SESSION 3
Paper (c)

GROUND-BASED SYSTEMS

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Introduction

Extending ground-based systems further into steep country is seen by many to be a viable alternative to hauler logging. To date in New Zealand skidders and tractors have been used successfully in Nelson and Hanmer areas and much of this work has been internally documented. There are, however, many other occasions where this system is used on what would normally be called hauler country without any documentation to assist others in planning.

Given the variability of soil type and characteristics in New Zealand, it is desirable then to either carry out trials or monitor areas already being worked or recently worked, in as many areas as possible. Though documentation of such exercises is then essential, the following paper looks at the type of information currently available and points out the large vacant areas in that information.

This subject was well covered in a bibliography tabled by Bob Gordon at the 1981 tactical planning seminar. A noticeable trend in that bibliography was the lack of New Zealand references. Only one N.Z. reference of substance was cited. That reference, by Ralph Robinson, discussed in detail the operational aspects of logging steep country with ground-based systems in the Nelson region.

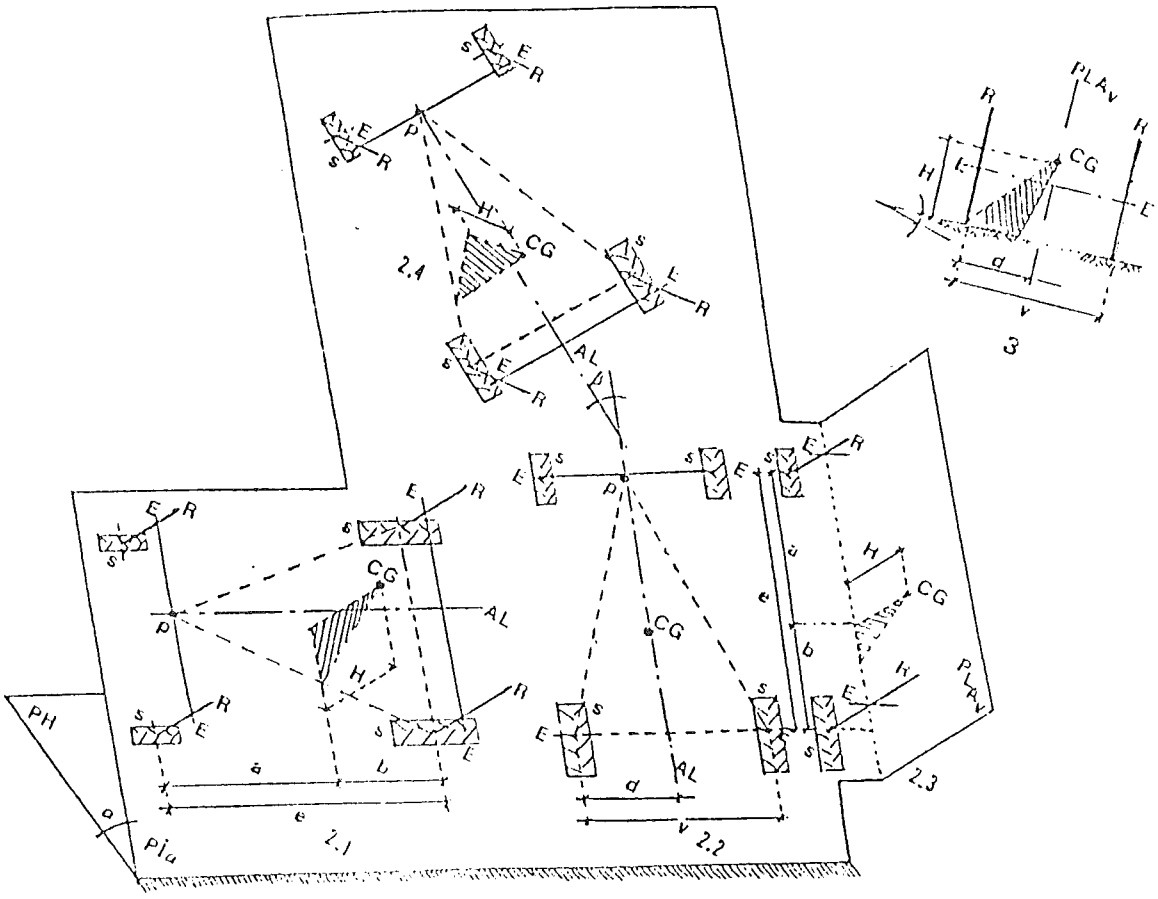
The Australians, by comparison, have reported quite extensively on using ground-based systems in both thinning and clearfelling. The trials documented are, however, of only short duration, but provide good comparisons of productivity and soil disturbance of different systems.

Other overseas publications tend to deal with either :

(a) Trials in the northern hemisphere where it is noted that the best conditions are frozen soil, not often found in New Zealand. The trials are often also related to small piece size clearfell, .5 m^3. Or,

(b) Pure mathematical analysis of when a machine will tip over, assuming it is on a concrete pad type land.

The type of information presented in this mathematical analysis is illustrated in the diagram, Fig.1.



Part of the accompanying text reads as follows :

"A Toric-elastic-envelope like the tyre must be seen in a longitudinal view, i.e. following the equatorial plane and also in transversal section to that equator."

While this type of information is most useful to designers and manufacturers of skidders and tractors, it is doubtful how much use it is to someone who is operating or controlling operation of such a machine.

Fast tracked or FMC type skidders with their advantages of low soil disturbance have tended to be trialled in environmentally sensitive areas rather than testing their ability to log steep areas for prolonged periods.

To summarise, we have reasonable information on different options for tracking, albeit isolated to specific soil types. We have good information on expected productivity from machines working in the Nelson area. However, there is little or nothing on, for example, what slopes various machines can economically work on without tracks and then how much they can be extended by tracking over a range of soil and topography conditions in New Zealand.