THERE IS MONEY IN SLASH

By

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The lumber scene is changing as the policy of "mining" the land and moving on changes to one of timber cropping. More and more companies are turning their cut-over lands into tree farms and attempting to grow future crops. As the price of public timber rises, because of competitive bidding for a dwindling supply, more and more companies are finding it difficult to stay in business.

Much closer utilization is one answer to the problem of a decreasing timber supply. If a company can prelog and/or relog at zero or plus profit, it is one way to stretch present timber supplies and stay in business until tree farms yield salable raw material for the manufacturing plants. In 1944, a Forest Service study revealed that an average of 27 per cent of a total stand is left on an area after logging. This figure has undoubtedly dropped because of higher prices and technological advancements; but any person who has visited an average logging show can well appreciate the amount of usable material left in the woods. Quite a few companies are beginning to realize what can be gained and are starting salvage operations. Two important arguments for salvage logging are that the wood is gratis since there is no stumpage and roads are either already built or will be built for the main harvest.

SALVAGE LOGGING DEFINED

Salvage logging includes two phases—prelogging and relogging. A strict interpretation of prelogging might include all the cuttings

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done prior to final harvest since thinnings remove material which would be lost to stand mortality, but prelogging in this paper will mean only that which is done just prior to harvest. The objective is to remove small trees which are ordinarily so broken and smashed during harvest operations that no use can be made of them. The other facet of salvage logging, relogging, comes after the main crop has been harvested and has as its objective the removal of any sound, usable material not taken in the main operation.

Besides supplementing the timber supply of a company, salvage logging brings the added advantages of reduced fire hazard and in some cases seed-bed improvement. Income from salvage operations might cover the cost of planting or seeding the next crop.

**SALVAGE PROCEDURE**

Prelogging and relogging differ as to the manner in which the operation is carried out, the parties involved, the equipment used and the area covered by each. Species and ultimate use of the product are also controlling factors on some operations.

Pulp species and small trees that may be of value for lumber of good quality are usually prelogged while average lumber species are mainly relogged. The advantages of prelogging is that trees can be brought out in log length form instead of being broken and shattered by felling and logging the main crop. The advantage of relogging is that logs which have been overlooked by the initial logging operation can be salvaged along with the good but smaller
material. Lumber species, especially Douglas-fir and Western Redcedar, can be relogged at any reasonable time after initial logging because they can lie on the ground for long periods of time without undergoing any deterioration except saprot. On the other hand, pulp species must usually be salvaged within two and one-half years or the fibers will deteriorate to such an extent that the resulting pulp is of little value.

Both types of salvage operations can either be undertaken by the company which owns the land or contracted out to loggers with special equipment. Valsetz Lumber Company, Booth-Kelly Lumber Company and the Weyerhauser Timber Company are examples of companies which have their own salvage programs. Long-Bell Lumber Company and Oregon Pulp and Paper Company are examples of companies which let contracts for the work.

PRELOGGING DISCUSSED

As has been said before, prelogging is here used to mean the removal of a part or all of the understory trees in a timber stand just prior to the main logging operation. It is generally used where there is small cedar, true fir or hemlock in the understory. These species are damaged the most by one-step logging. Some considerations to keep in mind when deciding whether to prelog or relog are:

1. Topography which favors tractor or horse logging makes prelogging easier since the standing overstory trees offer less interference to understory removal than would cable logging.
2. The heavier the understory stand the more favorable will be the yarding cost per unit.

3. If an area is prelogged, there might be more breakage in the overstory trees which are generally higher in value. The breakage would be caused by the stumps of smaller trees or from the loss of the cushioning effect the smaller trees have on the larger, heavier trees.

4. Cutting-costs for relogging would be lower than for prelogging because there would be little or no felling cost.

5. Relogging is more favorable from the standpoint of completely cleaning the area.

So far, in the Douglas-fir Region, the emphasis has been on relogging rather than prelogging. Topography is probably the deciding factor. One point in favor of prelogging should receive more attention and undoubtedly will in the future as utilization becomes closer. This is the "most effective use" aspect of machine logging.

If an area has been prelogged with small, specialized equipment designed for that purpose, then when the main logging machinery is brought in it can be used to its most effective capacity because the small stuff will be gone.

RELOGGING DISCUSSED

Any arguments against relogging can be quickly dispelled by a visit to the average completed logging chance. The only questions then remaining are (1) the proximity of a market and (2) the possibil-
ity of making a profit. Even breaking even can be justified if it keeps the manufacturing plant in operation. The market problem is becoming more favorable, especially for pulp, and more material removed by relogging is used for pulp than for other products. More plants are going in and higher prices are encouraging longer hauling of raw material.

Material remaining after the initial logging usually consists of tops, small broken trees—both fallen and standing, broken chunks of wood, snags, windfalls, partially rotten material and logs of all sizes and grades missed by yarding crews because of concealment by dirt and debris. In addition, an occasional long corner is found to be incompletely logged. High stumps in areas where cutting in the snow is practiced will yield very high quality blocks and short logs. Some operators have taken off as much as ten to twenty thousand board feet per acre in relogging operations.

