SESSION VII

Paper (a)

TRAINING THE LOGGING INDUSTRY
A Proposal

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Any industry's effectiveness depends on its ability to exploit the potential talents and skills of its managers, operatives and workers at all levels. It is not enough to exploit existing skills and the industry must take active steps to develop those talents, making its people aware of technology and opportunity and developing their understanding, competence and leadership.

Training is the key, and it is notable in this Conference on Human Resources that the keynote speaker has devoted half his time to this subject and that it has been explored or demonstrated in more depth during the field day and evening session.

Justification

It might be asked - is all the effort and expense involved in training an industry justified for the harvesting and transport sectors of the forest industry?

The expense alone is a major justification. It is by far the biggest proportion of total cost of wood at mill door. In producing 10 million cubic meters of wood per annum, at present the industry pays approximately $100 million in logging costs and a further $70 million in transport costs. The capital value of the equipment involved is well over the $200 million mark. In present day terms, an owner/operator trucking contractor's rig costs upwards of $200,000.00, an average logging contractor would have nearly $300,000.00 invested in equipment and some new logging haulers are costing more than $600,000.00 a unit. Obviously these resources need to be wisely used.

The logging industry has operational characteristics which not only pose very tough engineering problems, but require a very flexible and imaginative approach in dealing with these problems. Its engineering requirements involve moving very heavy loads over a wide range of uneven, steep and often unstable terrain where it is difficult to assess traction and weight bearing capacity. The machines used are generally expensive, they have to handle a wide range of variables and are often employed in conditions which go beyond the operating specifications envisaged by the designer of the machines. The environment the job is carried out in is generally that considered too difficult for agriculture. The product to be moved is spread all over the acreage of the terrain and the conditions on it vary widely geographically according to topography and soils and also from day to day influenced by weather.

The human resources employed, therefore, require ingenuity, initiative, and vigor in both mind and body. They are usually relatively remote from services and direct supervision. Operators and workers in the main have control of procedure and timing. There is a constant potential for danger and their working environment is continually changing.

All the foregoing justify significant investment in training.

Counter Arguments

The are some common arguments which depreciate the need for training. They are expressed at all levels.

In management, particularly at the higher levels, logging is often seen as just another facet of forestry to be learnt in a general course or experience and to be called on if required (as nursery work, silviculture, ecology or accounting is). What is often not recognised is the high cost of mistakes in logging and the detailed knowledge of the operations required to properly supervise or manage them.

In on-the-forest management, or with contractors, the contention is - you can learn on the job through trial and error and gradually pick up experience. This approach is expensive and potentially disasterous. There are numerous examples to illustrate the error of this approach, particularly in the planning areas.

At the on-the-job level the feeling that the experienced man can train the new recruit prevails, but does twenty years of experience only mean one year of learning, probably in outdated techniques twenty years ago and repeated ever since?

It is common to question the benefits of training. Can benefits be proven? Admittably this is difficult to show in real terms. Gordon Bryon's paper to the 1983 LIRA Seminar* indicated the benefits in reduced accidents and machine maintenance costs through training programmes at N.Z. Forest Products. The evidence in the statistics on accidents earlier discussed in this Seminar indicates benefits from the training schemes mounted by the Logging and Forest Industry Training Board and some individual companies. One company at least also reports productivity per man hour increasing significantly as the company's training scheme is implemented. Better training has resulted in reduced numbers in crews.

Military organisations are probably the best example of how

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*G.P.T. BYRON "Operator Training for the Forest Industry". Research and Development in Tree Harvesting and Transportation. Proceedings. June 1983

training schemes can be used to train completely inexperienced people in the operation and management of complex machinery in very short spaces of time. Admittably there is little expense spared in such training programmes but they are demonstratively effective.

Possibly the best arguments against not training are the many illustrations in evidence in the industry where formalised training has not been given, or has been inadequate (see slides shown).

