SESSION I
PAPER (c)

TASMAN FORESTRY - CENTRAL REGION

SUMMARY OF TAUHARA FOREST WINDTHROW SALVAGE OPERATIONS.

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Introduction

The Easter storm of 1982 caused widespread damage within several of our forests in the Taupo region. The winds were generally from the southerly quarter and reached velocities of 70 knots. All age groups and all silvicultural regimes were affected with only relatively low lying very sheltered sites escaping damage. Of the 1000 hectares of merchantable forest damaged most was rolling to steep country. Direction of fall and lean was fairly consistant and in many areas not in a direction suitable to extraction and roading when compared to normal logging planning. The volume which had to be uplifted was four times the current annual harvest and had to be uplifted in less than 1 year.

Assessment and Planning

Like most others affected, the initial priority was to assess the extent of damage. This was achieved through;

1. Eyeball assessment from aircraft
2. Vertical aerial photography
3. Ground reconnoitering by logging and silvicultural senior staff.
4. Application of existing inventory and assessment information.

Concurrent with these activities various constraints were examined. The major ones were:

1. Biological time limit. (How long would timber last at optimum values).
2. The markets (various) ability to absorb extra produce.
3. Manpower and machinery to uplift the timber.
4. Administrative and supervisory capacity to control considerably increased operational level.

Strategy agreed on was to salvage highest value stands first, taking into account that high value - high volume stands which could be logged with the highest production rate should be logged first.

Progress reports were updated weekly by supervisory staff and included mainly maps and production records. An eyeball progress survey was carried out by helicopter after 3 months to update maps and salvage plans. Continuous monitoring of log type and value output per gang and forest stand allowed re-deployment of logging crews where necessary to ensure maximum volume and value recovery.

Roading

Immediately after the storm every road access to current logging areas was blocked by fallen trees and the majority of roads into other affected areas also. Priority was given to re-opening all roads. It took very little time to discover that where major windthrow had occurred, actual salvage of stems across roads was so time consuming and caused so much damage to the road surface that the whole exercise was futile. The most effective method was to use a rubber tyred loader of the Fiat-Allis 645 class to grab small stems and simply break them away and dump to the side or on large stems to work two cutters with the loader, effectively doing the same thing. The cut logs were later re-trimmed and sorted during the actual salvage operation. In actual road-forming (new roads) operations where rapid salvage crew access was required, particularly in steeper country, we used tractors in the over 300hp class (most effective were Fiat-Allis 21B's) which had very considerable height when the blade was fully raised, and simply smashed our way to suitable landing sites forming the road as we went. Foot access was so difficult in some of these areas that we simply sketched the desired road grade and location on stand contour maps, gave the tractor driver a start point accurately located, and left them to it. Main points using this method were:-

1. Work downhill
2. Don't try it if your roadline is parallel to the windthrow
3. Observers essential
4. It is very fast, especially in immature stands.

The above methods were used to gain primary access to landings from whence salvage crews could then work in any desired direction from the landing. Because of the nature of the windblow, i.e. the single major fall direction, twice as many landings compared to normal were located on flat to rolling country, but only about one quarter more on steeper country. Pulling by head downhill or even turning trees was still preferred to uphill hauling (conventional machines). The method of establishing secondary roads and subsequent landings on easy country was to allow the salvage crew to butt pull onto existing landing out to a back line 5-15 chain out, then shift them onto a new landing elsewhere while the fresh cutover had a road pushed through it, and a new landing built on the back-line. The crew would then be moved back into the new landing, and so on.

Logging Salvage Methods

Because of our relatively small logging force prior to the windblow, and other peoples problems after the storm we were forced into playing the field for any logging crew available. Fortunately we had a good although small core of our own crews boosted by experienced contractors temporarily surplus to Pan Pac, N.Z.F.P. and K.L.C. (2 Madill haulers in the latter case). The remaining twenty or so crews which came from hither and yon certainly salvaged our wood, but lacked the reliability and steadiness of "regular" crews from our own and the other companies.

There is no doubt that the bulldozer, bush rigged is a good versitile, robust, allrounder for windthrow salvage. Skidder/tractor or skidder/skidder or hauler/skidder twin crew combinations are definitely more productive in pumice and more cost effective "on truck" also but put greater pressure on men.

Notably high performers were: (tonnes not dollars)

(15% better than hauler) FMC (steep country old crop contour tracking, thinning)

(20% better than single rope skidder) Twin 518 Cat Grapple Skidder.

(10% better than the single skidder) Twin skidders

(good on steeper going) Twin tractor/skidder in moderate topography.

Successful performers were:

Single skidder
single tractor
Volvo forwarder & Clark shears (3 man crew)

Unsuccessful performers were:

As anywhere else - unsound or obsolete gear: - unsound men.

Haulers used were:

Small wood - Modified Pearce & skidder
Wilhaul & skidder
Lotus series II & skidder

Generally 30%-85% more costly and 30% less productive than convential machines in same piece size. No remarkable performances here but these machines certainly able to salvage wood unable to be logged by conventional machines without carving up the hills.

Large wood - Washington
Madill 009

Nothing betwwen these haulers. Both types were used for all of:

- high lead
- scab skyline
- shotgunning

Production levels 20% below normal mainly due to difficulty and danger of falling and breaking-out in windblown steep areas. Thinning of partially blown steep "old crop radiata" was achieved using a Maki slack pulling carriage and production average of 130 tonne/day achieved. This particular exercise was 40% more expensive "on truck" than if we had clearfelled the areas prior to salvage instead of thinning, but preserved a portion of our resource "standing" and in fact allowed more "total blow" resource, to be salvaged and sold than would otherwise have been the case in a glutted export and domestic market.

General Production Comments

Variation in production achieved in windthrow salvage in stands 14-21 years only varied 50t minimum - 80 tonne maximum, (piece size range 0.2 to 1.0m³) with conventional gangs (664 or 666 and 5 men). These figures are generally 15% better than long length thinning in similar piece sizes where only around 120-150m³/ha was to be thinned. Compared to clearfelling something like yellow contorta however with 0.2m³ piece size where 70-75m³/day is achievable the productivity is 30% worse in windblow.

Safety

Increased accident rate in windblow was quite marked after the first 2 months. I feel this was attributable to bushmen becoming tooblase after an initial intensive safety promotion effect had "worn off". The accidents mainly occurred during trimming when trees were not "broken out" prior to trimming taking place. The safest method was to:-

1. Remove tension from stem using either machine or by cutting.

2. Extract drag into cutover then trim.
3. Complete trimming on skid.

On steep areas or in unsafe situations the stem was partially cut near the stump, and then broken off the root wad during extraction. The large haulers hauled stump stem and all on occasions when cutters considered the dangers of getting close were too great.

Initial safety promotion took the following concurrent steps:-

1. Several safety billboards with various messages were erected at strategic points throughout the forest.

2. Trees along road edges had safety messages painted on with dazzle paint.

3. Two accident statistic billboards were erected on which every accident was recorded, (even minor ones).

4. Relevant chapters from the American "Fallers and Buckers Handbook" dealing with cutting logs under tension were photocopied and distributed to every man.

Other causes of accidents were:-

- carelessness
- over exuberance
- off the job problems (man away from home)
- aggressive contractors (to their men)