# PULPWOOD UTILISATION OF WINDTHROWN LOGS

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## Introduction

This paper discusses the utilisation of windthrown logs at the Tasman Mill.

For three months after the windthrow it was possible to use a substantial quantity of windthrown material as furnish for mechanical pulping. However, at the onset of sap-staining no further use of this material could be made for this purpose. Currently about half the wood supply for mechanical pulp is coming from living trees in wind affected areas with no undue effects on newsprint quality.

Six months after the strom windthrown material is still being utilised for kraft pulping, with as yet no adverse affects on quality. Because the material being used is solely Radiata, a production increase in dried kraft pulp has occurred.

## Woodroom

There has been an increased incidence of broken logs and shorts from the windfall material and while this creates some extra work the woodroom has been able to cope adequately with the problem.

## Mechanical Pulping

Prior to the windthrow a normal week's supply of wood for mechanical pulping at Tasman consisted of 2,000 $m^3$ Tarawera thinnings, 2,500 $m^3$ N.Z. Forest Service thinnings, 2,000 $m^3$ Tauhara thinnings and 6,800 $m^3$ clearfelled top logs. Except for a small percentage of Ponderosa all this wood was Radiata. This small diameter, low density material is ideal for stone groundwood production, both from a processing point of view (ease of handling in the mill, small knot size, low resin content) and for quality (good strength and brightness). The low density is not an advantage for strength development in the refiner groundwood mill which produces 40% of our mechanical pulp requirements, but the low resin content is an essential requirement, and the high brightness is a considerable advantage.

After the windthrow the supply became 5,500 $m^3$ thinnings and 7,800 $m^3$ windthrown wood. We were anticipating that we would eventually have problems with sapstain, and in late July the brightness of refiner mill pulp fell (Fig.1). Not all of the fall would have been caused by sapstain, some would be due to the fact that larger than normal logs, with a higher heartwood content, were being chipped for refiner mill use. We initially responded to this by increasing the bleaching of the refiner groundwood. The usage of the bleaching chemical, sodium hydrosulphite was approximately trebled (Fig.2). However, even with these increased bleach additions we were having difficulty in maintaining minimum newsprint brightness standards. This coincided with a period when no reduction in quality standards would be tolerated in the market. It was, therefore, necessary for us to reduce the intake of windthrown

wood and substitute thinnings. When this was done (by 1 August) brightness and bleach usage returned to normal.

We have done a preliminary laboratory bleaching study which indicates that in addition to a lower initial brightness sap-stained wood uses more sodium hydrosulphite for a given brightness rise, and the maximum rise achievable is less than with normal woods.

At the present time our weekly supply comprises 4,000 $m^3$ of 10-18 year old Tauhara clearfellings of trees affected by the wind storm, but not blown over, 2,700 $m^3$ tops of mature trees from wind-affected areas plus 6,700 $m^3$ of thinnings. The use of this mix has not affected stone groundwood quality. Refiner groundwood is higher in brightness than before the windthrow but lower in strength. It is not possible to clearly define any change in newsprint quality. Brightness is controlled as necessary by bleaching, but possible affects on strength are obscured by changes in machine speed and kraft content which have occurred over the concurrent period.

Kraft Pulping

Normally the Continuous Digester at Tasman is supplied with a variety of species, such as Ponderosa, Corsican, Muricata and Southern Pines, with less than 30% of the input being Radiata. Since the windthrow harvesting has been concentrated in Radiata compartments, with the result that over 96% of the furnish is Radiata, the effects of this have so far been highly beneficial.

We have an intermittent sheet formation problem on our pulp drying machines. This is associated with fibre characteristics, in a manner not fully understood, and is affected by other variables such as pH, residual cooking liquor content, or the presence of surface active additives such as defoamers. The problem results in lost production arising from sheet breaks and/or reduction in machine speed to avoid breaks. With the present Radiata furnish this problem has disappeared, with the result that dried pulp production levels have been raised by an estimated 5%-10%.

Problems arising from wood decay have so far not become apparent, nor would we have expected them at this stage. Previous studies have shown that chips can be stored for more than six months without adversely affecting pulp quality and the same should be true for roundwood.

Turpentine

Turpentine is a by-product of the kraft pulping process. It is a physiological quirk that Radiata pine produces the best quality turpentine in the world. Ponderosa, on the other hand, produces turpentine with a somewhat undesirable composition. Since the change in wood supply resulting from the windthrow turpentine quality has markedly improved. In terms of overall operation this is of course of only minor significance.

