INTEGRATING PRODUCTION AND SAFETY

LOGGING CREW MANAGEMENT FOR

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Introduction

Training in operational techniques and managerial skills has been a contributing factor in improving work procedures and greater managerial and production efficiencies.

In 1980, 3133 loggers were employed to produce 9,911,000 cubic meters of roundwood nationally. By 1993, despite a decrease in the national workforce from 3133 to 2722 loggers, log production had increased by 56% to approximately 15,584,000m^3 (Statistics NZ, Ministry of Forestry). This increase has been achieved in part by technological advances and in part by a greater emphasis on training, with a corresponding increase in production per logger. Conversely, over the same period there was no significant decrease in the number of injuries and accidents sustained in the forest industry. In 1993 the government introduced the HSE Act to assist in managing health and safety in the workplace. This requires a commitment from Principals, Employers and Employees to work together to reduce accident rates.

I believe that a climate for further improvements in safety must be created by the forest industry. Commitment from management is the single most important factor in improving safety. Unless Contractors and Forest Owners have a positive approach to jointly controlling safety in the same way that production, quality, costs and sales are controlled then the number of accidents will not be reduced.

Planning

Planning of forest harvesting may be divided into three broad levels: strategic, tactical and harvest planning. Day to day operational planning is then managed by the contractor.

Working within the parameters that have been set, harvest planners detail the logging systems to be used, define on plans and in the field the location of roads, processing areas and boundaries.

I see harvest planners as being essential in assisting in the identification and control of hazards in the workplace. "The objective of Harvest Planning is to achieve Maximum Efficiency" An objective of maximum safety will also assist maximum efficiency.

Operational planning and its links with harvest planning fall within my area of competence. In this paper I want to describe my approach to safety at an operational level and then look at how some planning decisions can affect my crew's production and safety.

The HSE Act and the Forest Industry -My Perception

The probability of a member of the logging workforce being FATALLY injured is 28 times greater than the New Zealand industry average. Combining this with the extremely high number of serious lost time injuries, logging in New Zealand is unquestionably a dangerous occupation, however a reduction in fatalities and serious injuries is also unquestionably achievable. To improve these abysmal statistics we must improve awareness and attitudes to safety. A greater investment in safety and a more efficient use of the combined skills of forestry management and contractors is required.

In 1993 the Health and Safety in Employment Act was introduced to

improve not only the Quality of - but also in our industry the **Quantity** of peoples working life.
The act states that employers, principals of contracts, self employed, and all employees must take all practical steps to provide for the prevention of harm to employees and others at their place of work. It also promotes excellence in health and safety management.
The objectives are to help us:

- develop good safety habits,
- improve our knowledge of safety precautions
- to adhere to basic rules in safety

Good safety practices not only protect loggers but also protect those around them

To begin the process of safety management all hazards in the work place must first be identified and then communicated to those involved in the harvesting process. It is from this point that the process of implementing control steps can begin.
Harvest planners are in an ideal situation to facilitate the process of identifying, then eliminating, minimising or isolating hazards. In turn hazards which harvest planners are unaware of or which have been created by planning may be communicated back to them by the contractors.

-SAFETY MANAGEMENT BEGINS WITH COMMUNICATION-

Safety Plan and Systems
-BC Adams Ltd - How it started

I first started this exercise in "Compliance" to

- satisfy the needs of the OSH inspectorate
- pre-empt the requirements of 'Industry Principals' desperate to achieve inroads into safety management and awareness
- improve the public perception of the 'Dirty Difficult and Dangerous job of Logging'.

I soon found that this focus on training was becoming an essential tool in moving towards maximum efficiency in all aspects of the logging operation. Safety requires Training - Training Promotes Efficiency.

It wasn't until the benefits of a safety management program became evident to my employees and I that the task of implementing the systems became a 'Want ' rather than a ' Need '.
The most apparent benefits can be classified as follows:

- Increased awareness of personal safety and a greater willingness to communicate and participate in safety matters. This has led to a diminished requirement for 'enforcement measures'.
- Greater job satisfaction, which leads to less turnover, improved overall performance and quality of product produced.
- Personal protective equipment is maintained at a higher level
- Personnel are more concerned for the safety of their work mates.
- The opportunity to minimise risks has been greatly enhanced with all of us working towards this aim, not just me.
- The risk of accident or near misses has been greatly reduced.

Brief Summary of Policy in general terms

The primary objectives are to provide a safe and healthy environment that will ensure the well being of our employees and any others who may be in and around our place of work. To assume responsibility for overall safety of our employees and **involve them** in the development and implementation of

safety procedures which included the development of a Hazard Identification manual, and to ensure training needs are identified and training made available. Every employee was to be responsible for not only their safety but for the safety of all those involved in the industry around them.

Hazard Identification Manual

Considerable effort and time was spent in identifying hazards in the work place Each phase of the operation was looked at individually; the hazards were compiled and the consequence of each hazard was investigated, recorded and a control method developed.

