

A 45 year old male employee working as a ride operator-in-training, was caught between the turntable of the Wisdom 2000 Starship ride and the stationary trailer on which the turntable sits while greasing the tandem.

The Wisdom Starship 2000 (“gravitron”) is a movable, electrically-powered amusement ride that spins rapidly. The ride consists of a turntable top that sits on a trailer. The ride is powered by an onsite generator, located approximately 100-250 feet away; during maintenance, the generator is turned off and the ride unplugged from it. The trailer has outriggers that extend to either side, with hydraulic jacks to stabilize the ride. There is a tire on each of the four trailer ends (the front of the trailer, the back of the trailer, and each of the two outriggers) where contact is made with the turntable. There is a fifth point of contact between the stationary trailer and the turntable – the center bearing, located in the center of the ride. The turntable portion is supported by the four tires and rotated with that central bearing.

The center bearing (Fig. 1) has two grease fittings (alternately referred to as “zerks” or “alemites”), located directly opposite each other. The center bearing is made of an inner and outer ring containing several small ball bearings in the space between the rings. The space between these rings needs to be greased regularly.

Greasing the center bearing in the manner completed by the employer requires between three and four employees. The typical process for greasing the center bearing is for one employee to go under the ride, connect the grease gun to a fitting, crouch down and verbally communicate to his coworkers that he is clear of the turntable portion of the ride, at which point the other employees will manually turn the turntable from the outside. The grease is injected through the fitting into the bearing as the structure is rotated. The process is done this way to ensure that the entire area inside the rings is lubricated. The inside employee will then verbally communicate to the outside employees to stop when the hose on the grease gun starts to reach its full extension and needs to be repositioned; this length equates to approximately one-quarter turn of the ride. The outside employees will manually stop the turntable from rotating, and then the inside employee will move as necessary to navigate around the trailer beams and reposition the grease gun and himself. He will then verbally communicate to the outside employees that he is once again clear of the moving turntable, and the process will repeat until one complete circle around the bearing has been made applying grease to each of the two grease fittings (for a total of two complete circles around the center bearing). This process normally takes between 15 and 30 minutes.

The victim had not performed maintenance on the gravitron ride prior to the morning of the accident. Standard training for the job performed by the victim consisted of verbal warnings by the supervisor about hazards and hazardous areas of the ride (pinch points, warnings to make sure to stay low enough to not get hit by the turntable during maintenance).

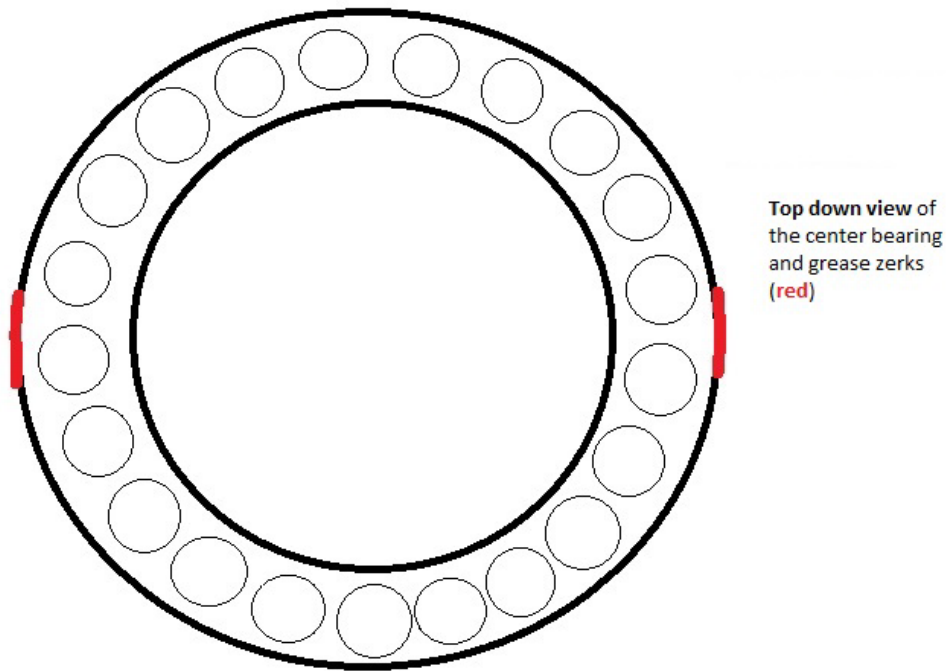


Fig. 1 (top): A diagram showing the position of the two grease fittings (alternatively referred to as alemites or zerks) on the central bearing. The two fittings were located directly opposite each other. The space greased via the fittings contained ball bearings (shown for illustrative purposes only – not numerically or positionally accurate).

On Thursday, July 6, 2023, the victim and the victim’s supervisor began weekly maintenance on the gravitron just after 9 am. According to the two coworkers working with the victim that day, the supervisor explained the scope of weekly gravitron maintenance work to the victim. The two coworkers, both familiar with the process for greasing the center bearing, had been recruited to assist in the maintenance task.

Prior to his entry into the underside of the gravitron ride, the supervisor gave a brief verbal training to the victim regarding where to position his arms, upper body to include his head, and grease gun to ensure that they wouldn’t get caught by the rotating turntable during the maintenance activities. The supervisor reiterated the gravity of the situation and the importance of staying below the turntable. The victim responded that he understood and would be careful.

