through the usually complex OWCP process.

Lessons Learned

- 1- **Become familiar with unfamiliar equipment before you take it to the field.** While the dozer operator was qualified to use the machine, he hadn't used this type of winch before on this machine. His normal equipment had a winch that had a "let out" gear that did not use "free spool." It was not until he was in the field that he determined the actuator lever needed to be forcefully engaged. While equipment operators are not required to "run out" the winch before they use a dozer, it could prevent unplanned incidents if operators know the "ticks" before using another unit's equipment.
- 2- **As the risk increases, over-communicate all your actions as you engage.** Operationally, the team was working within their training and qualifications, however the circumstances significantly increased the risk of the winching operation. The swamper needed to pull out the cable in a very small space and the operator needed to engage the free spool that was acting up. Taking the time to verbally communicate all the "small" steps as they went through this process could have significantly reduced the chance of a bad outcome.
- 3- **If at first you don't succeed, you don't have to try and try again if there is another dozer.** Winching operations are common and frequent. The team did not initially consider calling the other dozer, as they were working within their scope and training. However, they later recognized that they should have called for help earlier. They did not want to have to take working equipment away to simply pull them out. The FMO later commented that it is sometimes difficult for people to want to ask for help when they are expected to get the job done.
- 4- **Defer to expertise early and often.** The FMO immediately recognized that this was a serious accident and would need some special expertise to be involved. He called his District Ranger and engaged with a Hospital Liaison within hours of the incident happening, heading off a lot of frustration that could have potentially been involved with this incident. By making those calls early, he allowed subject matter experts to manage this potential confusion.

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