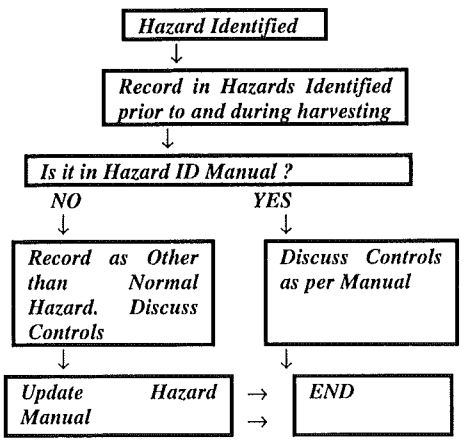
Table 1: Example Tree Felling Hazard

Hazard	*Control*
Use of wedges	
When used improperly wedges may break shatter or spring out of cut causing injury and/or eye damage.	*Wear helmet and visor at all times. Use a nylon/plastic hammer or maul only, ensure wedge is placed correctly and firmly before hammering. Use wedges that are in good condition only*

Hazard Identification Procedure

The Hazard Manual is now used as a reference whenever hazards arise or prior to beginning harvesting a new block, when the entire logging crew make a full assessment of the area. The following flow chart (Table 2) shows the procedure.

Table 2: Hazard Identification Procedure



The following Table (3) is used to record hazards identified prior to and during harvesting.

Table 3
Hazards identified Prior to and During Harvesting
Forest:
Compartment Number:

Date	*Hazard Identified*	*Sign*

These Hazards have been identified and controls discussed as per manual
Contractor/Supervisors or Foreman's Signature:

Other than Normal Hazards

Hazards arising that have not been identified in the Hazard ID Manual and therefore have not had controls developed are recorded in the following format (Table 4). The resulting hazard and control can then be used to update the hazard manual.

Table 4
Other Than Normal Hazards
This section is for the identification of Hazards not listed in the "Safety Code for Forest operations" or in the "Hazard Identification Manual" or not identified in the "Compartment Logging Prescription" provided by the Forest Owner.

Controls for Significant Hazards not listed in the Manuals

Significant Hazard: .....

Location of Hazard:.....

Can this Significant Hazard be Eliminated: Yes / No

If yes, what can be done to eliminate it? (Both Local and Management controls) :.....
.....

If no, why is it not practical to eliminate the hazard?:
.....

If it cannot be eliminated, can it be isolated from employees?: yes/no
If yes what can be done to isolate it? (Both Local and Management controls):.....
.....

If no ,why is it not practical to isolate employees from this hazard?.....
.....

If it cannot be eliminated or isolated, what can be done to minimise the effect of the hazard on employees? (Both Local and management controls).....
.....

Signed: *Date:*.....

Introduction of policy to employees

Introducing this type of safety policy was a relatively easy task as employees:

- had been given the opportunity to address their own personal safety,
- could have the amount of input they desired without peer pressure
- knew that safety concerns were finally being addressed in a proactive and positive manner.

A change in attitude is required from both employer and employee to ensure that safety and training is a shared responsibility. In fact introduction is easier than maintaining a progression of continued improvement. Without on-going input and communication the initiatives will stagnate and die. It seems that one cannot say - "Right, we've done that now, safety is no longer a priority". Without support, any safety management system will fail to achieve the desired results.

Affects on Productivity

There is little doubt that safety and training can only improve productivity, however to achieve and maintain compliance, I believe our industry has to accept that there are ongoing costs. Time and expense is required to ensure adequate coverage is given to induction, supervision, training and audit procedures. These costs are a legitimate expense and should be recognised by forest owners.

The Forest Industry now considers that "Safety is not a priority issue" and tends rather to focus on productivity. University of Otago's summary report on injury to forest workers finds:

- "Safety was mentioned as a priority issue more often by contractors than by forest owners".
- "Forest owners' priorities were more often focussed on strategic concerns".
- Professional advisors, consultants and researchers polled considered that "..safety is not a priority issue for the industry - industry concerns are focused on increased productivity, skilled labour, management training and capital needs rather than safety"(Houghton, 1995).

However, to take advantage of productivity gains without recognising safety costs will inevitably create an environment for injury.

Planning decisions affecting productivity and safety.

Production pressure has been identified as the main hazard by New Zealand forestry workers. (Houghton, 1995) Workers perception of production pressure as a hazard has significant implications for compliance with the HSE. Elimination of the hazard could be impractical due to a number of reasons.

Who is responsible for production pressure? This pressure may be the result of many variables, including the skill level of the loggers, the production required by the employer, a reflection of the contractors ability in both personnel and financial management. The responsibility to ensure a minimum of production pressure must lie with the principal by ensuring that the right contractors/systems are selected and production expectations and logging costs are realistic. However despite this, the contractor always has the final responsibility to manage operations to achieve both safety and production.

Target setting methods have not adapted to respond to the huge increase in time required to process trees on the landing given the emphasis on value recovery, presentation and the high number of sorts as compared to what could only be termed as the volume recovery of previous years. The assumptions that the extraction machine will be the factor that limits production in most situations and that crew size is determined by production requirements of the extraction machine is in my view no longer applicable. Production may be restricted by requirements such as the number and length of sorts, customer quality requirements, planning of landings, restrictions on time frame from stump to mill and efficiency of log distribution.