The point where the victim accessed the underside of the ride was between the trailer front end and the righthand outrigger. There were white panels set up around the perimeter of the ride to cover the space between the bottom of the turntable part of the ride and the ground, concealing the trailer underneath. The panel directly to the righthand side of the trailer front end had been removed, and it was at that point that the victim entered the underside of the ride.

The two coworkers of the victim were positioned at the lefthand outrigger/front of the ride, and the victim’s supervisor was positioned at the front end of the trailer (Fig. 2). The supervisor had a clear line of sight to both other coworkers and the victim due to the removal of the white panel. The two co-workers were not able to clearly see the victim.

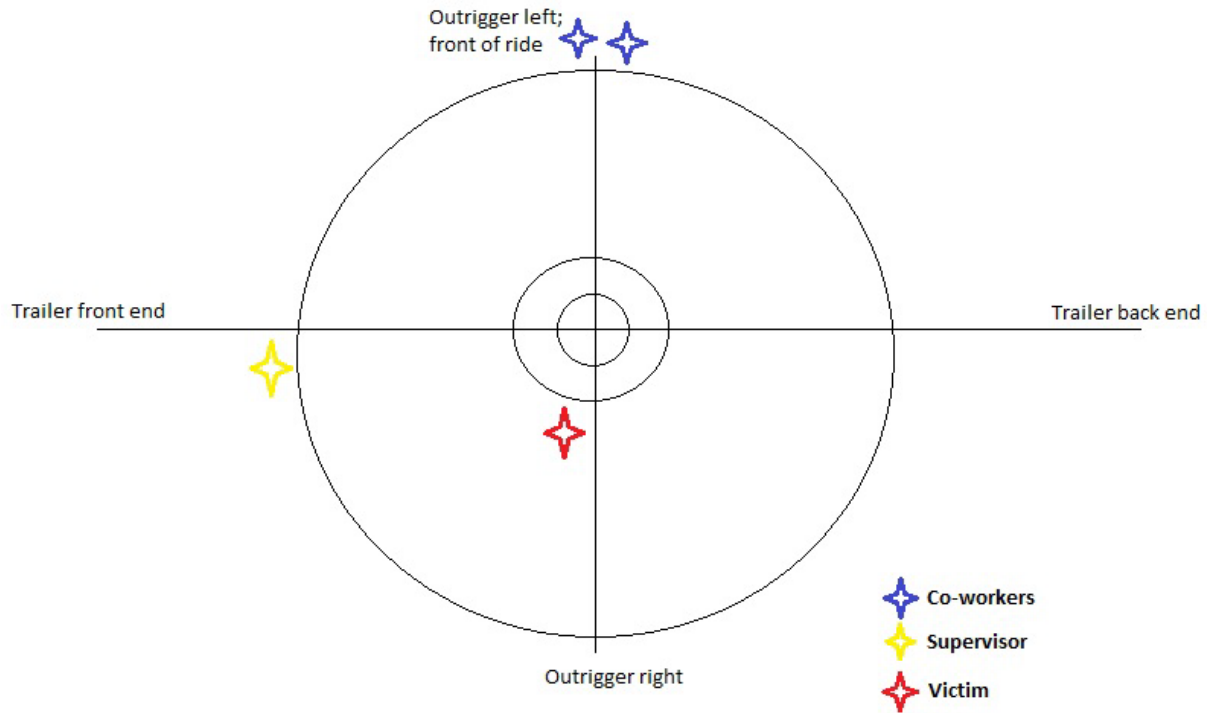


Fig. 2 (top): A diagram showing the relational positions of the victim, supervisor, and two co-workers at the time of the incident. The ends of the trailer and outriggers are denoted. The two, smaller concentric circles in the middle of the diagram indicate the center bearing (see Fig. 2). Sizes are not to scale.

The victim connected the grease gun to one of the fittings and told the supervisor that he was clear once he was in position. The supervisor and the two co-workers rotated the gravitron one-quarter turn counterclockwise. The victim then yelled for the three to stop the ride's rotation. He disconnected the grease gun from the fitting, reached around the trailer's righthand outrigger, and reconnected the grease gun on the opposite side of the outrigger beam. He yelled to the outside employees to resume pushing the tabletop, and the supervisor visually checked to make sure that he was clear. The other two co-workers asked the victim was he sure he was clear. He responded affirmatively. The three outside employees then began turning the turntable again. They rotated the structure approximately one foot before the victim's head was caught in between the righthand outrigger and the bottom of the turntable, fatally injuring him. The outside employees rotated the tabletop clockwise slightly to relieve the pressure off the victim's head and then called for medical assistance.

Citation(s) as Originally Issued

A complete inspection was conducted at the accident scene. Some of the items cited may not directly relate to the fatality.

Citation 1 Item 1

Type of Violation: Serious

\$4000

TCA 50-3-105(1): The employer did not furnish to each of his employee's conditions of employment and a place of employment free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees.

In that employees were exposed to caught-between and/or struck-by hazards due to manual movement of the table while underneath the turntable greasing the bearings on the Wisdom Starship 2000.

Citation 1 Item 2

Type of Violation: Serious

\$2000

29 CFR 1910.147(a)(2)(iii)(A): Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start-up of the equipment was not controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

In that the cord to the electrical generator for the Wisdom Starship 2000 ("gravitron") was not under the exclusive control of the employee performing maintenance activities including but not limited to greasing the bearings of the ride.



Crushed Between parts of an amusement ride—Insp # 1681434 James Gang Amusements LLC



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