FOREST PRODUCTS LABORATORY † FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

IMPROVED HARVESTING METHODS

EQUIPMENT SURVEY NOTES

WYSSEN CABLE OPERATION IN BRITISH COLUMBIA

Timber formerly considered inaccessible for present-day tractor-logging methods is being logged in British Columbia by the Wyssen cable system described in Report No. 1637-27 of this series. This report describes the first installation in the rough, mountainous region of western North America.

Essentially, the cable system is a combination high-lead skidding and aerial transportation system, taking full advantage of gravity. The logs are skidded to the skyline and transported down hill to the landing in one operation. The skyline is a 1-inch cable, 1-1/4 miles long, extending from the landing to the winch 2,400 feet higher in elevation, and has one intermediate support. Settings are about 400 feet apart.

The winch, powered by a 32-horsepower gasoline engine, is located at the upper end of the skyline. It has a single drum with a 3/8-inch cable to pull the logs up to the skyline carriage, to control them while descending, and to pull the empty carriage back up the hill. Paint marks on the cable indicate to the operator the position of the carriage so that he can slow down as the carriage approaches the intermediate support, landing, or carriage stop. The 3/8-inch haul-back cable has a safe working load limit of 4,000 pounds on this operation. A new 5/8-inch cable is being installed to increase the limit to 10,000 pounds.

In general, the topography is very rugged, and the 1-1/2 to 2 million feet being logged are on slopes averaging between 60 and 80 percent. The timber stand is spotty, but averages about 15,000 feet per acre, and is being cut into short logs 12 to 16 feet long. Utilization is to a 7-inch top; thus logs range from about 6 to 30 per thousand board feet with an average of 15. About 300 to 400 feet of logs are transported in each turn, resulting in a daily production of 10 to 12 thousand board feet.

The logging crew consists of six men under a foreman. Two men furnish their own power saw and tools to fell, buck, and swamp at a contract price per thousand feet. Yarding is done by four men, using the above-described company-owned equipment, but they are paid on a per thousand basis except when setting up or moving.

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Cost Analysis

Equipment investment, including main-line cable and accessories = $18,344.

Average annual investment = $\frac{\text{Initial cost } (N + 1)}{2N} = \frac{18,344 \times 11}{20}$ = $10,089.

Estimated cost based on yearly production of 2 million board feet

Fixed cost	Per year	Per M feet
Interest, taxes, insurance = 10 percent of average investment = $10,089	$1,008.90	$0.50
Depreciation $\frac{\text{delivered price}}{\text{years of life}} = \frac{18,344}{10}$ =	1,834.40	.92
Repairs (parts and labor) = 90 percent of initial cost ÷ years of life = $\frac{18,344 \times .90}{10}$ =	1,650.96	.82
Total fixed cost....	$4,494.26	$2.24

Operating cost	Per M feet
Fuel (1 gal. per hour at $0.25)	$0.18
Operating supplies	.15
Haul-back cable (1 cable per 1 MM feet)	.81
Labor for three settings, $900	.45
Total	$1.59

Labor	
Felling, bucking, and swamping on contract	6.00
Yarding on contract	7.00
Total	$14.59

On this operation a camp is necessary, and its construction cost is $5,000. Depreciation, operation, and other costs of the camp must be added to the above, based on its useful life and salvage value. Also, the foreman's salary must be added to arrive at the total cost.

Increased cable size and larger units are necessary to log other types of timber. A larger unit capable of handling 10-ton loads is being constructed, and it will probably be installed in western British Columbia.

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