

**OREGON OCCUPATIONAL SAFETY AND HEALTH DIVISION
DEPARTMENT OF CONSUMER AND BUSINESS SERVICES**

PROGRAM DIRECTIVE

Program Directive: A-298
Issued: October 28, 2016
Revised: November 2, 2022

SUBJECT: Local Emphasis Program (LEP): Tethered Logging

AFFECTED STANDARDS/DIRECTIVES: OAR 437 Division 1, General Administrative Rules
OAR 437 Division 7, Forest Activities

PURPOSE: This directive describes the policies and procedures for implementing a Local Emphasis Program (LEP) to identify and ensure tethered logging operations comply with steep slope requirements under 437-007-0935 (Operation of Ground Skidding Machines and Vehicles), stability limits specified by machine manufacturers (if any), or the provisions within an approved and active research variance.

BACKGROUND: Tethering technology in the logging industry has enabled machines used for mechanized felling and ground skidding activities to be used on slopes greater than what are permitted under 437-007-0935(1)(a) through (c) when effectively tethered:

437-007-0935(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**.

Most tethered logging systems (also known as winch-assist, cable-assist, and traction-assist) use a purpose-built, equipment-mounted, winch system in conjunction with a harvesting machine, forwarder, or skidder. These systems replace workers on the ground who are potentially exposed to dangerous tree

felling and timber transporting operations with operators in machines with protective cabs.

Operation of machines on slopes which exceed the applicable rule's slope limit is only permitted in Oregon when the manufacturer of the machine specifies it is acceptable to do so – as it pertains to machine stability for operator safety, not engine or hydraulic system function, or when an employer has requested and been issued an approved research variance with Oregon OSHA.

ACTION:

This directive applies to all statewide tethered logging operations subject to Oregon OSHA jurisdiction. Tethered logging inspections must be conducted by safety compliance officers (SCOs) who have been authorized by their managers to conduct logging inspections. When an active tethered logging site is located, the SCO will determine if the firm is one of the 50 employers on the logging inspection scheduling list. If they are, a comprehensive inspection will be conducted. If they are not, a tethered logging emphasis inspection may be conducted if it appears that the tethered machine is, or is likely to be, operated on slopes in excess of the applicable slope limit under 437-007-0935(1). If during the course of a tethered logging inspection serious hazards are identified in areas unrelated to this LEP, the SCO will expand the inspection to cover those hazards.

Mechanical logging operations with no tethered logging systems in use are not covered by this LEP. If a SCO observes an imminent danger or serious hazard at a mechanical logging site that does not involve a tethered logging system, the SCO will conduct a referral inspection based on the guidelines in the FIRM, or a LEP inspection under Program Directive A-245 (Struck-by Hazards in the Logging Industry) if there are employees working on the ground.

**INSPECTION &
CITATION
GUIDANCE:**

A. Compliance Procedures. When a SCO observes a tethered logging operation on slopes which are, or likely to be, in excess of the applicable slope limit for the type of machine covered under 437-007-0935(1), an LEP inspection will be conducted to verify that the operation is covered under, and is in accordance with, a tethered logging research variance issued by Oregon OSHA, or that the machine manufacturer has specified that the applicable slope limit under 437-007-0935(1) may be exceeded (untethered) – as it pertains to machine stability for operator safety, not for engine or hydraulic system function. SCOs are expected to follow all applicable inspection procedures outlined in the FIRM.

B. Safety and Health Protection for the SCO. The SCO must comply with all applicable Division 7 safety and health rules and practices at the job site and use the appropriate personal protective equipment, such as hard hat, safety glasses, high-visibility vest, and work or caulk boots.

Tethered logging operations may be performed by a single person operating a machine that is synchronized with an equipment-mounted winch on a base machine (anchor). SCOs must stay clear of all operating machinery, moving lines, and trees being felled. SCOs must not approach tethered machines in operation along moving lines, from locations where there is a likelihood of being struck by thrown or flying objects, within reach of any hazard trees, or within two tree length of trees being felled. SCOs must assess the worksite for hazards, find a safe location to observe operations, and wait for the machine operator to shutdown all equipment and securely lower any attachment to the ground. The SCO should establish eye contact with the operator to confirm it is safe to approach the machine. The SCO should request that the operator return the machine to the landing, or near it, to allow safer access for machine and tethered logging system assessment.

