

SALVAGE OF EASTER WINDBLOW AT NZFP

W.D. SEWELL
N.Z.F.P.

1. Damage Assessment

(a) Pre-logging Assessment

The area affected was established from aerial photography. Volumes were estimated from Working Plans information on age class and previous silvicultural history. No ground assessments were attempted. Areas were stratified into:

- (a) Windblown - would require clearfelling
- (b) Salvage only required.

(b) After Logging

Monthly aerial photographs were used for area measureup and to enable regular checks on the total volumes and assortments being achieved, compared to those predicted from Working Plans information. There was remarkably little loss, both in total volume and in degrade of quality material, except from Kaingaroa, where salvage continued into October. The majority of wind-blow in Kinleith forest was completed by the end of August.

2. Organisation and Planning of Recovery

(a) Skids and Roads

Most of the area affected had been previously roaded for clearfelling or thinning. Some new roads were established to enable butt pulling and to reduce the haul distance. Roading density was up to 50% greater than for normal operations. In Tahorakuri clearfall areas, skid density was approximately double that for normal clearfall (approximately 4.0 ha/skid). In immature areas, much of the produce was stockpiled at roadside.

Where new roading was required, these were generally salvaged parallel to the lie of the windblow. This was necessary because of the greater difficulty of breaking out the logs when salvaged at right angles to the blow. (In Compartment 526 at Kaingaroa, this required a complete change from the original roading plan.)

Clearing of existing roads and dumps was aided greatly by the use of a John Deere 855 tracked loader.

(b) Manpower and Machinery

NZFP was fortunate that the windblow only accounted for approximately 15% of the annual cut. Skilled gangs with the appropriately sized machines were therefore able to be diverted immediately from normal operations. Main Points:

- (a) Contractor gangs maintained their normal manpower
- (b) First crop and 1947 fire regeneration was logged using tractors (D7, D85) and skidders (668, C8 size) with 5-8 man gangs
- (c) Immature stands were salvaged using contract thinning crews mostly with 664, C5 sized skidders and 4-5 men
- (d) Company crews used in windblow salvage had their manpower reduced by about 20%.

3. Harvesting Techniques

Prior to beginning salvage, discussions were held with all members of the crews to emphasise the need for safe logging practices and the changed techniques that would be required. The most used systems were as follows:

(i) Mature Tractor Stands

- (a) Felling of leaning trees - most fellers adopted the practice of side scarfing and boring in from the opposite side to decrease slabbing
- (b) Fellers broke out their own drags and used the machines to release tension from loaded trees
- (c) The recommended method of undercutting and side-cutting trees under tension was generally used but there was difficulty in persuading cutters to work close to the root pan of blown trees
- (d) Some fellers chose to limb as far as possible up the tree prior to butting off. This enabled a better appreciation of the lie of the log and the degree of tension on the tree
- (e) Where felling into partially standing bush was required, the following practices were adopted:
 - Do all limbing on the skid
 - Haul free of the standing timber and complete limbing prior to dragging to the skid. This

does affect machine productivity due to interference.

- (f) A John Deere 855 tracked loader was used to break out trees under tension and stockpile them for butting and delimiting. The system was discontinued because of the high cost and the fact that safety was not always improved. A feller was still required to work close to the machine to fell standing trees which interfered with the 855's movements.
- (g) One grapple machine (D7 with an Esco grapple) was used. An efficient system but did require a higher than normal road and dump density in order to decrease haul distance and maintain machine productivity.

(ii) Immature Tractor Stands

- (a) Young stands (age 11-14) were either cut into 1.8 m pulp in the bush, or extracted tree length and converted to 1.8 m pulp on skids. Age 16-20 stands were all harvested in tree length.
- (b) Especially in previously unthinned areas, there were problems with felling into partially standing bush. Overcome by:
 - Extracting untrimmed with the prime machine to the skids or an intermediate cleared space
 - Use of a prestopping technique to decrease the waiting time for the prime machine while delimiting was carried out clear of the standing timber
 - Use of a secondary machine (Bell Logger) to break out trees to a cleared space.

(iii) Mature Steep Country

Only one mature stand required extraction using a hilead system. The only differences from normal harvesting techniques were:

- (a) No pattern was possible in felling residual trees. Basically trees were felled in the safest direction.
- (b) Fellers worked in threes, enabling two men to help the third to clear the stump.
- (c) Where it was dangerous or difficult to completely cut out through a windblown tree, various cutting techniques were used which involved scarfing and partial backcutting, such that the log broke off from the stump during the extraction operation.

(iv) Immature Steep Country

One stand (aged 26) extracted using a Timbermaster Skyline. Harvesting techniques were again similar to normal clearfall with care being taken to ensure all material was at least partially cut and high stumps were cut back to ensure a clear extraction track. There were some gear failures, due to the piece size being too great for the machine. Spiked boots are a must to ensure safe footing.

Note: Working in hauler country was undoubtedly the most dangerous of the operations in windblown timber. Fallers were often working in situations where no escape path was possible, but where standing and leaning trees had to be felled to clear the line.

4. Productivity

(a) Mature stands

Prior to the commencement of salvage, liberal contract rates were set which allowed for a 25% to 45% drop in productivity. Company crews worked without bonus targets. Both policies were instituted in order to reduce the pressure on crews, and allow the use of the safest possible logging practices.

In the first two months of operation most crews showed this drop of between 20% and 50% of normal production. Skidder crews were less affected than tractor crews, probably due to the ability to maintain closer to an optimum drag size (i.e. less affected by breakage).

In the last three months of salvage production returned to within 10% of normal clearfall levels. Possible reasons:

- The effect of the increased road and dump density on reducing haul distances
- Increased skill levels in the crews and development of improved techniques in working in windblow
- Some reduction in the self-imposed safety standards by the crews ("Familiarity Breeds Contempt").

(b) Immature Stands

These were logged using crews normally involved in thinning operations so no comparable production figures for clearfelling of standing and windblown immature stands exist.

Short Pulp crews achieved slightly higher production levels than when thinning, although much of the advantage of increased piece size was offset by the greater difficulty of felling.

Long length crews achieved between 60% and 100% greater productivity than when working in equivalent aged thinnings.

Hauler production was increased only slightly compared to thinning operations.

5. Accidents

The accident frequency for gangs working in the windblow salvage did not increase markedly over normal levels when not working in windblow. I feel this can be attributed to:

- Lack of production pressure through use of liberal contract rates
- The reasonably high skill level of the crews. The level of windblow was small enough that it would be logged using current logging crews (no new crews required)
- Discussions with both contract and Company crews prior to beginning salvage helped emphasise the dangers.

The main accidents experienced which can be attributed to working in windblow were:

- (a) Hit by rolling stump (2)
- (b) Hit by falling tree (2)
- (c) Hit by log when working close to extraction machines (2)
- (d) Hit by log when tension released (3)
- (e) Cut through kickback while cutting logs under tension (3)
- (f) Sprains when working in difficult footing conditions (2)