Rapid Lesson Sharing

Event Type: Skidgine Rollover

Date: August 7, 2020

Location: Neals Hill Fire, Burns Interagency Fire Zone, Burns District, BLM Oregon

"I am thankful that I was wearing my seatbelt and hard hat."

Skidgine Operator

Skidgine Rolls from Three to Five Times

On August 5, a lightning storm ignited the Neals Hill fire in eastern Oregon in the Burns Interagency Fire Zone.

Two skidgines were assigned the next day.

Skidgine A Assists with Suppressing Hotspots

On August 7, all resources were briefed. The two skidgines where assigned to support the resources in Division A. At approximately 1500, Skidgine A was asked to support a Type 2 Crew working on the south end of Division A.

Skidgine A worked one hotspot with the crew and was then asked to proceed up the hill and assist with another hotspot. The operator of Skidgine A, a local contractor, informs: *"While I was sitting there that day I could hear rocks rolling off the mountain inside the black. So I knew the ground was unstable. But it slipped my mind when I was asked to come up to that second hotspot."*

At that time it was estimated that Skidgine A had approximately ¼ tank (200 gallons) of water remaining.

Skidgine Shifts Weight on Half-Buried Boulder
Skidgine A resituated and proceeded to that next hotspot, located approximately 100 yards away. Once there, the operator decided that there was a good flat spot where he could turn around, point his skidgine downhill, and back into the hotspot to better assist the crew.

"It was not very steep," reflects the Skidgine A operator, *"and so I did not feel uncomfortable at any point in time. I am thankful, however, that I was wearing my seatbelt and hard hat."*

As he made the turn and headed downhill, the Skidgine A operator felt the machine shift sideways as his rear right tire rolled off a half-buried two-foot boulder that rolled to the surface. Slopes were estimated at approximately 20 percent.

The operator recalls that it felt as if the machine was going to tip over. He therefore made the decision to drop the blade in an attempt to stabilize the machine. In doing so, according to witnesses, the machine proceeded to roll over three to five times.

The Skidgine A operator recalls: *"It was all very slow motion. I was able to turn the machine off between the first and second roll. The machine rolled a couple more times and then came to a stop. At that point, I turned the master off and then I felt it was stable enough for me to crawl out."*

View of boulder that shifted from beneath the skidgine's rear tire resulting in the imbalance that led to the rollover.

Photo taken from the location of the initial rollover site looking down at the skidgine's final resting place.

Incident Within an Incident Initiated
An Incident within an Incident (IWI) was initiated, with Division A assuming command. A Medical Incident Report (MIR) was called into Dispatch from the IWI Incident Commander. A Rapid Extrication Module (REM) had arrived on the incident prior to the rollover and arrived at the IWI at 1622.

The REM completed a patient assessment. It was determined that the operator sustained no injuries and was released from the incident. Damages to the skidgine were minor, mostly cosmetic—not structural or mechanical

Observations from NW Team 9 Safety Officer: *"Upon my initial review of the scene, the skidgine was not operating on excessive slopes or overly rugged terrain. There was no glaring cause evident other than the shifting rock under the rear passenger tire. Additionally, the operator was wearing his seat belt and the roll cage performed as designed, which led to the positive outcome of no injuries."*

Lessons

- You may be operating within the slope capabilities of the equipment. However, big, loose rocks change the slope percentage each time you go over one, making the slope much steeper within a two-foot area.
- Heavy Equipment Bosses should be assigned to work with heavy equipment. While the lack of supervision did not contribute to this incident, it may have allowed for a spotter on the ground to help identify hazards.
- While it is good practice to utilize your blade to stabilize your equipment, in this instance, the operator stated that this may have contributed to his rollover.
- The operator stated that that they had low tire air pressure and may have over-inflated the tires. Over-pressurization can reduce wheeled machines' ability to absorb some of the impact on the sidewalls—adding to instability.
- The operator stated that at the time the Skidgine did not have any extra ballast in the tires. It is common for machines operating in steep country and side hills to add fluids as extra ballast. The factory tire is a 28L-26 which can hold 157 gallons. Adding fluids such as beet juice or calcium at 50 percent of the tire's capacity, could add roughly 3,500+ pounds of weight below the axle. This extra ballast can help with the sudden shift of weight when water in the tank is suddenly shifted. It is unknown if this would have made a difference in the final outcome of the incident.

Fluid	Weight per gallon	Additional weight per tire	Total additional weight
Water	8.34 lbs.	655 lbs.	2618 lbs.
Beet Juice	11 lbs.	864 lbs.	3454 lbs.
Calcium Chloride	11.5 lbs.	903 lbs.	3612 lbs.

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Fifteen Cent Lake Fire Rollover

Rapid Lesson Sharing

Event Type: Skidgine Rollover

Date: Aug. 11, 2014

Location: Fifteen Cent Lake Fire, Oregon

Est. 2002

Skid #2 Rolls Five Times

Skid #2 started to adjust the back end of the skidgine to be fully pointed downhill when several rocks kicked loose and rolled out from under the rear tires. This action changed the ordination and angle of Skid #2, jarring it toward the front right tire (the downhill side)—causing Skid #2 to rollover.

Skid #2 rolled five times before coming to rest on its right side, approximately 200 feet down slope. When Skid #2 stopped rolling, the operator immediately jumped out of the skidgine, under his own power, and ran clear of the machine—thinking it might roll again.

LESSONS

- Always remember: Skidgines are NOT dozers.
- You may be operating within the slope capabilities of the equipment but big, loose rocks change the slope percentage each time you go over one, making, the slope much steeper within a two-foot area.
- HEQBs and Equipment Operators need to stop just short of the limitations of the equipment and the operator to allow for an extra margin of safety.
- Not all skidgines are built the same. Skid #2's tank was positioned higher than the tank on Skid #1—changing the center of gravity and making Skid #2 more top heavy.
- HEQBs and Equipment Operators need to keep in mind the effects that rocks and uneven terrain have on the stability of the equipment. If this had been the exact same slope but without all the loose rocks, the skidgine would likely not have rolled over. (The rocks kicking loose from under the back tires caused Skid #2 to rollover.)
- Make sure items in the cab are secure to handle a rollover. Items such as tool boxes, fire extinguishers, and floor plates. If they are not secured, these things could hurt you more than the rollover.