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LIM-MIT LM2000 PROCESSOR: OBSERVATIONS

INTRODUCTION

Mechanized processing of logs has been accepted as a safe and efficient practice in operations in Alberta and the Interior of British Columbia. Risley Equipment of Grande Prairie, Alberta has introduced a new model of the Lim-mit processor. The Lim-mit LM2000 was built and tested in Alberta during the winter of 1989-90. The Forest Engineering Research Institute of Canada (FERIC) had the opportunity to observe the new processor in operation near Barriere, British Columbia, in November of 1990. It was processing lodgepole pine and Douglas-fir stems in a conventional landing operation for Tolko Industries Ltd.

DESCRIPTION

The Lim-mit LM2000 log processor (Figure 1) is similar to the original LM2200 but has been designed to process smaller stems more efficiently. The processors are different in weight, feed speed, and infeed assembly. Because the LM2000 is lighter in weight, it can be mounted on a smaller excavator carrier. The feed ring, which often hindered placement of the butt into the rollers, has been replaced by a bumper bar. This not only reduced the weight of the processor but simplified feeding. The feed rollers feature replaceable spiked bars or an arched wave bar. The topping saw can cut tops to a maximum

23-cm diameter. A 71-cm chain bar butt saw can be mounted behind the grapple arms to buck larger tops. The LM2000, mounted on a John Deere 693D carrier, sells for approximately \$347 000.

OBSERVATIONS

The processor viewed by FERIC was owned by Stamer Logging of Barriere which logs for Tolko Industries Ltd. The stand was comprised of mixed lodgepole pine and Douglas-fir; stand volume was 231 m³/ha, and average stem size was .5 m³. A small percentage of white spruce, sub-alpine fir, and Western red cedar was also present in the stand. The contractor was required to manufacture and separate peeler logs, and separate the Douglas-fir and cedar logs.

Using the LM2000 on a landing operation enabled the contractor to sort logs easily. The operator built four log decks in a 180° radius on a small landing. To make his operation more workable, the contractor harvested in two phases. A Rotosaw feller-buncher felled all the stems up to a maximum 50-cm diameter, and the bunches were skidded to the landing for processing. After the smaller stems were processed and hauled to the mill, the larger stems left in the stand were hand felled, skidded to the landing, and hand bucked or processed by the LM2000. This method of harvesting may not have been the most efficient, but the landings remained small because the number of log sorts and decks were kept to a minimum. A rubber-tired loader was able to clean up a landing very easily and quickly after the LM2000 was finished.

The processor produced approximately 35 m³/h and worked two 8-h shifts per day. The contractor was very pleased with the LM2000 because it functioned well, measured very accurately, and could be used to sort logs on the landing. The contractor had in recent years purchased and tried two boom-type delimiters but sold them because they had length-measuring problems and proved to be unreliable for his operation. The contractor stated that the productivity of the processor could exceed 45 m³/h if sorting was not required. The cost of manufacturing logs at the

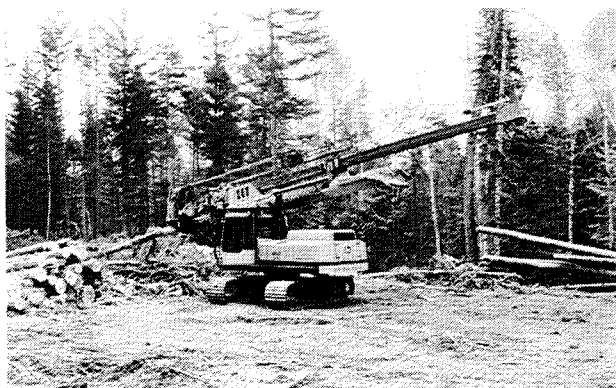


Figure 1. The Lim-mit LM2000 log processor.

observed site with the Lim-mit LM2000 delimber was calculated to be \$2.31/m³.

The LM2000 is operated in the same manner as the LM2200. The grapple arms on the processing head pick up the stem and place it in the feed rollers, which have a lineal feed speed of up to 10 m/s. Delimbing speed is also enhanced by the extendable boom, which has a lineal speed of 2.3 m/s. The delimbing knives on the grapple arms and on the tip of the processing head remove the limbs as the stem is pulled through. Delimbing stops at the preset minimum top diameter and the topping saw bucks the top. The feed rollers then reverse and the log is fed onto the deck of processed logs.

Manufacturing long logs involves topping the stem as usual, but on the discharge motion the log is stopped at a pre-programmed log length for the butt log and bucked. Discharging of the log then continues as usual. On very large stems, the first log is measured to the desired length and bucked by the chain bar butt saw located immediately behind the grapple arms. The log is discharged onto the log deck and the normal processing continues after the unprocessed top portion of the stem is picked up.

Only one problem was observed: the discharging speed caused some logs to be improperly aligned in their respective decks. This is an operator-related problem and can be easily rectified. The strain on the undercarriage might also be a concern when swinging the long stems to their respective decks.

CONCLUSION

The Lim-mit LM2000 is a viable delimber that will be a welcome addition to harvesting operations in the Interior of British Columbia and in Alberta. Its new design and faster roller feed speed allow it to economically process smaller stems. This delimber, if placed on a smaller excavator carrier, has a relatively low capital cost. The Lim-mit continues to be a safe and effective machine for processing and sorting different species and lengths without increasing landing sizes.

INFORMATION

More information may be obtained from:

Risley Equipment Ltd.
9024-108 Street
Grande Prairie, Alberta
T8V 4C8
Tel: (403) 532-3282
Fax: (403) 538-1808

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Dennis Araki, R.P.F.
Senior Researcher, Harvesting Operations.

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