Office of Environment, Health, Safety and Security
Operating Experience Level 3

OE-3: 2016-08 **December 2016**

Avoiding Vehicle Accidents

PURPOSE

This Operating Experience Level 3 (OE-3) document provides information about a safety concern related to vehicle use at Department of Energy (DOE) facilities.

BACKGROUND

Events involving vehicles -- whether or not property damage or injuries result -- are reported to the Occurrence Reporting and Processing System (ORPS). The events discussed below resulted from inattention, inadequate equipment, contract violations, and/or fatigue.

THE EVENTS

1) On May 9, 2016, an unattended vehicle struck a building at Lawrence Livermore National Laboratory (LLNL) when the driver parked the vehicle and exited it to talk with another employee without ensuring that the vehicle was turned off and that the transmission was in *Park*. (ORPS Report NA--LSO-LLNL-LLNL-2016-0011)

2) On May 2, 2016, a service truck at the Hanford Waste Treatment Plant (WTP) rolled 30 feet on a slight grade because the driver had not put the manual transmission in gear when he turned off the engine. The driver had left the transmission in *Neutral* and had gone inside the shop office to obtain a signature. When he returned and found that the truck had moved, he reported the incident to the supervisor. (ORPS Report EM-RP--BNRP-RPPWTP-2016-0008)

3) On March 22, 2016, a snowplow with a non-functioning backup camera backed into a building at the National Renewable Energy Lab (NREL), damaging a railing and ramp. The contract required all snowplows to have a working backup camera and beacon light. Because the event was the latest in a series involving the same snow removal subcontractor, NREL began the process to remove the company. (ORPS Report EE-GO--NREL-NREL-2016-0005)

4) On March 15, 2016, at Idaho National Laboratory (INL), an ambulance collided with the rear of a fire engine when the vehicles were returning to the Fire Station after conducting a tour. When the fire engine (in the lead) slowed for wildlife crossing the road, the ambulance driver did not realize that the fire engine's speed had changed and the ambulance hit the rear of the fire engine. All occupants were wearing seatbelts. Both drivers were taken to the hospital for assessment, and both vehicles were taken out of service. (ORPS Report NE-ID--BEA-CFA-2016-0001)

5) On February 1, 2016, an INL employee was driving his personal vehicle into the Yellowstone Park and Ride parking lot in Idaho Falls and collided with two pedestrians walking from their car to the bus loading area. The pedestrians noticed the vehicle entering the parking lot; however, they thought the driver saw them and was preparing to stop and wait for them to cross. The driver experienced reduced vision from sun glare, and noticed the two pedestrians a split second before the vehicle collided with them. The driver was traveling at approximately 5-10 miles per hour. The driver immediately stopped the vehicle

and the pedestrians both stated that they were not injured. The pedestrians reported to the medical dispensary where they were examined and released to work without restrictions. (ORPS Report NE-ID--BEA-STC-2016-0002)

6) On January 12, 2015, a Nevada National Security Site (NNSS) worker was injured in a single car accident when he fell asleep at the wheel of a government car, crossed into the oncoming lane, and then veered off the pavement. He was taken to the hospital, kept overnight, and released with lifting and driving restrictions. Subsequent investigation and interviews with the worker determined the worker's extreme fatigue was the result of long work hours and a multi-hour commute, combined with driving the deserted road between the NNSS and U1A facility. (ORPS Report NA--NVSO-LANV-BOPNV-2015-0001)

Discussion and Corrective Actions

1) In the LLNL event, the driver was distracted, focusing more on talking to a co-worker than ensuring that the vehicle was safely parked before he exited the vehicle. The co-worker thought the engine was still running, but the noise was at first masked by a nearby dump truck. When the driver was told his vehicle was still running, he moved to the vehicle, opened the driver's side door, and leaned in to look at the gauges. At that time, the vehicle lurched forward with enough momentum to jump the cement parking block and impact a building. The driver was thrown to the side and sustained minor injuries. He was treated at onsite Medical and released. The driver's lack of attention to performing all steps in safe vehicle shutdown could have had serious, even fatal results (refer to OES-2009-11, *Type A Accident Investigation - Vehicle Fatality at LLNL*. Vehicle shutdown is a procedure and as such, each step must be performed.

2) The service truck driver at WTP was focused on his routine of responding to service calls and performing regular maintenance and forgot to perform all the steps for safe shutdown/parking of his vehicle (mental lapse). There was no damage and no injuries, but nonetheless, corrective actions (CA) were assigned. The CAs included the following: area supervisors will reinforce with staff that all vehicles are to be shut off when unattended, not only as good practice but also because two site procedures require it; and drivers must remove the key, set the parking brake, and place automatic transmissions in *Park* and manual transmissions in *Reverse*.

3) NREL had previously filed an ORPS report for recurring accidents with property damage involving the same snow removal subcontractor. Based on their experience at other job sites, the subcontractor workers were not accustomed to NREL's rigorous safety expectations, and those expectations had not been adequately or clearly defined or enforced by the subcontract company when their workers began work at NREL. As part of the previous CA Plan, for each snow event, the subcontractor was expected to complete a separate Activity Hazards Analysis for both snow plow drivers and personnel removing snow with shovels. All snowplow drivers were required to use a spotter or a functioning rear-mounted camera with dash display when backing up. The latest contract modification required the subcontractor's vehicles to be equipped with a beacon light and backup beeper. However, in two spot-checks, the snowplows did not have functioning backup cameras. After a recent blizzard, a spot check again identified a snow plow with non-functioning camera in violation of the contract. As a result of the contract violations and subcontractor non-adherence to the CAs, NREL started the process to remove the subcontractor.