**SALVAGE METHODS**

**Prelogging**

**Yarding** — Because of the difficulty of yarding logs from among standing timber, prelogging has not been resorted to on a very large scale. In areas where topography is favorable, tractors and horses can be used fairly effectively. A disadvantage to using horses is that the trees have to be bucked before yarding. It has been the general practice to yard the small stuff taken on a prelogging operation in tree length if possible.
Cable yarding from among standing trees is barely past the experimental stage. Some companies have small, portable yarders complete with spar which they use to log areas close to roads. Experiments in cable logging in timber are being carried on at the Cascade Head Experimental Forest of the U.S. Forest Service. They have obtained favorable results yarding up to five hundred feet. As the average tree D.b.h. in the Douglas-fir Region decreases, systems such as the Swiss Skyline will probably come into use.

**Loading**

Loading can be accomplished with any conventional loading equipment. Portable, wheel-mounted loaders are generally more effective. To facilitate handling, the small material from prelogging shows is often banded together with steel bands.

**Relogging**

Yarding - Methods and equipment used for relogging are, in general, the same as used in the initial logging operation. The most common piece of equipment is a medium sized tractor of the D-6 or TD-14 class. One departure from conventional logging methods is made by Crown-Zellerbach Company. They use a "bunching" tractor. The tractor, using a four-man crew, makes use of a 150', 5/8" line on a free-spooling drum. The line is hauled out by hand. Logs are bunched in places where larger tractors can get at them. This system cuts down the time lost while building up a turn.

Because of topography, cable systems are also used quite extensively. Yarders are smaller but of conventional type. The most common are double drums on old tractors, and small, 85 to 100 h.p.,
truck or sled mounted gasoline engines. Various spars have been used. In some cases the spar tree used in the initial logging can be used for relogging. Some companies have developed portable steel spars. Crown-Zellerbach uses steel towers mounted on tractors. External yarding distance has been up to 1200 feet in some cases but most operators feel that 500 to 600 feet is optimum. There is usually more slash on areas that were initially logged by cable systems. Moreover, the majority of the salvagable material is often concentrated in gullies or draws. For this reason it may be necessary to core-log only portions of an area.

**Loading**—Four factors which raise loading time and costs are:
1. Variation in length,
2. Small size of material handled,
3. Low net scale and
4. Small volume loaded at each landing. Nearly every conventional type of loading device has been tried to determine the most economical system. Operators usually favor the shovel type of loader because of its flexibility, but they are expensive, and a high daily production is necessary to obtain reasonable loading costs. Small operators make good use of A-frames or roll-on systems. Wheel-mounted shovels and cranes are generally the most effective for larger operators. Certain modifications, such as ability to raise or drop the boom while swinging it and jaws instead of tongs increase the efficiency of shovel loaders.

Some operators, especially pulp companies, have resorted to sawing and splitting logs into 8-foot cants at the landing. Loading and hauling are thus made easier. Banding with steel bands has been
of only average success. This is due to the extra handling necessary. Banding is almost mandatory, though, where the small material is transported by water for any distance.

Loading costs are also lowered by using systems of preloading. This is accomplished by use of extra trailers, false bunks, or bundling. Truck time loss is kept to a minimum by these methods.

Transportation - So far, standard log trucks and trailers have been most widely used for hauling. Where the material is small, stakes instead of bunk blocks are used. Addition of stakes cuts loading time. Some material is transported by rail and some by water. Bundling is customary, especially in water; it permits handling of whole loads as one unit in booming and rafting and also prevents the loss of short material and sinkers.

USE OF SALVAGED MATERIAL

Utilization of salvaged material takes three forms: The biggest use is for pulp. The material is yarded and hauled to plants as described above. Some pulp companies have installed special equipment to clean and handle the small material. The sulphate process of pulping has been expanded so that more Douglas-fir can be used as pulpwood.

Where the salvaged material consists of a high percentage of large logs, direct transportation to sawmills for manufacture into shop lumber, handle stock, etc., is the utilization picture.

The last form of salvage use is the conversion of forest waste
into lumber in the woods. Small portable sawmills are used. Material is hauled or yarded directly to the mill. High loading and hauling costs are thereby reduced. If salvaged material is converted to lumber or cants full pay loads can leave the woods.

**SUMMARY**

As timber supplies dwindle and stumpage prices increase, more and more companies are turning to closer utilization as one answer. Salvage logging, consisting of prelogging and relogging, is a principal means of obtaining closer utilization.

Relogging, or cleaning an area of usable material after it has been initially logged, is the principal form of salvage logging in use at present. Conventional equipment, with special adaptations in some cases, is used to carry out the relogging operation. Salvage is accomplished either by company-owned equipment or by contract.

The pulpwood industry is the chief user of salvaged material but use for lumber and specialty products is important.