The yeild of turpentine and the other resin based by-product, tall oil, is expected to fall as the windblown logs age.

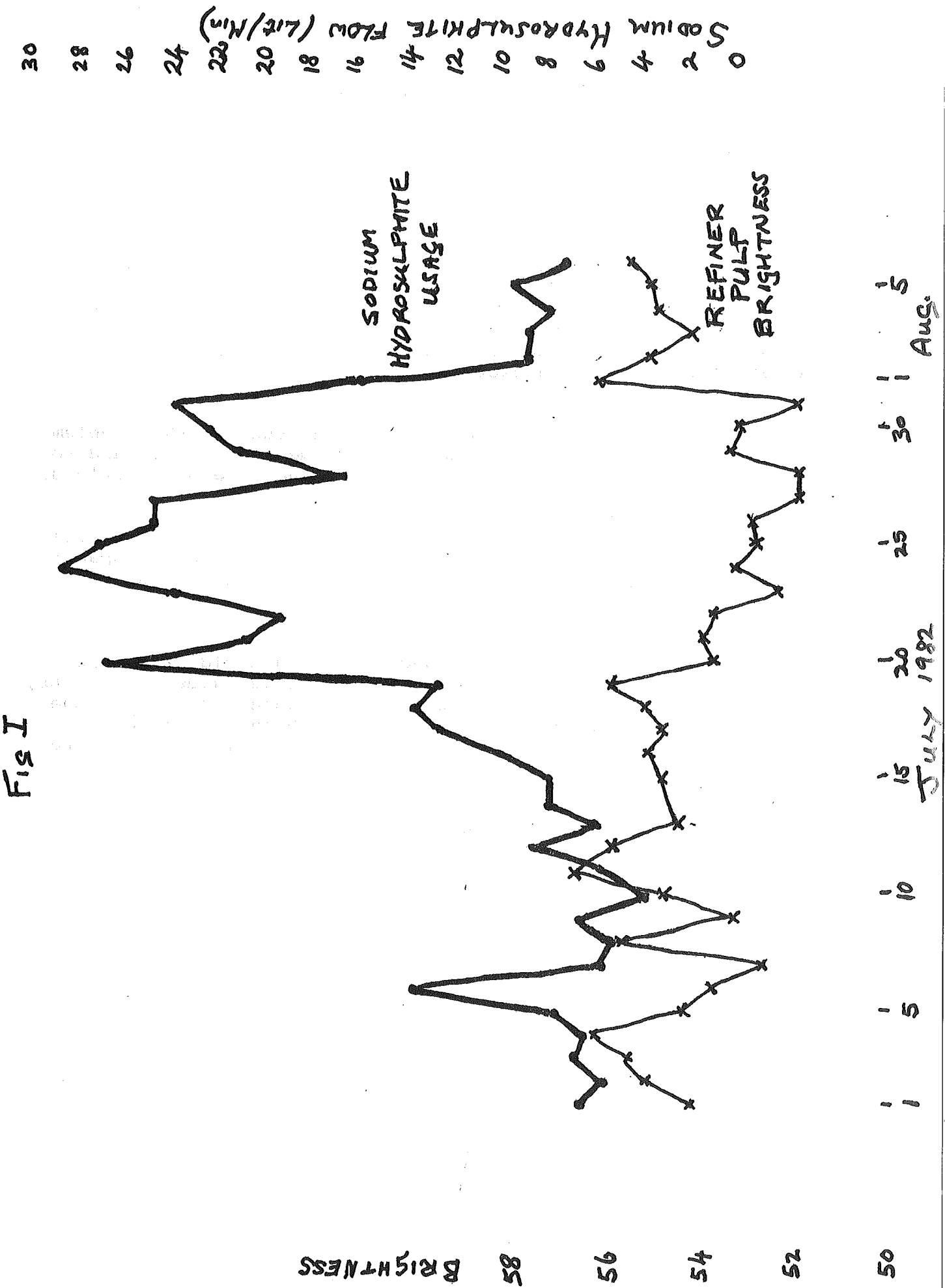
Sodium Hydrosulphite Flow (Lit/Min)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Brightness
50 52 54 56 58
SODIUM HYDROSULPHITE USAGE
REFINER PULP BRIGHTNESS
1 5 10 15 20 25 30 1 5
July 1982
Aug.

Fig I