

A Checklist for Efficient Log Trucking

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Trucking is often the most expensive phase of a timber harvesting operation, accounting for as much as 40-60 percent of the total logging cost. Numerous state and federal highway laws also make trucking the most regulated part of a logging business. To the general public, log trucks are the most visible element in a logging operation, and their appearance, along with the driver's performance, often forms the basis for public opinion regarding the industry. Accidents resulting from unsafe log trucks are in part responsible for the high vehicle liability insurance premiums of recent years.

Today's logger must stress efficiency and safety in his trucking operations. To do otherwise will result in reduced revenue or even insolvency. The following checklist describes 10 steps that may help to improve log trucking efficiency. Some or all may apply to your operation.

1. Know the applicable federal and state regulations covering trucking, and comply with them. In Virginia, two sources of information for log trucking regulations are:
 - a. "Size, Weight, Equipment, and Other Requirements for Trucks, Trailers, and Towed Vehicles" - available from the Virginia Department of Highways and Transportation.
 - b. "A Summary of Laws and Regulations Affecting a Logging Business in Virginia" - Publication 420-142, available from local Virginia Cooperative Extension Service offices.
2. Stress safety at all times in your trucking operations. Nothing gives logging a "black eye" as dramatically as having a log truck involved in an accident. Hire only safe, well-trained drivers who are properly licensed and have good safety records. Check each driver's history before you hire him. Keep your

trucks clean, and have your name (or your company's name) painted on the doors. Your pride of ownership will carry over to your employees. Make sure your truck is highway-safe; go the extra mile by providing safety equipment such as flares, reflectors, and mud flaps, and have tail-light extensions for the ends of tree-length loads. Insist on new tires, rather than recaps, especially on the front wheels; this reduces the risk of a serious accident caused by a blowout. Consider installing speed-limiting devices (governors) on your trucks. Lower speeds mean fewer and less serious accidents.

Brake failure is the greatest mechanical cause of crashes- refitting brake drums with automatic adjusters or ordering anti- lock brake systems on new trucks will increase reliability. Maintain fully operational brakes on the front axle of your log truck-this will soon be required by law under the provisions of the Commercial Motor Vehicle Safety Act of 1986. Make sure all trucks are equipped with power steering to help drivers maintain control over rough logging roads and on tight landings.

Perform regular safety inspections on all trucks. Instruct your drivers to be "knights of the road" by driving courteously and offering assistance to motorists in trouble. Trim your loads and remove any vines or branches that detract from the truck's appearance or that may litter the highway. Have your trucks and drivers convey the image of a concerned, successful business. Don't you prefer to do business with someone who displays the pride of workmanship through clean and safe equipment? The savings here may go far beyond dollars and cents.

3. Consider organizing your trucking as a separate legal entity. Keeping the trucking phase of your operation legally separated from the rest of your logging company would isolate the liability incurred through

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your trucking from the assets of your logging business. Truck drivers would then be employees of your trucking business and would be subject to different hiring standards and perhaps lower workers' compensation rates than those required for your logging business. Of course, separate records, documentation, and filing would have to be done for a separate trucking business, which would enable it to pass the legal test for independence. You may wish to consult a CPA to determine if there are any potential tax advantages to incorporating your trucking operations as a separate company, as well as any federal or state regulations that may apply.

4. Establish a sound preventative maintenance program for your trucks. A sound, well-planned maintenance program will pay great dividends. In establishing a program for your trucks, consider the following points:

a. **Dirt:** Only equipment abuse increases maintenance costs more than dirt. Airborne dirt around log landings and mills is particularly hard on trucking equipment. A truck left idling on a busy log landing on a dry, dusty day may pick up as much dirt in the air cleaner as it would in 2,000-3,000 miles on the highway. A broken or improperly sealed air cleaner allows this dust to go directly into the engine. A blocked air cleaner can reduce power and increase fuel consumption.

You can increase the lives of air cleaners and engines by using precleaners if they're available for your engine model. Use air cleaners that can be cleared with an air hose, then discard them when they become worn or blocked. In addition, consider installing filter blockage indicators on the air intake. Instruct drivers to change or clean the filters when a blockage is indicated.

Dirt invades all parts of the truck, making it necessary to pay more attention to a good lubrication program, particularly on universal joints, steering linkages, add other wear points. A shot or two of quality grease once a week will push the invading dirt away from bearings, bushings, and seals, thereby extending their lives. Dirt invasion is particularly severe when pulling through mud or standing water. Frequency of lubrication should be increased when you are operating under these adverse conditions.

Dust can also affect the efficiency of the radiator and other cooling surfaces. A shallow layer of dust, pollen, or other materials on the cooling fins of a radiator can seriously affect its ability to dissipate heat. Blowing the core clean with an air gun or hosing the core out with low-pressure water can often improve cooling ability considerably.

b. **Lubrication:** The adverse conditions encountered in logging may require more frequent engine oil changes than those specified for over-the-road trucks by their manufacturers. This is particularly true if the truck has long hauls on dirt roads or spends a major share of its time in low gear at high rpm's. Engine heating contributes to oil breakdown and should be watched carefully. Changing engine oil every 3,000 miles may increase operating costs but can result in considerably longer engine life.

