

THE VERSATILITY OF THE BELL LOGGER

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I started contracting for NZFP in 1978. We started in 12 year old thinnings, with a 75 hp David Brown tractor for extraction. That didn't work too well and was replaced with a secondhand Clark 664 skidder. At this stage the operation was under-capitalized, we were struggling, going broke and the bill collectors were knocking on the door.

About this time the first Bell arrived in the country for demonstration. I thought "If I can't do it with four wheels and 90 hp how can we do it with three wheels and half the horsepower"? The trials at NZFP showed it could extract, but it had some problems with terrain. What really opened my eyes was its ability to bunch wood for a skidder.

So off I went and traded the David Brown for a Bell and added some more men to the gang. We increased production from about 40 tonne to 60 tonne per day. After time we saw that the skidder was under-utilized, so we added another Bell to the system and some more men. This increased production further to 90 tonne. But then the skidder became the limiting factor, so we got another Bell to do the felling and stacking.

In 12 months we went from four men and one skidder to 12 men, skidder and 3 Bells. The system finally seemed to be balanced out fairly well. Then the pulp market fell and the rules of the game changed. We were shifted into roundwood areas where we produced posts and poles to minimise pulp output. This is where the Bell's versatility started to show through. The Bells were used for all the sorting and stacking of the products. In addition, the Bells were loading everything from 6 ft. posts and short pulp to 18 ft sawlogs.

Then one morning after Easter in 1982 we found ourselves smack in the middle of a windthrow. It took four hours just to cut our way into our gear. We spent eight months working in 35 year old Radiata pine producing sawlogs, posts, poles, shortpulp and long pulp. Every stick was sorted and loaded by the Bells. In the bush the Bell proved a lifesaver. It worked alongside the cutters assisting when required. Once the tree was cut off the stump the Bell pulled it away to a safe area for delimiting (bunching it at the same time). The dangers of windthrow were reduced by using the Bell.

After the windthrow the gang was split into two, with 1 going in roundwood (2 Bells) and 1 going in 12 year old thinnings (2 Bells).

About this stage these LIRA and FRI people started showing up with cameras, stop watches and notepads. I started to become more conscious of costings, productive capacities and matching manpower/machines into a completely integrated system. We altered felling techniques to improve the Bell's productivity. We started playing around with bunch size and its effect on the skidder, Bell and residual stand. Balancing the three phases resulted in a gang structure of 1 Bell bunching, 1 Bell on skids (stacking and loading) 6-7 cutters and 1-2 skiddies. This system produced 80 to 110 tonne of short pulp per day on truck.

Then NZFP opened up the long length dry drum debarker and phased out shortpulp. We then had to switch to 18 ft. lengths in thinnings. At the same time, the Super Bell arrived and it was just what we needed for loading. It had more horsepower and a bigger lift (2 tonne instead of 1 tonne). It proved to be a low cost loader and still versatile enough to bunch, extract, sort and stack when required. NZFP even used it with their 009 Madill haulers in clearfell of first crop. It handled every log there; mind you it struggled with some. First crop was a bit out of its league, but it still did the job.

At that stage we were still working to pre-set rates (\$/tonne) for thinnings. So any increased production, over costs, was worth it for us. We then got involved in tendering against other systems at NZFS Kaingaroa. We put forth a proposal with 2 Bells, skidder and 7 crosscutters, to produce 150 t per day. Our tendered rate was accepted. Price-wise the Bell system came in at about 10-20% below conventional skidder operations.

But we didn't stop there. We found that the Bell was spending too much time building the bench to build the bunch on, and the skidder was spending a lot of time hooking on and unhooking. To speed the Bell and extraction we introduced a grapple skidder. However, we kept getting patches of steep gulleys over 10-15 degrees where the Bells won't work, so we put a conventional 4 man gang with a rope skidder on. Now we've got 15 men, 3 Bells, 1 grapple and 1 winch skidder. With this system in .25 to .30 m3 tree size, we produce an average of 200-230 tonne per day sorted and stacked with this system.

*40-60 m³/day
per Bell.*

The Bell is not without some problems, such as

1. Increased supervision and organisation of fallers, Bells and skidder
2. Only works butt pull (can do limited head bunching using conventional winch skidder)
3. Slope limitations of the standard Bell to less than 12 degrees
4. Higher number of breakdowns - hoses, bits and pieces
5. High labour turnover - 160 men in 8 years (now employ 40 men) due to large gangs, also high absenteeism.

The slope limitations have been somewhat overcome by the introduction of the 4WD. We've had it about 8 months now and have been impressed by its ability to handle the slopes up to 15 degrees. So far it's been a more reliable machine, with less wear and tear, more driver comfort and no chains required.

In summary the Bells have proved very successful at:

- Bunching
- Sorting, stacking
- Loading
- Extraction of close material

*Bell better than
skidder over 0-80 m
haul distance.*

I feel the Bell will continue to have a place as an all-purpose machine capable of performing a wide variety of tasks in logging. The Bell can be added to just about any logging operation and help to increase its productivity and flexibility. You just have to rethink your operation and use your imagination.