LOGGER SAFETY INITIATIVE

Keeping Washington loggers safe.

October 2021

Logger Safety Initiative Quarterly Training

Why am I receiving this LSI Safety Training Packet?

LSI participants are required to annually attend approved LSI Employer Logger Safety program training. There are two parts to the required training: Formal Training and Safety Training (see the attached LSI Training Requirements for more details). This packet satisfies one of the four required Safety Trainings. The LSI employer must ensure that all workers receive four LSI required trainings per year.

How do I provide the training to my employees?

LSI Employers and supervisors, if delegated, and all employees engaged in manual logging operations must participate in at least four (4) LSI trainings on an annual basis. If you have employees that do ground operations, even if only occasionally, review the "In the Clear Rigging" safety training (found on our website) materials in detail and discuss the scenarios with employees.

What documentation is required?

LSI employers will document that the training took place as part of their safety minutes. Be sure staff has signed the safety meeting sign-in sheet. The completion of the training will be assessed at the annual DOSH LSI Consultation.

WASHINGTON STATE LOGGER SAFETY INITIATIVE

Keeping Washington loggers safe.

Quarter 4 2021 Logging Training: Yarder/Tower Maintenance Inspection Criteria

This training will provide a general overview of basic yarder inspection maintenance and emphasizes the importance to paying close attention to detail when conducting your inspections. All inspections must be conducted by a qualified, authorized person that is skilled in inspecting the tower by manufacture specifications. This training is not intended to replace the manufacturer's maintenance or inspection specifications.

Qualified person. A person, who by possession of a recognized degree, certificate, professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project.

Before inspection

Before beginning maintenance or servicing of equipment where the unexpected energizing, start-up, or release of stored energy could cause injury, the equipment must be shut down, isolated from all potentially hazardous energy and locked or tagged out in accordance to WAC 296-54-517 and manufactures recommendations.

Lock-out/Tag-out training must be provided on an annual basis. Please contact the DOSH Consultation Program if you would like further assistance with understanding the lock-out/tag-out requirements.

The person(s) in charge of the inspection must also direct the process of raising and lowering the tower. Any employee who is not engaged in the raising or lowering of the tower must stay in the clear during this process.

Tower inspections

Portable spars or towers and their parts must be inspected by a qualified person whenever:

The portable spar or tower is lowered especially if its safe condition is in doubt

- Look for dents in the spar.
- Cracks in metal plates or around welds
- Look for signs of discoloration (stress, heat, or damage)

When damage from over-stress or any other source is noted or suspected. Before being used again, the part in question must be inspected by a suitable method and:

- Found safe Repaired by a qualified person; or, Replaced

Daily tower inspections should include such items as:

- Test all drum brakes before taking a load.
- Throttle controls operate properly
- Hydraulics operate properly.
- Check hydraulic hoses for signs of chafing, damage, or leaking. Replace defective parts immediately.
- All fuel and oil levels must be adequate.
- Verify the power take-off equipment to the hydraulic system, and the leveling and raising jacks operate properly.

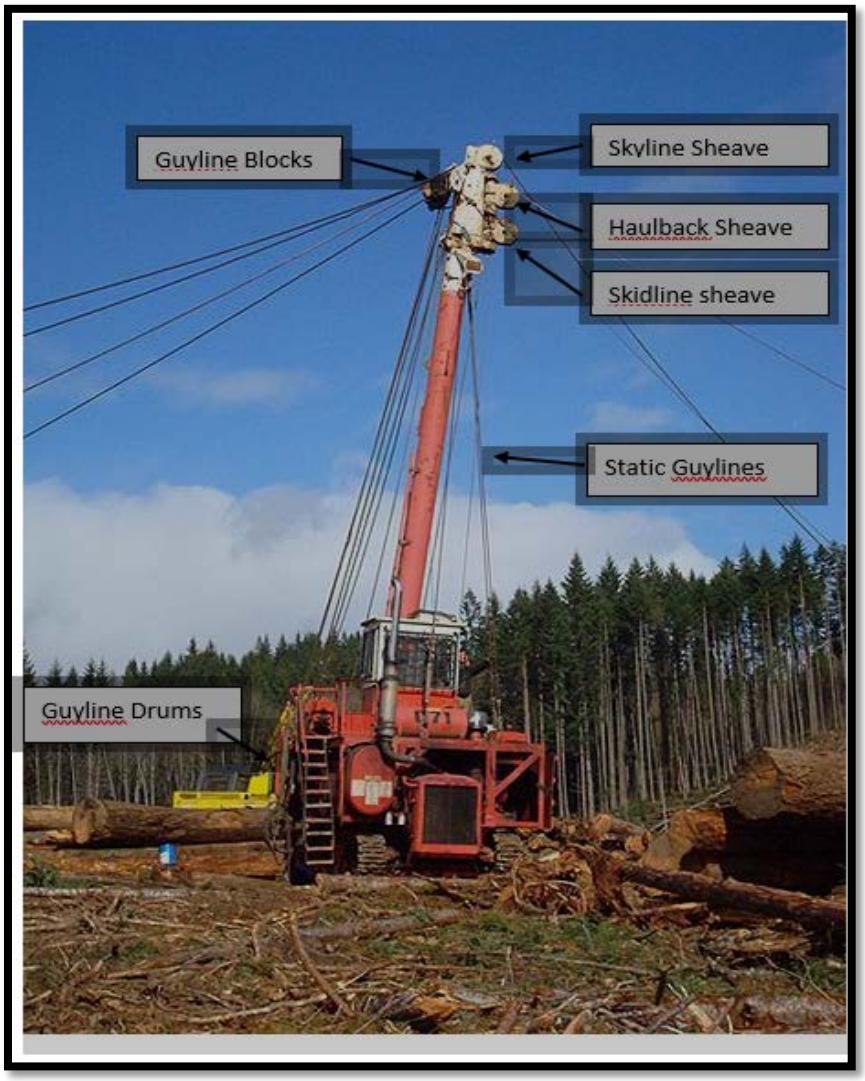
Check the following components on the spar:

- On telescoping towers, check the locking dogs (or locking pawl) for damage, excessive wear, or cracks.
- Check the guy ring and guy lugs where they attach to the tower.
- Check the safety strap at the top of the tower to ensure that it is properly connected and is in serviceable condition.

