

Oregon OSHA's revised guidelines for using tethered logging systems

Tethered logging systems (winch-assisted, cable-assisted, traction-assisted, etc.) can enable ground-based timber harvesting machines (feller bunchers, harvesters, loaders, shovels, etc.) to be operated on slopes of more than 50 percent. However in Oregon, under 437-007-0935(1)(b) and (c), these harvesting machines may only be operated on slopes up to 40 percent, or 50 percent if the machine was designed for steep slopes. **General operation of these machines in excess of the applicable rule slope limit is only permitted when specified by the manufacturer for machine stability for operator safety, not engine or hydraulic system function.**

[437-007-0935](#) Operation of Ground Skidding Machines and Vehicles.

(1) Machines must not be operated on slopes in excess of the following limits unless specified by the manufacturer of the equipment.

- (a) Rubber-tired skidders – 30 percent.
- (b) Crawler tractors, tracked feller bunchers, tracked excavators and loaders – 40 percent.
- (c) Other forestry equipment designed for steep slopes – 50 percent.

Employers who plan to use tethered logging systems in Oregon must ensure that the harvesting machine to be tethered is specified by its manufacturer for operation on slopes of more than 40 or 50 percent, as required by 437-007-0935(1)(b) and (c) respectively. If not, they must apply for and be granted a research variance prior to using the harvesting machine above its slope limit with a tethered logging system.

Oregon OSHA's decision to grant research variances from 437-007-0935(1)(b) or (c) is to support the use of new technology that could replace dangerous tree falling and timber transporting operations by workers on the ground with operators in machines with protective cabs meeting the requirements of [437-007-0775](#). Approved research variances will also provide a means of collecting relevant safety data until Division 7 (Forest Activities) rules can address these newly introduced technologies. While the length of time for data collection is unknown at this time, Oregon OSHA anticipates promulgating Division 7 rules for tethered logging operation in 2018. Approved research variances that are complied with and shown to provide adequate operator protection will remain in effect until such rules are adopted and the requirement for a variance is no longer needed.

Oregon OSHA will consider the following criteria for research variance approval:

- Harvesting machines used with an operator in a tethered logging system must be manufactured on or after July 1, 2004 and meet the protective structure requirements covered under 437-007-0775.
- The tethered logging system must be designed, constructed, and strictly used for tethered logging applications.
- Tethered logging systems must be operated, inspected and maintained according to the manufacturer's recommendations and specifications.
- Tethered logging operations must meet all applicable general Division 7 (Forest Activities) requirements: working alone, emergency plans, supervision, etc.
- Tethered logging operations must be planned by the operator and the competent person on how to safely operate on slopes more than 50 percent, taking the following into consideration:
 - Experience of the operator.
 - Limitations of the machine and soil conditions.
 - Direction of travel.
 - Requirements for turning the machine on slopes.
 - Weather.
 - Load sizes.
 - Method and adequacy of anchorage.
 - Any other adverse conditions.

- Tethered logging system operators must have adequate experience in safely operating the system on slopes less than 50 percent prior to operating the system on slopes more than 50 percent.
- The variance application must also specify the following:
 - Tether line replacement criteria. (Note: New wire rope must be used for tether lines and must not be spliced or used for purposes other than tethering machines until permanently removed from tethering service.)
 - Cable size, type and breaking strength, and method of assurance that tensions do not exceed 1/3 of breaking strength to maintain a 3:1 safety factor or greater.
 - Inspection and maintenance to be performed on tether lines, end connectors, machines and winches.
 - How the operator will use tension limiting controls to maintain desired tension.
 - How the winch cable tension and machine travel are synchronized.
 - How the operator will monitor machine slope, anchor movement, winch tension, amount of line on/off drum, and winch function.
 - How tether line attachment point (hitch) to the harvesting machine are engineered to withstand potential loads.
 - All harvesting machine modifications that allow it to operate on steep slopes, including operator harness or restraint system.
 - How pre-operations planning and daily assessments will identify hazards for soil/terrain conditions.
 - How the operator will determine if soil/terrain conditions are unsafe during operations.
 - How operators will report new hazards identified during operations.
 - Operating guidance given to the operator.
 - How emergencies are handled by the system:
 - Line failure, machine failure, winch failure, anchor failure, etc.
 - Winch machine movement or anchor movement.
 - Is there an emergency stop for the operator or at the anchor?

An approved research variance will require that the following information be provided to Oregon OSHA on a semi-annual basis:

- Safety, health, and ergonomic issues identified, including machine tip-over, roll-over, and equipment failure events, regardless of incurred bodily injury.
- Recordable injuries incurred during tethered logging operations and comparative data for any hand felling and cable logging injuries that were incurred at the same worksite.
- Any interventions taken which were not included in, or in conflict with, the provisions in the variance but were necessary to ensure the safety and health of employees.
- A summary of tether line and connector component inspections, including hours of use, wear and tear, and any repairs or replacements made.
- Hours of work by the operator actually operating the machine on slopes greater than 50 percent (daily & weekly).

**To obtain a variance request form, or if you have questions, contact
Tom Bozicevic: 503-947-7431, tom.bozicevic@oregon.gov.**