

# Panther Fire Equipment Recovery

## Lessons Shared



The Panther Fire occurred on September 12, 2017 in southwest King County, Texas. During the first evening of the fire, there was an accident involving a Texas State Type II dozer driving into a ravine. Shortly following the dozer accident, a Kent County motor grader rolled over into another ravine. That accident occurred approximately ½ mile away on the same fire line. The details of this incident have been outlined in the *Panther Fire Dozer Accident and Motor Grader Rollover Lessons Shared* report. Following the accidents, additional state resources were ordered to respond to manage recovery of the equipment involved. This consisted of Operator 1 with a Type I dozer and Operator 2 with a Type II dozer. All equipment involved in the accidents was left in place at the request of Operator 1. A sound assessment of the situation and equipment's condition would be completed upon their arrival.

### Dozer Recovery

On the morning of September 13, 2017, Operator 1 and Operator 2 departed from Merkel, TX. Both operators arrived on the scene of the dozer accident at approximately 1100. They began by assessing their options to recover the dozer from the 10-foot deep ravine. The Panther Fire was still actively burning at this time. However, the fire had been suppressed near the dozer location due to the previous day's operations. The dozer was nearly turned on its right side with the top of the cab supported by the ravine wall and the blade braced in the soil at the bottom. Operator 1 assessed the situation, discussed options with another operator, and developed a plan. Upon further consideration, the original plan was changed to ensure the dozer would not continue rolling over into the ravine.



Looking into ravine from fire line

Operator 1 began to dig soil out from under the rippers at the rear of the dozer. This allowed the tracks to contact the ground and eliminate the possibility of the dozer rolling over. After the dozer was sitting level in the bottom of the ravine, Operator 1 began pushing soil into the ravine. This was started behind the dozer to create a ramp that the dozer could be winched up. After the ramp was pushed, Operator 1 positioned their dozer in front of the stuck dozer to push it, blade to blade. Operator 2 hooked the cable from his rear-mounted winch to the rippers of the stuck dozer. Operator 2 then winched the stuck dozer while Operator 1 pushed the dozer safely out of the ravine. The total time from arrival to dozer recovery was roughly 45 minutes.



**Looking into ravine after dozer removal**

The dozer was allowed to rest on a level surface for approximately one hour to ensure fluids were not pooled to one side. All fluid levels were then checked, and a thorough walk-around inspection was completed to verify the dozer was safe to start. Once complete, the dozer started with no issues. The dozer was tested by Operator 1. He tracked around and push soil to ensure proper operation. The dozer was then tracked out by a different operator where it was loaded on its transport and taken back to its home unit for a detailed inspection. The only repair needed following the accident was the replacement of a rock guard that had fallen off, which likely was

not caused by this incident. There were also minor scars on the rippers and blade from the recovery operation. The dozer was returned to service on September 22, 2017.

### **Motor Grader Recovery**

Following the removal of the dozer from the ravine, Operator 2 was requested to assist with suppression operations. Operator 1 moved the type I dozer to the scene of the motor grader accident. The motor grader was upside down in the bottom of a 30-foot deep ravine with both sets of rear tires against the ravine walls. Kent County officials discussed a potential plan with Operator 1 to safely remove the motor grader. The first idea was to order a crane to the accident site and hoist the motor grader from the ravine. This idea was determined to not be feasible due to the remote location of the accident site and poor road conditions that would limit access of a crane. The second recommendation was to hook a cable from the Type I dozer to the front of the motor grader, stand it up vertically, and then pull it out of the ravine. This was attempted, but could not be completed due to the weight of the motor grader.

The executed plan was to cut away the north wall (left side of motor grader) of the ravine, next to where the left, rear tires were against the wall. Operator 1 used the Type I dozer to deliberately push soil into the ravine on the north side. Operator 1 used extreme caution working around the ravine rim. After pushing several times toward the edge of the ravine, the wall began falling into the ravine. Operator 1 continued to push down into the ravine, parallel to the motor grader. This created a small wall that remained next to the grader. The wall slowly began to fall into the area where Operator 1 was working, revealing the rear tires. Operator 1 continued constructing a ramp alongside the motor grader, pushing dirt all the way into the bottom of the drainage. Upon completion of the ramp, Operator 1 positioned his dozer in the bottom of the widened ravine perpendicular to the motor grader.



**Motor grader in ravine, looking down from fire line**



**Type I dozer preparing to roll motor grader, looking into ravine from south rim**

A cable was connected from the back of the dozer to an anchor point on the underside of the motor grader. The motor grader was then slowly pulled from its roof to its left side. The cable was then re-attached to an anchor point higher on the frame of the motor grader. The grader was slowly pulled back on to its wheels. At this time, two Texas State Type II dozers, previously engaged in suppression, stopped at the site to observe the recovery. Due to the location of the grader after up-righting, Operator 1 could not maneuver his dozer to exit the ravine. It was then decided to utilize the

Type II dozers to winch the motor grader up the ramp from ravine. Due to the inability to start the motor grader, it had to be removed with the brakes engaged. The first dozer connected the cable from their rear-facing winch to the rear of the motor grader. While attempting to winch the grader the dozer was pulled toward the ravine. The second dozer connected their rear-mounted winch cable to the front of the first dozer to act as an anchor. The first dozer then winched the grader to the top of the ravine. Both dozers were then repositioned, and the grader was winched the remainder of the way to the fire line. Total time of recovery for the motor grader was approximately 4 hours.

Once removed from the ravine, the motor grader was allowed to rest on-site overnight. The following day, Kent County contracted a qualified service technician to unlock the brake system on the motor grader. Operator 1 then used the Type I dozer to tow the grader roughly 2 miles to a county transport. County personnel used a second motor grader to push it onto the transport. It was then taken back to a Kent County facility. Upon visual inspection, there was some damage to the engine housing, a broken side window from rolling over during recovery, a broken windshield from the operator using that as an exit point, and some dings on various other parts. The motor grader was not back in service as of the date of this report.



**Two Type II dozers pulling motor grader from ravine**

## **Conclusions**

Considering the potential for equipment damage and operator injury in these accidents, the outcome should be considered a success. Both operators only suffered bumps and bruises, and the damage to the equipment was minimal. The knowledge and experience of the operators involved in the recovery operation certainly made the success possible.