Metal spar guyline safety strap, *In accordance to WAC 296-54-555: (1) A metal spar guyline safety strap or equivalent device must be installed at the bight of the guylines to prevent guylines from falling vertically more than five feet in case of structural or mechanical failure of the guyline attachment.* ***(2) The safety strap or equivalent devices must be equal to the strength of one guyline being used****. (3) Using cable clips or clamps to join the ends of portable spar or tower guyline safety straps is prohibited, unless used to secure the end of a farmer's eye.*

To perform a visual tower inspection, ensure that:

- The yarder is in a clean condition to allow any evidence of damage or wear to be seen.
- The yarder is not being used operationally for the duration of the inspection.
- The tower can be raised or lowered during the inspection to allow observation of the raising/lowering mechanisms.



Sheaves

- Visually check the alignment of the sheaves with the tower.
- Check for cracks or damage where the cheek plates attach to the base plate and tube and check the front of the cheek plates for spreading.
- Check for cracks where the cheek plates join the top plate and pivot pin.
- Check the condition of the sheave, looking for cracks, dents, rope marks, and the correct rope groove diameter for the rope (<5% of each other).
- Check the condition of sheave bearings, bearing axle, locking nut, and washer. Check the condition of the sheave axle, looking for loose nuts, cracked welds, or general damage.

- Check the sheave bushings or bearings by rotating the sheave to see that it rotates freely.
- Use a bar between the sheave and the sheave housing side plate to see if there is free play in the bush or bearings. **Note: These sheaves are not fast moving.* Consult with a mechanic or contact the manufacture to understand how much shim side play is too much.
- Check the mounting pin at the shackle connection. This pin should have no damage or bend at all.

Blocks

Check the guy block shackles.

- Is there a bend in the shackle or shackle pin?
- Does the shackle have the required safe working load?
- Is the nut effectively secured?
- Check the condition of the guy block at the safety strap connection. These are located near the top of the tube.

Thorough inspection

A more complete through inspection method involves magnaflux and sample X-ray of the metal structure. This testing will detect stress-related fractures that may not be visible. Check with manufacturer to see if they have a recommended schedule for conducting the magnaflux or other metallurgical type inspections.

Fatigue

Fatigue failures are potentially dangerous because they occur without warning and at a stress much lower than the ultimate stress for the material. Such failures are most commonly associated with shafts and other rotating components, but any equipment subjected to cyclic loading is subject to fail. A fatigue failure usually has its origin in some surface imperfections (sometimes an imperfection below the surface can be the cause). These imperfections can be due to the following: Manufacturing methods, Surface finish, Heat treatment, Environment, Handling, Raw material production, Residual stress and surface coatings.

When considering the likelihood of fatigue failure of any structural steel component of a yarder tower it is important to understand how the component is loaded during operation:

- Components that are loaded only in compression will not fail due to fatigue
- Components loaded cyclically in tension are at some risk of fatigue failure

- Components alternately compressed and then tensioned repeatedly are very vulnerable to fatigue failure.

Additional items to inspect:

- Visually check the entire tower or gantry frame, the transport frame, and raising frame for cracks, bends, dents, and wear, lose or worn bearings, and missing or loose retainer clips, bolts, and washers.
- Check the tower raising system.
- Check all drive chains, locking dogs, dog actuator, and ratchet wheel on the guyline drums for signs of cracks, wear, or damage. Ensure guyline drums and drives are properly secured.
- Ensure all lever mechanisms are in good condition. guyline drum controls and outrigger controls must be separated and clearly identified to prevent engaging the wrong control. Ensure that the jacks are maintained with pilot/check valves and properly guarded to prevent damage.
- Check air pressure on the skyline brake and all components on the yarder drum brakes.

Note that making adjustments on bolts and anchor pins will cause wear over time and require replacement.

- Check the drum set frame-mounting bolts to ensure they are all in place and are tight.
- Ensure the ram has a safety valve to stop the tower from coming down if a hydraulic hose blows.
- Check the raising lines and pendant lines for damage and signs of aging.
- Check the age of the guylines and guyline extensions. Consider age, use, care, and visual inspection when deciding to replace the guylines.
- If there is any doubt concerning damage to the spar, consult the manufacturer or a professional engineer before using the equipment.

Yarder spars are subjected to extreme forces, and over time, the metal will develop stress-related fatigue. Damage may still exist even if unvisitable to the eye. It is extremely important to have your yarder thoroughly inspected on a regular basis by a qualified person(s) to help prevent a catastrophic failure.

Logging Safety Training

Attendance Roster

Date: _____ **Subject:** _____ **Location:** _____

Trainer: _____ **Trainer title:** _____

NAME (PLEASE PRINT)	SIGNATURE	COMPANY	JOB TITLE

Safety training attendance roster reviewed by _____ date_____

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