

HELICOPTER LOGGING IN YOUNG CROP RADIATA PINE

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In August 1978, the N.Z. Forest Service Kaingaroa Work Study Unit in conjunction with Waimihia State Forest staff and Lakeland Aviation of Taupo, studied a Hughes 500 helicopter in a production thinning trial.

The objective was not to establish whether this particular operation was financially viable with the equipment used but to ascertain the practicability of the techniques, and to gather some base data from which Lakeland Aviation could assess the feasibility of the operation if related to larger helicopters.

EQUIPMENT AND BASIC DATA

HELICOPTER

The Hughes 500 helicopter has a 365 kg payload capacity and is a



Photo courtesy LAKELAND AVIATION LTD

Figure 1. Hughes 500 Helicopter

(It was acknowledged before the study that this machine was not ideal for this operation.)

lightweight, very fast machine. (140 knots/hour.) This particular machine has had a lot of use with monsoon buckets and the electric release principles of the monsoon bucket had been extended down a 18 m link chain to a quick release mechanism to which the strops could be attached. (Breaking strain of chain is 1360 kg.)

STROPS

The 13 strops were made of polypropylene (1820 kg breaking strain) with a spliced eye at one end and a steel ring or spliced eye at the other. The length of strop varied from 1.8 m to 2.4 m.

FELLING

All felling and trimming had been done by the Forest Service staff in advance of the operation and three landings were to be utilised. (800, 1100, and 2400 metres from the felling face.)

CREW

Lakeland Aviation supplied the pilot and breakeroout (another pilot) while the Forest Service provided a skiddy and an extra man in the bush to assist with cutting to length of large stems and final trimming.

FOREST STAND

The stand was 15 year old Radiata pine with the stems removed averaging 0.25 tonnes. The compartment was flat and there was very little wind.

WORK PATTERN

The helicopter travelled to the bush with the 18 m chain dangling below. Once located above the breakeroout the helicopter was lowered until the breakeroout could reach the chain. This placed the helicopter just above the tree tops.

The pre-stropped logs were hooked on, the breakeroout signalled with a hand wave, and the helicopter moved up vertically until the load was clear of the crop trees. (Where a convenient gap existed the pilot took advantage of it to move forward and upward together.) Once clear of the tree tops the load was moved in a straight line to the skids. Dependent on line of sight available at the skids, either the load would touch the ground and be dragged to the drop point or be manouvered until the load was suspended over the drop point and then lowered and released. Once released the log and strop would be left on the skids and the helicopter return to the bush. When convenient the strops from the previous loads would be gathered and attached to the chain by the skiddy for returning to the bush.

The table below summarises the data:

HAUL DIST.	NO. HAULS	AVERAGE PIECES PER HAUL	AVERAGE TONNES PER HAUL	AVERAGE CYCLE TIME (Mins)
800 m	15	1.47	.25	2.06
1100 m	18	1.22	.26	2.59
2400 m	14	1.71	.25	3.49