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TROUBLE SHOOTING PRODUCTION PROBLEMS FOR LOGGERS

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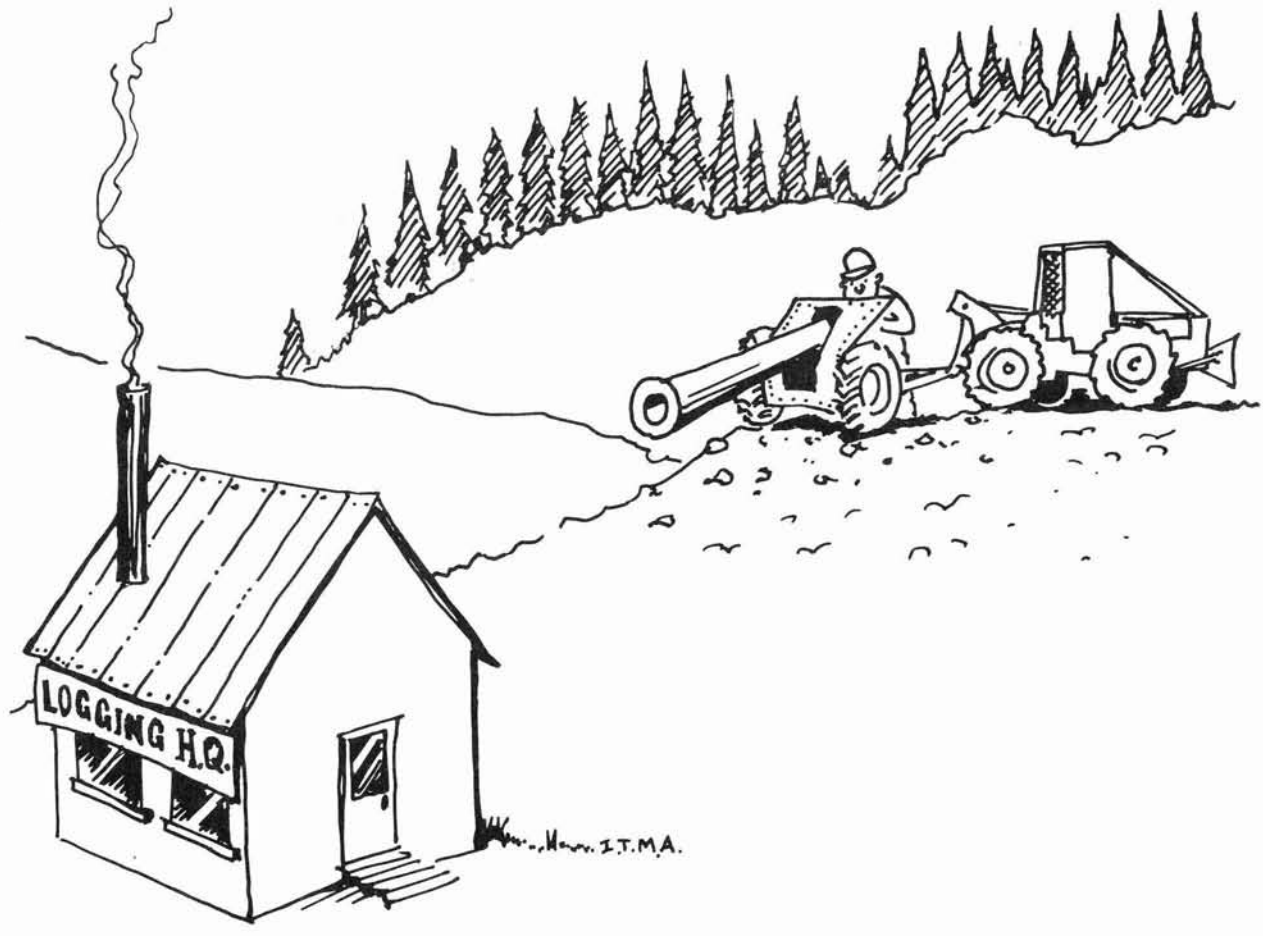

INTRODUCTION

The failure of logging crews to meet production targets creates problems for both logging crews and their employer. For a contractor below target production, this can lead to severe cash flow problems which may eventually put him out of business. For a Company gang, it can mean a substantial reduction in hourly earnings. For the logging organisation, it can cause problems with meeting production schedules, and this can result in possible cost escalations and strained labour relations.

Failure to meet production targets may be due to an incorrect target, or the result of other factors which are within the control of the crew.

This Technical Release has been written to assist in identifying such problems. It :

- lists some of the assumptions made about logging operations in setting targets
- outlines the methods for calculating targets
- provides a checklist to help identify the causes of low production.

ASSUMPTIONS IN TARGET SETTING

Some organisations have formal target setting methods. Others use targets based on practical experience or historical averages. In most situations, there are some important assumptions made in the setting of targets.

These are :

(i) The extraction machine will be the factor that limits production in most situations.

(ii) Crew size is determined by the production requirements of the extraction machine.

(iii) Crew members are expected to be work hardened and skilled.

TARGET SETTING

Regardless of the target setting method used, the result will reflect the effect of the variations in the stand and in operating conditions. For a particular size of machine and gang, there are three major factors that influence the setting of targets. These are :

(i) Length of working day

(ii) Average cycle time

(iii) Average drag size

Targets are calculated by using the following formula :

$$\text{Daily target} = \frac{\text{length of working day} \times \text{average drag size}}{\text{average cycle time}}$$

Average cycle time is calculated from existing work study standards and field data. Average drag size is calculated from stand data.

