



Hard road



By Gail Johnson

A new study has shifted the logging truck industry toward better braking power for drivers facing increasingly steep terrain.

Logging truck drivers who haul enormous pieces of timber down B.C.'s rugged mountains routinely face steep, treacherous slopes. In 2003, a 49-year-old man was powerless to stop his fully loaded truck from veering down a particularly perilous incline near Port Alberni. The hauler died after his vehicle smashed into an embankment, ripping off the trailer and spilling the logs before the truck went over the bank.

"It was a very heavy load and it was on very steep terrain," says WorkSafeBC occupational safety officer Alan Yon, who investigated the circumstances leading to the fatality. "The driver couldn't stop the truck under its own braking power."

That horrific crash occurred on a switchback with a 28 percent grade. To put that angle into perspective, consider that the steepest grades on all B.C. highways rarely exceed 13 percent.



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Trucking tragedy hastens research into improving road safety

The Port Alberni tragedy prompted the need to address the longstanding safety threat that steep grades present.

“We said, ‘We’ve got to stop this,’” Yon says. “We had to determine how we could safely haul down these grades.”

WorkSafeBC issued guidelines in 2005 under section 26.2 of its Occupational Health and Safety Regulation. Geared to coastal “fat,” off-highway trucks, which carry higher payloads than highway trucks, the guidelines separate hauling requirements into two categories: grades less than 18 percent and those more than 18 percent, the latter of which requires a risk assessment and development of a safe descent procedure prior to hauling.

In addition, WorkSafeBC, the forest industry, and FPInnovations–Feric division launched a two-part study into how employers can best put those guidelines into practice. Together, haulers, companies, and regulators are working to ensure cases like the one in 2003 never happen again.

“Trucks go up empty and come down full, and they need to do that in a safe manner,” says Seamus Parker, senior researcher with FPInnovations–Feric division, which recently released the study’s final report. “We needed to find out the key operating

parameters and realistic data...and came up with a computer model to look at what-if scenarios for steeper grades.”

Scarily steep roads have become increasingly common in the province. As old growth has been depleted, companies have been forced to travel higher up mountains to access natural resources. There’s a cost factor, too: building new roads is expensive, so sometimes a sharper, shorter slope is chosen over the long and winding road. Steeper road sections have less environmental impact than longer routes in terms of how much terrain is used. And more roads are being built along ridges to avoid unstable slopes, resulting in steeper roads.

“In the old days, we didn’t have steep roads like this,” says Bjarne Nielsen, WorkSafeBC senior regional officer. “In the old days, you’d just go to the bottom of valleys. Now that we have logged most of the valley bottoms, we’re chasing logs higher and higher up the mountains and it’s getting steeper and steeper.”

Study unearths importance of regular brake checks

Aside from grade and road condition, many other factors must be carefully considered when it comes to descending safely, including braking capacity, brake adjustment, brake temperature, traction, speed, hauling configuration, payload, grade distance, road alignment (curves), and weather conditions. “To compound the steepness, there’s sometimes poor road-surface material; it might be muddy and slippery when it rains,” Nielsen says. “It’s a real concern.”

Photos page 11 and at left: A Western Forest Products logging truck bound for northern Vancouver Island and a Hayes Forest Services truck headed for the Island's west coast share one thing in common: increasingly steep terrain, and the threat to safety that goes along with it.

"One of the main parameters is traction: how much brake force can apply to a road. If it's a snowy, slippery surface, a low-pressure brake application can lock up those wheels and the driver can lose control," Parker explains.

"A length of descent in excess of two to three kilometres can heat up those brakes substantially," he adds, explaining that if brakes get too hot they can expand, to the point that the brake friction material will no longer contact the drum. So the worst-case scenario results in "no braking at all."

Arcand, former head of Truck Safe, an arm of the B.C. Forest Safety Council, organized monthly meetings among stakeholders – truckers, licensees, road engineers, roadbuilders, and others – to establish dialogue about the guidelines.

"We came up with terms of reference on how to work together, how to take the information and make it a reality on the ground," Arcand says. "Everyone came together to make it safe for all concerned. It's the first time we've had such a collaborative approach to solve an industry-wide issue."

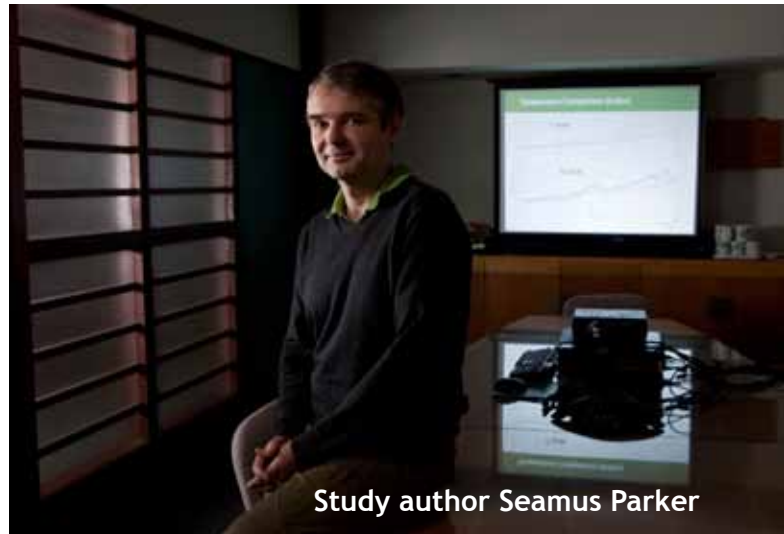
"There certainly has been heightened awareness that it's a serious thing," she adds. "It's not just 'jump in the truck and go.' We haven't had a single steep-slope fatality since."

Stricter standards gain support industry-wide

Ed Proteau, forest operations extension specialist with FPInnovations-Feric division, says that employers' response to the study has been remarkable.

"A grade over 18 percent triggers a red flag," Proteau says, noting that the research will be applied to the development of descent guidelines for highway trucks. "Rather than everyone inventing their own standard operating procedure, everyone came together. That's the way you solve a problem like this."

WorkSafeBC research secretariat director Ed McCloskey says that the study, the second part of which was funded by an Innovation at Work grant worth \$30,000, was crucial to bring everyone up to speed on hauling safety. "With logging in steeper areas, there is the potential for catastrophic consequences for operators and anybody else in the path," he says.



Study author Seamus Parker

Dennis Dystant, owner of Campbell River's Dystant Trucking, knows first-hand how seriously the descent guidelines must be taken. "There's no room for error on steep grades," he says. "It used to be 'learn as you go,' even in the pitch black. Now we do a steep-grade assessment. We take the driver up in a pickup truck and we talk as a group and make sure we're all comfortable with it."

To further enhance hauling safety, future research could examine a simplified means of monitoring traction, Parker notes. Under another WorkSafeBC Innovation at Work grant, FPInnovations is currently evaluating a brake monitoring system that measures brake adjustment and temperature.

Later this year the company will visit stakeholders involved in steep hauling – forest engineers, roadbuilders, and haul supervisors – to go over the guidelines. It will also hold workshops for drivers, in which driving technique, service brake maintenance, gear selection, and load size will be emphasized.

Dystant says that driver expertise is crucial, as is the mechanical condition of the truck. "We will bring trucks in in the wintertime and take every brake apart and inspect it," he says. "The drivers need to be able to trust the vehicle." 