

THE ECONOMICS OF YARDING SMALL LOGS WITH BIG YARDERS

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For the purposes of this paper we will define a "Big Yarder" as a 100 foot tower rather than a "Small Yarder" with a 50 foot tower.

Now that we have that clear, what makes me think I know the difference?

I have spent 13 years logging with cable yarders in the state of Washington. I have logged everything from 4" tops to 8' old growth Douglas fir and from regular highlead system to flying a sky car drop line carriage. I don't claim to be an expert but I do know what works.

The Economics of Yarding Small Logs

Economics boils down to two main factors:

1. Costs - Initial purchase costs for machinery and rigging and the continuing costs of both maintenance and rigging.
2. Productivity - What do the different methods do to put more logs on the landing every day?

In this paper we will use costs in the United States for the purchase prices.

Average new price for a 70' Madill and a 70' Thunderbird are \$460,000 (US). Average new price for a 100'/90' Thunderbird or a Skagit Berger Washington are \$600,000. Since the used machinery market is obviously a variable area but also

volatile as to comparable costs and conditions we will conveniently ignore it!

Operating Costs

The smaller yarders will have an advantage on fuel costs because of lower power requirements but engine and transmission life will be shorter because they work closer to full capacity more of the time.

Cable costs are hard to peg. The smaller machines use lighter cable but because of high speeds and high brake tensions go through lines more often.

I would give the 50 footer an operating edge of 20% less cost to operate.

Now the biggest part of our differences is in the methods.

The old timers used to go out and top a tree at 150' and put guy lines on at the top, hang 3 big bull blocks up there and either one or two sets of buckle guys on the way down. All this work to put the "high" in "highlead". Nothing takes the place of height at the landing for making the logs come easier and faster.

Lets compare two theoretical settings with the usual ground conditions. My 90' M3 Berger would rig up in 4 hours and with wood averaging 24" would produce 16-20 loads a day up to 1200 feet from the landing. Bill Paul's 071 Madill would rig up in about 1-1 1/2 hours and would produce 9-12 loads a day up to 900 feet. The Madill would have to move twice at

1000' with adequate deflection

15%

1976

\$220,000

25 ton loads

1978

\$190,000

*1989
W.B. Peacock*

turn the yarder

about 30 minutes per move to bring the whole setting into lead. Sure the Madill moves easy but you have to move more often.

chokers reducing time between turns. This means more logs.

Why does the Berger get more logs? Let us count the ways.

1. More horse power - 425 hp against 318 hp means we are using at least one more choker each turn.
2. Less moving - We log at least a half circle (180.), but it's possible to log 300, from one spot.
3. Most important, better deflection - Deflection is the secret to cable yarding of logs. With 100' at the landing and all the possibilities of getting lift at the back end available to both systems means less han-gups and faster yarding with the higher tube. If the horse power and moving were the same, the higher tube would still get significantly more logs.

How about the Problem areas.

1. Convex Slopes - Carried to the extreme neither system works, but a 100' tube will work more than 100% farther out than a 50' tube.
2. Long Reaches - You have to rig disproportionately higher at the back end to keep lift if you don't have lift at the landing.
3. Roading - To maximise productivity with a short tube you markedly increase roading costs to keep yarding distances short and get access to the higher ridges and points.
4. Carriages - To handle the new motorised slack pulling carriages you need bigger machinery and more lift. But they pay off in pre-setting

Operating Techniques with 100' towers

Some of the concerns spoken about by last autumn's touring group of N.Z. loggers were:

(1) Handling the logs at the landing.

- Whether in tree length or bucked logs, a track mount log loader is the most efficient. It must be of sufficient capacity to handle the tree lengths to where they can be bucked and then deck the logs.

(2) How to guy line on steep ground.

(a) Small stumps

- join a bunch together
- tie the stumps back with hay wire
- dig in a dead man.

(b) Wrong Angles

- extend guy lines as far as possible with extensions
- put a block up a tree and guy the tree
- put extra dead guy lines out

(c) Moving the yarder

- Two of our yarders were mounted on trailers and could be towed down the road by a truck. By putting a 2 axle dolly under the front could the yarder be pulled from landing to landing with a tractor (D7 or D8)? A weak point on the 071 was or is the transfer

300-400'

Must be done

clutch. They don't stand too much strain. Both systems are easy to move, but the 071 is lighter where bridges are a concern.

My own opinions.

With the family style contracting system used by most of the major timber operators in New Zealand there is, very definitely, room for both systems. The Madills are economical, dependable yarders and quite productive on shorter leads. However, over the harvesting of whole watersheds and forest systems, overall economies can be made and production maintained or enhanced by utilising the inherent advantages of taller tubes. As more of the steeper ground comes on line, particularly unstable ground, big slack lines also offer some operation alternatives and advantages. The savings on road costs, plus the unknown cost associated with mid slope roads on unstable ground, can make long span yarding an attractive proposition.

The technology and experience is here in the Northwest. Take advantage of it and like good Kiwis, improve on it.

Thanks.