Don't forget transmission and rear end oils when changing engine oil. All too frequently, these gear boxes are only topped off without being drained and the oil replaced. This oil should be changed at least at the manufacturer's recommended interval and on shorter intervals if the vehicle has several hundred thousand miles on it or is being used under rough conditions. Again, a few miles in low gear at high torque operation pulling out of a woods road can put as much strain on a transmission as several hundred miles of highway operation.

c. **Tires:** Tire inflation pressure should be monitored daily. Inflation pressure should be held at the manufacturer's recommendation. Under-inflation for highway travel may increase traction slightly and give a better ride but results in considerable sidewall flexing and heat build-up in the tires, reducing tire life and increasing the chances of a blow-out.

Try to keep duals well-matched for wear and tread type; a slight difference in the rolling diameter can throw the major share of the weight onto the larger tire and cause excessively rapid tire wear. Start a good tire rotation/replacement program and follow it closely. Begin with the best tires on the steering axle, then rotate them to the tractor tandems, and finally to the trailer tandems, decreasing the risk that's associated with a blow-out or re-cap failure on the highway.

Check the alignment on the steering axle regularly and the alignment of detachable rims on all axles. Keep all tires balanced. A misaligned rim or an unbalanced tire can increase tire wear and cause unnecessary vibration.

- d. Brakes: Carefully monitor brake wear and adjustment. Be certain air hoses, glad-hands, and seals are in good condition. Make sure the driver is bleeding the air tank regularly. The majority of the accidents associated with heavy trucks are caused by brake failure. Don't increase the statistics.
- e. Electrical: Off-road hauling, in-woods loading, and woodyard unloading equipment are very hard on electrical systems. Turn signals, brake lights, and headlights should be checked daily to make certain that they are functioning. Instruct your drivers to clear the mud away from turn signals and brake light lenses before pulling out onto the highway as a matter of safety as well as common courtesy to the other highway users.
- f. Instrument Panels: Instrument panels serve one role-to report the condition of the vehicle to the operator in time to allow him to take corrective measures before damage occurs. Yet it's surprising how many trucks are on the road with only the minimum number of instruments in working order. Gauges and leads are difficult and frustrating to repair, but the frustration associated with replacing an oil pressure gauge is considerably less than that associated with rebuilding an engine. A driver can't be held totally responsible for a failure if the truck's warning system is not working.
- g. Loading: No hard-and-fast rules can be offered for balancing load weights against road conditions and routes, but every contractor should adjust load size to trucking conditions. While it's always desirable to maximize payload for a particular haul, there may be times when underloading is a more efficient strategy. The last cord on a truck may actually be costing you money if it requires that the truck be pushed out of the woods by a skidder, run in lower-range gears to make it over the mountain, use more fuel, and take longer to make the trip.
- h. Driver Training: Trucking efficiency and performance are heavily dependent upon the man sitting behind the wheel. There are all kinds of truck

drivers available for hire on today's market. Just because a man can find a starter button and shift through a 13-speed gear box does not necessarily mean he's a good truck driver. Try to select drivers who are dependable, take good care of their equipment, have good driving records, and will accept advice.

Few things in logging can increase insurance rates and do more damage to a contractor's reputation than having a fleet of poorly maintained, poorly operated trucks on the road. The driver is a key to reducing these risks. Make sure he is adequately trained. Monitor his performance closely, reward him for success, and replace him if he fails to meet the standards you have set.

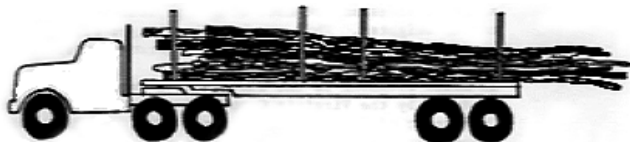
- 5. Minimize the tare (empty) weight of your log trucks. It has been estimated that every pound added to a log truck's tare weight decreases a logger's profit by \$5. Carefully select truck and trailer components with weight as well as durability in mind. Eliminate from the tractor or trailer all unnecessary equipment that adds weight. For example, a sleeper-cab is a very costly luxury on a log truck. Estimate fuel tank needs and do not install excess capacity. Remember, every pound saved in tare weight allows another pound of wood to be legally hauled on every load. Pole trailers weigh 3,000-6,000 pounds less than double-bunk frame trailers. If you can operate with them, they can save you money. Standards and bolsters make up a substantial part of a log trailer's weight - often these can be made of lighter material and still do the job.
- 6. Choose the proper loading technique to enable you to haul the maximum legal payload on each trip to the mill. Operating in natural pine stands or hardwood timber, this may not be a problem. However, loggers hauling highly tapered, light plantation pine often reach the maximum legal height allowance before they reach the maximum legal weight their truck is licensed to haul. In addition, federal bridge formula weight regulations may stipulate axle or tandem allowances on certain log trucks (trailers) that become limiting before maximum legal gross vehicle weight is reached under conventional loading techniques. When either of these situations is encountered, an alternate loading strategy may be in order. Two that have proven successful are shown in the following figures.