C. Tethered logging operations covered under an approved and active research variance. Slope limits as specified in 437-007-0935(1)(a), (b) and (c) may be exceeded when the logging operation is covered under a variance, providing the following alternative methods and safeguards are complied with:

1. When a variance term or requirement, herewith in, conflicts with a recommendation or specification by the tethered logging system manufacturer or machine manufacturer, the term, requirement, recommendation, or specification that would provide the higher level of safety for employees must be followed.
2. Forest activities not covered under the rule for which the variance is issued must comply with all applicable Division 1, 2 and 7 rule requirements including, but not limited to, reporting fatalities and hospitalizations to Oregon OSHA, emergency medical plans, requirements for cutting trees and mechanical falling, securing machines, working alone, employee involvement, and supervisory responsibilities.
3. Tethered logging operations must not create a hazardous condition for workers, including any subsequent hand felling operations. Operations must communicate harvest plans with hand fallers when

applicable, and have hand fallers work first if possible. Operations must ensure all piles are stable on the hillside if fallers will be working below felled timber.

4. Tethered logging steep slope machines (SSMs) must meet all applicable protective structure requirements under OAR 437-007-0775, be equipped with a certified roll-over protective structure (ROPS), and have at least a 4-point operator restraint system approved by the machine's manufacturer. Base machines used for tethered logging must be equipped with a cab that provides tip-over protection in accordance with OAR 437-007-0775(14)(a), (b), and (c), if an employee is allowed to be in the cab while the tether line(s) is under tension from SSM movement.
5. The tethered logging winch system must be designed and constructed for tethered logging applications by the original equipment manufacturer (OEM), or approved for tethered logging applications in writing by the OEM or a registered professional engineer.
6. The tethered logging system must be operated, inspected, and maintained in accordance with the manufacturer's recommendations, specifications, and limitations; or if no manufacturer's recommendations exist, then by the recommendations of a registered professional engineer. Operators must ensure all machines, equipment, and attachments are secured to prevent movement and unintended operation during inspections and maintenance activities. Tethered logging systems and components not in safe operating condition must be removed from service until repaired or replaced by a qualified person.
7. Tether lines must be one continuous piece of wire rope (not spliced) and have a rated breaking load according to the tethered logging system manufacturer's recommendations and specifications. Tether lines must be repaired (shortened only) or replaced if there is evidence of chafing, sawing, crushing, kinking, crystallization, bird-caging, significant corrosion, heat damage, or other damage that has weakened the tether line. At a minimum, tether line inspections must be conducted by a competent person as follows:
 - a. **Daily line inspections:** Inspect the first 50 feet of each tether line prior to use. Such inspections may be conducted at the end of the day in preparation for the next day of use by the same operator.

- b. **Unit startup line inspections:** Inspect the maximum portion of tether line(s) used during the previous project plus an additional 100 feet. Such inspections may be conducted at the end of a project in preparation for the next project startup.
 - c. **2000-hour line inspections:** Inspect the entire length of each tether line and drum connection every 2000 hours of use. Such line inspections can substitute a unit startup line inspection if done between projects.
8. The tether line winch system must be synchronized with the SSM travel to ensure continuous tether line tension during operation. The winch must be designed and used in a manner to prevent line tension from exceeding 33 percent of the rope's rated breaking load under operating conditions. The operator must effectively use an immediate and self-reliant, or automated, way to identify tether line tension, winch rotation and speed, and the amount of line on and off the drum. If communication between the SSM and base machine becomes weak or is lost, work must be discontinued, and moved back to where there is an adequate communication signal. Base machines must be set up to minimize unintended movement. A device that senses excessive base machine movement must be effectively used and maintained to immediately notify the SSM operator during operation. Base machine anchorage and movement sensing devices must be inspected daily prior to use and after excessive base machine movement.
9. All tether line assembly components must be rated with a greater safe working load than each tether line (wire rope). Tether line attachment points and hitches must be engineered and certified to maintain a safety factor equal to or greater than the recommendations and specifications of the tether logging system manufacturer. Quick nub ferrules (split-wedge ferrules) must not be used for normal operations (*Note: Quick nubs may only be used during an emergency*). Inspections of tether line assembly components and equipment (except drum connection as specified under #7) including hitches, shackles and pins, sockets, sheaves, winches, machines, anchors, etc., must be performed daily by a competent person prior to use.
10. Operators must have sufficient training and experience operating tethered machines on slopes under 50 percent for each type of

