

LIM-MIT LM2200 PROCESSOR AND LOADER

INTRODUCTION

The North American forest industry has become highly mechanized in recent years by the efforts of many manufacturers to develop specialized equipment for the industry. Innovative timber harvesting contractors, in an effort to reduce costs, often customize this machinery to fit their harvesting operations. During the summer of 1991, the Forest Engineering Research Institute of Canada (FERIC) had the opportunity to observe a Lim-mit LM2200 processor both processing and loading in Oregon. During the last five years, the Lim-mit LM2200 processor has been successfully used in the Interior of British Columbia and Alberta. Because it has been the subject of three FERIC reports (Peterson 1987, MacDonald 1989, Araki 1991), the processing productivity of the LM2200 will not be described in this field note.

DESCRIPTION

Warfield Logging Ltd. of Toledo, Oregon, contract timber harvests on Georgia-Pacific Corporation's private forest land near Siletz and owns two Lim-mit processors mounted on modified Link Belt LS3400 excavator carriers. The contractor had originally purchased a Lim-mit mounted on a standard Link Belt LS3400 excavator to process logs and to experiment with log loading. As a result of some success with the latter, the newest Lim-mit was mounted on a modified Link Belt with a high-clearance undercarriage, raised swing-circle mounting ring, and an elevated cab, all of which improved loading visibility (Figure 1). The new excavator configuration did not affect the processing ability of the Lim-mit but did improve its loading capability. The mounting ring raised the excavator deck 20 cm, and the elevated cab raised the operator's line of sight an additional 1.2 m. All Lim-mit processors have two photo cells mounted at the top of the delimbing tube, but the two machines observed each have an additional two mounted at the bottom of the tube. These extra photo cells permit the machine to measure and buck short export logs. The cost of a Lim-mit LM2200 on a standard Link Belt LS3400 is C\$368 000. The high-clearance undercarriage and raised-cab options would increase the cost by an additional C\$30 000.

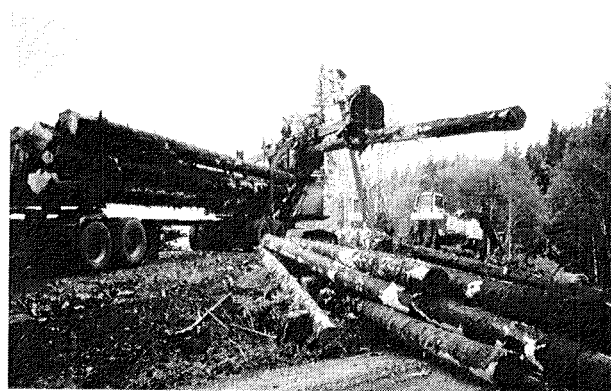


Figure 1. Lim-mit LM2200 processor mounted on a modified Link Belt LS3400 excavator.

OBSERVATIONS

The Lim-mit LM2200 processors were observed working at a skyline logging operation where a Madill 071 and a Thunderbird yarder were cable yarding a second-growth stand. This naturally restocked stand of Douglas-fir, western hemlock, western red cedar, and sitka spruce had an average volume of 450 m³/ha, an average butt diameter of 50 cm, and was approximately 60 years old. The main priority of Georgia-Pacific was to produce export-quality logs, which requires accurate lengths and an intact bark jacket to prevent checking or staining. Each yarder produced approximately 470 m³/day, using three chokers on a Danebo carriage. The contractor's complete equipment force also included: two Link Belt hydraulic loaders, a Koehring feller-buncher, and a Timberjack grapple skidder. Most of the stems were yarded tree length to the landing, but stems over 60 cm in diameter were bucked in the bush because the Lim-mit could not process them. A processor and hydraulic loader were positioned on either side of each yarder and pulled the stems away from under the cable lines as quickly as possible.

When manufacturing export-quality logs, the operator used the boom, instead of the live rollers, to pull the stem up into the tube, minimizing the possibility of removing any bark. Instead of the normal procedure of processing the whole stem to the minimum top diam-

eter, the manufactured butt portion of an export-quality log was placed alongside the yarder, and the top portion of the stem, with limbs, was set aside for later processing. The spiked rollers were used to hold the stem while the topping saw was positioned, and to discharge the processed log. After discharging the export-quality log, the processor then continued to pick stems from under the yarder. The top portions were processed when the landing area under the yarding cables was cleared. Any pulp or saw logs for the local mills were processed using the rollers and boom. Multiple stem delimbing was very common at this point.

Under normal harvesting conditions, the Lim-mit processed and the hydraulic loader did all of the loading; however, when the daily production for the yarder was less than 250 m³ or when the road and landing area was small, the Lim-mit performed both functions. The Lim-mit was able to load a highway truck in 8 minutes (legal payload of 26 tonnes). It did this by positioning itself behind the logging truck, lifting the trailer off the tractor, and loading from the processed log decks. The high-clearance undercarriage and raised cab make conventional roadside processing much easier because the operator has better visibility of the work area and less back and neck strain from looking up at the decks. The contractor indicated that loading small-diameter pulp logs with the Lim-mit was very quick because whole bunches could be lifted and loaded. To date, this combination of processing and loading has caused no structural problems to either the Lim-mit or the excavator.

CONCLUSIONS

The Lim-mit LM2200's processing ability was not affected when mounted on a high-clearance undercarriage and fitted with an elevated cab. It may be an advantage to have this configuration for normal roadside harvesting operations because log decks could be built higher and still afford good visibility for the operator. The processor loads well, and this dual-purpose capability may allow contractors with small operations to mechanize their log processing without having to increase production.

INFORMATION

The information contained in this report is based on limited field observations and is published solely to disseminate information to FERIC members. It is not intended as an endorsement or approval by FERIC of any product or service to the exclusion of others that may be suitable.

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