Butt to Top



This loading technique is especially applicable when operating in highly tapered timber. Note the cross places that separate the bundles to facilitate unloading.

Staggered Butts



This technique is often effective in controlling limiting axle or tandem weights by altering the load's center of gravity so that maximum legal g.v.w. can be reached.

7. Maximize legal payload by improving your control over load weights. How good is your loader operator at loading each truck to the maximum legal limit without going over? This is a real dilemma - the fear of incurring a stiff overweight fine can cause loggers to send purposely underloaded trucks to the mill, which costs them money. The longer the haul distance, the more important it is that each truck carry the maximum payload. Examine your range of load weights hauled over the past month. Calculate the average payload - how much room is there for improvement? If you have a wide range of load weights, or your average payload is more than 3-5 percent from optimum, there are a couple of steps you can take.

- a. Work with your loader operator to improve his control over load weights. Provide him with feedback from each previous load. Let him see how his loads have varied during the week. Suggest that he try some visual aids such as counting the number of stems on each subsequent load and correlating that number with the load's weight, or marking a point on the standards that approximates the optimal load size. Sometimes it helps to create a competitive situation - ask him to write down his estimate of each truck's weight after he loads it, then compare his guesses with the scale ticket when the truck returns from the mill. Probably the best incentive is to offer him some type of reward for loading each truck to within an acceptable target range.

However, even if the loader operator is sincerely trying, he may not be able to consistently load to within an acceptable range under all the timber stand and operating conditions. If this is the case, and you move sufficient volume to justify the cost, you may wish to:

- b. Consider purchasing an in-woods weighing device. The two basic types now on the market are on-board truck scales and loader-mounted scales. Both use electronic strain gauges to provide a digital weight readout of the log truck's payload. On-board scales have proved to be highly accurate and reliable under southern logging conditions. They provide axle and tandem weights, as well as net payload weight. While they are expensive (approximately \$3,500-\$4,500 installed for a tractor/double-bunk frame trailer combination), several loggers have reported recovering their cost in less than a year through reduced overweight fines and/or increased average payload.

Knuckleboom loader-mounted scales are somewhat less proven at this point but offer a lower cost alternative for a logger operating several trucks. At approximately \$6,000 installed, a loader-mounted scale provides an estimate of net payload weight only (no axle or tandem weights). This may be all a logger needs if he operates in a state where axle weights are not vigorously enforced.

In-woods weighing is the subject of a recent 15-minute videotape produced by the Virginia Cooperative Extension Service and the Department of Forestry at Virginia Tech. Contact your local Virginia Cooperative Extension Service office regarding availability.

8. Consider using an off-road tractor to forward loaded trailers to the highway if you haul with tractor-trailer combinations. The advantages of this operational technique can include:
 - a. Reduced wear and tear on road tractors. In addition, road tractors can be spaced-out with greater tare weight reduction in mind since they don't have to stand up to off-highway conditions.
 - b. Reduced road-building costs. Since you don't put your road tractors in the woods, you can often get by with lower quality, less expensive logging roads.

- c. Extended operating schedule. A properly equipped forwarding tractor, like a military 6 x 6 or a surplus skidder with a mounted fifth wheel, can often get a loaded trailer out under conditions that would stop a conventional road tractor.
 - d. Reduced cost for an on-board scale system. The single forwarding tractor, rather than several highway tractors, can be equipped with fifth-wheel load cells and a digital display and used to obtain weight estimates for each load-cell-equipped trailer. This could be much cheaper than outfitting each tractor/trailer combination with on-board scale systems.
9. Consider radial tires for your log trucks. Although the initial cost is somewhat greater than bias-ply tires, there is strong evidence that overall tire cost may be reduced. Some loggers have reported a 100-150 percent increase in tire life, higher gasoline mileage, and substantially fewer flats using 16-ply, steel-belted radial tires. Radials can also reduce sidewall problems encountered in off-highway service.
10. Look for a possible back-haul, especially on hauls over 100 miles. This suggestion may be difficult to implement, given the limitations on materials suitable for hauling on a log truck. However, a logger shouldn't completely overlook this possibility. Occasionally, you may be able to locate a customer who can utilize the services of your empty truck on the back-haul without excessively slowing down your log hauling. An obvious example would be manufactured wood products being shipped by the mill you supply to a destination near your woods operation. Other possible products might be utility poles, steel beams, trusses, etc. Of course, always make sure you have the required insurance, permits, and licenses, since this could result in your business being classified as a "common carrier," especially if you cross state lines.

The preceding checklist for efficient log trucking offers suggestions that have been effectively used by southern loggers to improve their trucking efficiency. Any other actions you can take toward this end will result in a safer, more productive, and more profitable logging business.