tethered logging system they are authorized to use prior to operating tethered machines on slopes over 50 percent.

11. Base machines should be repositioned when possible to maintain straight tether lines. Base machines must not be repositioned or moved while tether lines are under tension from the SSM. Operators must have sufficient training and experience to safely redirect tether lines (side wash). When using a stump or tree to side wash tether lines, the line deflection angle should be less than 40 degrees unless the operator has determined that a greater angle can safely be used. Operators should consider using a block for tether line deflection angles greater than 40 degrees.
12. The employer must establish and use procedures for operators to report unsafe conditions to a supervisor or competent person. Such conditions must be corrected prior to resuming tethered logging operations. Procedures must also include steps to take in the event of equipment breakdown and upset conditions.
13. All remotely operated equipment must have signage that effectively warns employees and others that machines and lines may start, stop, or move without warning. All employees working in close proximity to tethered logging operations must receive training that enables them to recognize the potential hazards involved and to maintain safe distances.
14. All tethered logging operations must be planned by the operator and a competent person. Plans must be updated when weather and ground conditions change. Items to consider during site-specific planning must include, but are not limited to, the following:
 - Experience and skill level of the operator
 - Slope limitations of the equipment if specified by the manufacturer
 - Areas to be hand felled, if applicable
 - Soil and terrain conditions
 - Environmental conditions
 - Weather conditions
 - Impaired vision conditions
 - Communication with affected personnel
 - Direction of travel
 - Requirements for turning the machine on slopes

- Load sizes and haul routes
- Location of anchor machine and method to be used for effective anchorage
- Potential fire hazards
- Any other condition that can adversely affect operations

Additional provisions requiring semi-annual reporting and variance field reviews are included in each research variance issued.

Situations of an employer’s noncompliance with one or more of the alternative methods and safeguards listed above must be documented and reported to Oregon OSHA’s Standards and Technical Resources section to determine if there is a need to revoke the variance. In such cases, the employer may be cited for violating the terms of the variance, per 437-001-0425(2). The SCO is expected to follow the procedures for variance violations in the FIRM.

D. Tethered logging operations not covered under an approved research variance. Tethered logging operations, not covered under a variance, on slopes that exceed the applicable slope limit under 437-007-0935(1) are only permitted when the machine manufacturer specifies that the machine may be operated on slopes in excess of the applicable limit – as it pertains to machine stability for operator safety, not for engine or hydraulic system function. If the tethered machine is operated on slopes that exceeds the rule’s applicable slope limit without the manufacturer’s approval, the SCO may cite 437-007-0935(1)(a), (b) or (c), depending on machine type.

A Red Warning Notice (red tag) in accordance with 437-001-0096 may also be issued. The SCO is expected to follow the procedures for Red Warning Notice in the FIRM during such situations.

**CITATION
TRACKING:**

The SCO is expected to track all inspection activity under this LEP in OTIS as follows:

- The **Inspection Type** for those inspections conducted under this Local Emphasis Program must be marked as Program Planned.
- Designate the Local Emphasis Program in OTIS on the Inspection Detail>Insp Info>Emphasis Tab as **Tethered Logging**.

EFFECTIVE DATE: This directive is effective immediately and will remain in effect until canceled or superseded.

History: Issued 10-28-2016
Revised: 6-19-19 and 7-8-2022