4) The INL ambulance incident resulted in two investigations: one Human Error (HE) investigation to identify the causes and expose potential latent organizational weaknesses that may have contributed; the other conducted by

the Idaho State Patrol (ISP) to identify the cause(s) of the collision. The HE investigation found that the driver of the Fire Engine and the front passenger saw an animal approaching from the right, giving the appearance that it was going to run across the road. When the driver removed his foot from the accelerator, the engine brake was automatically engaged. In addition, the driver pressed the foot pedal brake, significantly reducing speed from the posted 65 mph to 20-25 mph. As the animal crossed the road, the following ambulance driver saw it and removed his foot from the accelerator, reducing speed – but since there was no brake light on the fire engine yet, the ambulance driver did not realize the engine had slowed, and pressed the accelerator, thinking the animal danger was over. During this brief period, the fire engine driver had also pressed the foot brake and the ambulance driver did not have time to react. The ISP investigation identified four contributing circumstances: following too closely; inattention, distractions in the vehicle; and animals on the roadway. (Drugs, alcohol, speeding, and use of cell phones were NOT involved.)

Another contributing cause was that the fire engine was not equipped with brake lights that come on when the engine brake is activated. Trucks manufactured after 2009 are required to have that equipment, but the truck in this event was manufactured in 1999. The ISP investigation also found that the rutted road conditions and lack of signage could have been a hazard or distraction. CAs included performing an extent of condition review of fire trucks, addressing the distraction element, improving road conditions and signage, and training drivers on effectively and safely negotiating wildlife on INL roadways.

5) The INL pedestrian incident investigation revealed the need for personnel to take individual responsibility for their safety and act accordingly. After experiencing reduced vision from sun glare, the driver did slow down, but failed to stop before proceeding into the traffic lane. In addition, it is likely the pedestrians misinterpreted the driver's hesitation when the sun glare caused him to briefly slow down as a sign the driver saw them. INL has frequently emphasized parking lot safety and will continue efforts to raise awareness through safety shares, lessons learned and peer observations.

6) During the follow-up investigation of the single vehicle event at the NNSS, it was determined that the driver fell asleep due to fatigue. His normal schedule was 10 hours a day, 4 days a week. In addition he, like all workers, has up to a 2-hour commute to get to the site and also faces an additional 35-minute drive to the U1a facility farther into NNSS. Because of the remoteness, workers have the option of carpooling or staying overnight in free dormitories when they are too tired to drive home. The driver had not communicated his fatigue to his supervisor, which was a missed opportunity for intervention. The event provided management with the opportunity to heighten awareness of the risks and impacts of extended hours and to remind workers of controls, including good rest at home, carpools, and free dorms.

According to the National Sleep Foundation, 60 percent of adult drivers said they have driven a vehicle while drowsy in the past year, and a third of them said they have actually fallen asleep at the wheel. Eleven million drivers (4 percent) admitted that they have had an accident or near accident when they dozed off or were too tired to remain alert. The National Highway Traffic Safety Administration conservatively estimates 100,000 police-reported crashes are the direct result of fatigue, although that number may be higher due to inconsistencies among states and the fact that some accidents are blamed on alcohol, not fatigue. According to AAA, people who sleep 6 to 7 hours a night are more than twice as likely to be involved in a crash than those sleeping 8 hours or more, while the risk is multiplied 4 to 5 times for drivers who get less than 5 hours of sleep. The

bottom line for every worker, at a remote site or city office, is to: 1) get enough sleep, 2) compensate for lack of sleep by joining a carpool when available, or 3) notify a supervisor when they are extremely fatigued.

CONCLUSION

These events demonstrate the consequences of omitting any steps in safe vehicle shutdown as well as the importance of paying attention to the road for pedestrians, obstacles, and slowing vehicles. Those who work long hours or multiple shifts without adequate rest or breaks should acknowledge their limits. When driving fatigued or distracted, the stakes are high; including injuries, death, financial settlements, and/or serving jail time. See more at the links provided in the References section below.

REFERENCES

NA--LSO-LLNL-LLNL-2016-0011, *Site 300 Unattended Vehicle Accident*

EM-RP--BNRP-RPPWTP-2016-0008, *Worker's Inadequate Use of Service Truck Parking Brake*

EE-GO--NREL-NREL-2016-0005, *Subcontractor Vehicle Accident Damages Building*

NE-ID--BEA-CFA-2016-0001, *Fire Department Vehicle Accident*

NA--NVSO-LANV-BOPNV-2015-0001, *Worker Sustains an Occupational Injury Resultant of Single Vehicle Accident*

NE-ID--BEA-STC-2016-0002, *Near Miss Involving Personal Vehicle and Pedestrians*

Additional References:

- National Sleep Foundation, *Facts and Stats about Drowsy Driving*, at http://drowsydriving.org/about/facts-and-stats/
- OES-2009-11, *Type A Accident Investigation - Vehicle Fatality at LLNL*

Questions regarding this OE-3 document can be directed to Ashley Ruocco at 301-903-7010 or ashley.ruocco@hq.doe.gov.

This OE-3 document requires no follow-up report or written response.

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