Some organisations have found it helpful to provide the logging crew with the information used to derive a target. This allows the crew to monitor their own levels of production and to quickly identify factors that are affecting production. The keeping of daily records of; crew size, productive work hours, productive machine hours, and wood production (number of drags and logs per drag) is a useful method of doing this.

PROBLEM IDENTIFICATION

The Logging Supervisor, in consultation with the contractor or gang boss, usually has the best idea of why the production target is not being met. The following checklist is a guide to help pinpoint problems. Answering the following questions will reveal whether the target is correct, or whether other problems are the cause.

Target

- are the calculations correct?
- are the standards and field data used appropriate for the terrain and stand conditions?
- is piece size correct?
- how have other crews performed in similar areas?

Time on the Job

Machinery

- how much time is spent pulling logs?
- how much time is spent on other work (skid work, blading, pushing hang-ups)?
- how much time is spent waiting for work?
- how much downtime is there?

Manpower

- are the required number of men on the job?
- are they effectively organised?
- are they spending sufficient time working?
- how much time is involved with smokos, lunch breaks, walking in and out, and waiting for work?

Cycle Times

Manpower

- do the men have adequate skill and experience?

- do they have the right equipment?
- how are work relationships and morale within the crew?

Work Methods and Organisation

- is the felling presentation causing excessive breakage?
- is the time involved in accumulating drags excessive?
- is this a result of poor felling presentation?
- what is the average haul distance?
- are ground conditions or obstructions significantly increasing travel times?
- are landings correctly located?
- are there significant work delays?
- is the balance between machinery and manpower correct?
- is the way the block has been opened up and worked appropriate?
- are there sufficient landings, and of sufficient size?
- is load out frequent?
- can the work on the skids be reorganised?

Drag Size

- is the extraction machine the appropriate size and type for the job?
- is it correctly rigged?
- does it have a sufficient number of strops?
- is it extracting a full payload?

DISCUSSION

Two of the most important factors under the contractor's control are :

- making the best use of time on the job
- optimising drag size

The following example illustrates their importance.

Assume time on the job is 8.5 hours (e.g. from 7.00 a.m. to 3.30 p.m.). The productive work time will be 8.5 hours minus the time spent on machine servicing and breakdown, smokos, walking to and from the breakout site, discussions, shifting between sites, etc. In most situations, skidder and tractor operations achieve 6 to 6.5 productive work hours per day.

Time on the job is already paid for (e.g. wages, crew transport, machine repayments, insurance, etc). It makes sense to use as much of that time as possible (less agreed smoko and lunch breaks) for extraction. Starting work on time and keeping to agreed smoko breaks is simple to check. Monitoring machine time can be done by keeping a notebook of delays and downtime or by using a mechanical device such as a chart recorder.

In this example, the loss in productive time through losing an extra half an hour a day in delays and lost time is 8% (e.g. 0.5/6.5).

Figure 1 - Drag size optimised by bunching thinnings

One rule of thumb for optimum drag size for a skidder or tractor is the minimum load the machine will walk with. Increasing the load to optimise drag size will mean an increase in travel loaded time (and sometimes increased hooking and unhooking times) but this is only a part of the total cycle time and the increase in production is proportionally greater. The extra time involved in hooking on a small log or broken head to make up a full load is well worthwhile. However, overloading the machine, causing it to drop and winch excessively, will be counterproductive and will eventually result in increased downtime through premature breakdowns.

The optimum drag size will vary with soil type and wetness, slope and lie of the logs. To keep load size up to the optimum, the operator needs to keep experimenting and adjusting load size. As haul distance increases, it becomes more important to maintain the optimum drag size as the machine becomes the limiting factor. At shorter haul distances, the felling phase in the bush, or the processing phase on the skid may limit increases in production. Experienced contractors will often balance their operation by having fallers working close in and far out where possible.

PRODUCTION STUDIES

A production study is a method of measuring production in the work situation. It is often used if the target remains in dispute after all reasonable checks have been carried out. It can also be used to provide a target for particularly difficult conditions, or to identify problem areas.

Collection of this information is best done by work study personnel in conjunction with the Logging Supervisor. A study will be carried out over a full work day. Studies of shorter duration can be used to check drag size, piece size and cycle times.

If resources are not available for carrying out production studies, logging crews should use daily records of; wood production, crew size, productive work hours and productive machine hours to support their case for target adjustment.

SOLVING PROBLEMS

Once the problem has been identified, corrective action should be taken. This will usually involve consulation with management and the contractor or crew boss, and should result in :

- a target adjustment (if required)
- suggestions for changes or improvements in work methods
- further training or replacement of workers
- follow up to ensure that machinery is available and sufficient hours are being worked.

SUMMARY

Failure of logging crews to meet production targets can create serious problems for all involved. The cause of this problem is often a combination of factors which can be identified through the key personnel involved and the keeping of daily records.

Production studies can be a useful tool too for identifying problem areas or validating existing targets. Solutions to production problems are achievable, but require the commitment of management and the work force to making necessary changes.

The authors are members of a Management Services Working Group convened by LIRA to co-ordinate standards and procedures for handling information by industrial engineers and work study personnel within major forestry and logging organisations.

LIRA publishes this Technical Release in the interests of wider dissemination of knowledge in the industry.

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