

April 1988

FIELD NOTE No.: Felling--4
Previous Sheet Reference Nos.:

SUBJECT: CATERPILLAR FB219 FELLER-DIRECTOR

Pacific Ridge Logging Ltd. of Port McNeill, B.C. and Finning Tractor and Equipment Company Ltd. have developed a machine to fall trees, load logs, and construct back-spar trails. They began with a Caterpillar FB219 (Fig. A), then used the main boom section from a Caterpillar LL219, lengthened the stick, used an oversized stick cylinder, and added a live heel section (Fig. B). Engine power was increased to 100 kW.

The felling head was built by Pacific Ridge Logging Ltd. from a Hultdins F-60 feller-director. The Hultdins head (Fig. C) resembles a log-loading grapple with a chain saw attached beneath the grab-arms. The head was enlarged to a maximum opening size of 75 cm, and a maximum cutting diameter of 90 cm. The head's configuration allows it to cut diameters larger than the grab-arms opening. It has a powered swivel which pivots approximately 270 degrees for making undercuts and for directional control. The felling head was mounted on a different carrier prior to purchasing the FB219, and the contractor estimates it has cut 50 000 m³ since it was built.

To fall a tree, the operator rotates the head to the desired falling direction and grips the tree with the grab arms. Lifting the boom causes sideways pressure on the tree for directional control. The tree is cut with the chain saw, then released from the head as it begins to fall. Once it is on the ground, the butt may be positioned with other trees to build a bunch. The live heel is used to help lift the whole tree if the top also needs moving (Fig. D).



FIGURE A. FB219 Feller-Director.

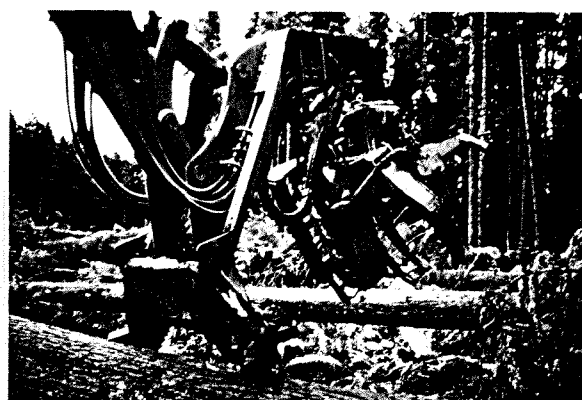


FIGURE B. Live Heel and Felling Head.

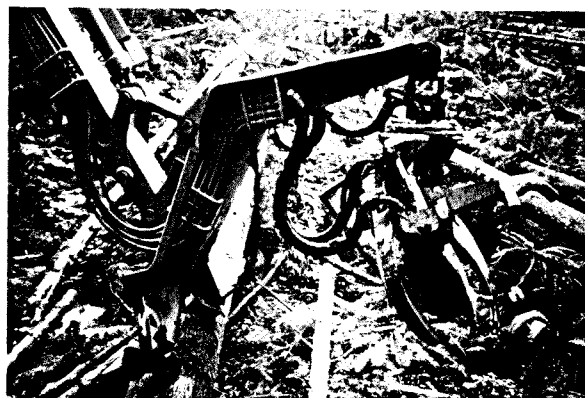


FIGURE C. Hultdins F-60 Felling Head.



FIGURE D. Lifting Whole Tree.

FERIC observed the feller-director working on a stand of second-growth hemlock, balsam, and spruce near Port McNeill in January, 1988. The stand was established after windfall, and was approximately 80 years old. It contained trees up to 100 cm in diameter. The setting was divided into two areas: one less than 15% sideslope, and the other approximately 40%. The steeper area was left for hand-fallers. The feller-director was able to fall trees adjacent to a fish-bearing stream and keep the trees out of the stream.

When FERIC was on-site, the feller-director was falling and bunching trees (Fig. E), and constructing backspar trails. It cut trees up to 80 cm in diameter (Fig. F), although butt-swell on the large trees caused delays in positioning the head. The contractor estimated on the previous setting that he averaged 400 m³ per 8-hour shift in addition to constructing backspar trails.



FIGURE E. Bunched Trees.



FIGURE F. Undercut Stump.

The feller-director had no difficulty in manoeuvring while FERIC was observing, but the contractor said he had left the steeper areas because of unacceptable soil rutting. On problem areas he generally used debris to fill in wet and soft spots to minimize rutting. He also used as much debris as possible on backspar trails to minimize excavation.

In FERIC's opinion, the FB219 is a viable alternative for mechanized falling. Its lower weight compared to larger feller-bunchers, reduces soil compaction and rutting. It is not able to hold trees as they are felled, but the combination of the Hultdins head and the live heel allow it to directionally fall and then bunch trees after they have landed. It is also capable of backspar trail construction in conjunction with falling, which should reduce overall logging costs. Its live heel also makes it capable of loading logs.

INFORMATION: The information contained in this report is based on limited field observation and is only published to disseminate information to FERIC member companies. More information may be obtained from:

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