Number of landings has a huge impact on both safety and production. To minimise the hazards and delays created by the interaction of men and machines on a landing site it is essential to be able to isolate the extraction machines from the processing workers, and if possible, isolate the processing workers from the fleeting and loading part of the operation, - de-phase the operation. For this process to be successful there must be sufficient landings available for the operation to cycle. This method also appears to alleviate the perception of 'production pressure' felt by landing workers and reduces their exposure to machine hazards. De-phasing does mean that time is lost in the process of moving men and machines from landing to landing and moving crosscutters regularly to ensure a constant flow of wood is available. It is my experience however, that time lost here is balanced by less interference to the skid workers by machines and that production is increased. This method seems also to be the easiest way to ensure that any logs with restricted rotation times can be readily accessible for trucking.

Size of landings is critical for both production and safety. 'Skids shall be adequately drained and of sufficient size for the storage of log sorts and for skid workers and machines to work safely on clear ground on the longest logs to be extracted' (Safety Code for Forest Operations - Logging). This recommendation is seemingly rarely adhered to, especially with the increased number of sorts required. Landings may well appear to be of reasonable size but it must be remembered that the working area is diminished considerably once stockpiles begin to accumulate. Whilst I appreciate that landing size is dependant on many factors, it is clearly one aspect of the planners work that could be assisted by communication with the contractor. Longer haul distances to a few large landings may be preferable to smaller landings which impact on both safety and production.

Placement of landings will always be a point of contention for contractors and in long established forests the existence of previously established landings do cause problems for subsequent logging operations. Although the topography will never change, the size and weight of trees may well have, along with the extraction system being used, not only in regard to the machinery options. No two contractors have the same preference for extraction routes or head or butt pull. Unless planners can be contractor specific when placing landings then only some of us will be happy some of the time. Meanwhile we are reliant on the knowledge and skills of the Harvest Planner. How often do planners take felling direction into account when planning?

Road edge and trees around the landing. "All dangerous trees within reach of the skid shall be removed before operations begin" (Safety Code for Forest Operations) OSH are now suggesting that all trees within reach of the landings be removed as soon as practicable - not an unrealistic request.
To increase safety and to reduce delays to movement of personnel and trucking around a compartment I prefer to fell all trees within one tree-length of the roads and on the prevailing wind side of each landing as soon as we begin harvesting. Initially there are delays but with a well planned approach they are kept to a minimum. Unfortunately this can cause considerable damage to the roads, much to the delight of roading superintendents. It would be my preference to carry out road-lining in total rather than have other crews do it previously, or perhaps initial road-lining could be extended to wider road strips and strips around landings. Hazards created by machines involved in road and landing construction are all too common. Large soak holes, high unstable banks and cutting too close to standing trees, damaging the root ball and making the trees unstable and susceptible to wind.

It would be so easy to label these constraints as "Problems" but in reality these are simply some of the parameters within which we must plan our logging operations to work both safely and productively.

Planners Role

Communication between Forest Owners and Contractors regarding logging tends to emphasise the end product, but this fails to provide the contractor with the opportunity to reduce the potential harm caused by conditions out of his/her control. Effective task performance relies heavily on information being communicated clearly (both ways). Errors occur when there are problems interpreting information and also when information is absent. All data collected by the logging planner, including haul distances calculated, extraction plans, estimated volume and any hazards or hazardous situations that may have been identified, not just those that are "unique" to the compartment need to be readily available to assist loggers manage the logging operation.

Summary

- Recognition of high risk of injury and risk of prosecution under the HSE Act is compelling logging contractors to restructure their operations. This requires the support of forest owners.
- High accident rates in logging reduce financial returns to the employees, employers and principals
- Labour force and contractors have the perception that production pressure is the primary contributor to accidents
- A logging contractor and a forest owner share many similarities with regard to business criteria - the aim of any business enterprise is to maximise profit over time. Working together would be to our mutual benefit
- I would suggest less emphasis on pushing high production expectations and more emphasis on high quality expectations - Markets and industry have changed. There are large gains for forest owners in pushing better value recovery, better training and safety, less injuries, less time between felling and log making.

-EG TREES NEXT TO ROADS & LANDINGS WITH ROOT CUT

HAZARDS RECOGNIZED + COMMUNICATED
PLANNING WITH CONTRACTOR - FOR CONTRACTOR
UTILISE THE VALUE OF PLANNING.

- Many Hazards identified by contractors are under control of the Forest Owners
- Resource data being collected by planners needs to be communicated to the harvesting contractors
- Communications need to be improved between contractors and harvest planners.
- An ongoing investment in safety will inevitably lead to improvements in skills, and gains in productivity which we should all share.

References

Safety Code for Forest Operations 1995. Occupational Safety and Health Service of the Department of Labour.

Houghton, R.M. 1995. Injury to Forestry Workers Summary Report. University of Otago Consulting Group.