> Accidents to workers are the most obvious. Nearly all result from varying degrees of human error, much of it due to the lack of adequate training.
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> Damage to machinery through inadequate maintenance, poor operation or lack of awareness of the potential for accidents also illustrates lack of training.
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> Poor operational planning of roads and landings related to the machines and methods used, are common throughout the country. They contribute to low productivity and high costs in harvesting.
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> Inadequate control of operations can have disasterous effects on soil and water values. These are often the most obvious damage seen by the public at large. In many cases restrictions, or even prohibition, of future activities follow.

What is the Present Situation with Training?

If we firstly examine where the industry was little more than a year ago, the future looked bleak. In the Forest Service the woodsmen scheme, which at least had given some logging background to many of the people who supervise operations today, had closed down. The Logging Officer Under Training Scheme which had probably given the most specialised training to a group who are still mainly in management of logging operations was defunct. The Timber Industry Training Centre had given up its chainsaw training through lack of support and the Logging and Forest Industry Training Board was in severe financial difficulty. The Forest Training Centre and Canterbury University's training school both presented programmes on logging, but both only as a part of their overall programmes for certificates or degrees in forestry. There was no programme in the Engineering Schools. On the credit side, FTC presented two courses on logging planning and logging management, primarily for Forest Service staff, although some outsiders attended. Also in combination with LIRA a Cable Logging Course was presented and this was available to all in industry. At least two companies had internal training organised for their own work forces.

The overall New Zealand picture compared unfavourably with, for example, the European countries with similar sized forest industries. Notably Austria, Norway and the U.K., or the more important forest producers, Sweden and Finland, where very extensive training has been an important feature. Generally the picture in Continental Europe had been that of a high level of technical training based, in the first instance, on some form of forest school for school leavers, followed by more technical specialisation in harvesting aspects. At the worker level initial training and certification is mostly required before one can even take the initial job in logging, and then retraining in specialised training schools at frequent intervals. Both the forest training schools and the Universities presented special options for those going on to careers in harvesting. In summary, the European scene demonstrated commitment to training one might expect from highly developed countries. It results in a very professional approach to logging and a high level of technical competence by operators. It probably enables them to use a range of machines that would either not be robust enough to survive our working environment, or would pose undue difficulty in servicing and maintenance.

It is probably not possible to reach the European level in New Zealand, but the scene is fortunately changing as is evidenced by a number of developments over the past year. LFITB is now on a much more secure footing with regard to funding and its activities are expanding with the appointment of further trainers. The Forest Service has implemented a training crew for ground based systems at Whaka Forest, primarily aimed at future supervisory staff, and a similar scheme for cable systems is proposed for Golden Downs. Both FTC and Canterbury's Forestry School are revising their harvesting options. The larger companies have training schemes in place, although these in the main are retraining their bush crews rather than new inductees. LIRA last year mounted its first course on Logging Hydraulics. These things are all indicators of an improved environment for training, but there is need for an overall co-ordinated approach throughout the industry if we are to meet the expansion planned for the 1990's with a force trained to plan, operate and control harvesting at economic levels.

Training Requirements

If we can assume general acceptance of specialised training for the logging sector, or at least a better environment for training, questions that have to be answered are:

Who should be trained.?

What should be the content of the training packages?

Who should be doing the training?

How should it be funded?

Who Needs Training?

Obviously the people who are to carry out the job on the ground need training in the basic skills and machine operating to certificatable levels of competence. To do this job is clearly what the Logging and Forest Industry Training Board was set up to do, and Mike Newbold to the 1973 LIRA Seminar* and Bill Evans with an earlier paper to this Seminar have outlined the scope and objectives of this training scheme, it will obviously be expanded later to cope with some aspects of operator training and so I do not propose to restate the objectives here. Rather to explore the training of those that will be responsible for the control, planning, and management of logging operations, we could call them logging specialists.

These Logging Specialists could be loggers who have risen through the ranks, rangers, foresters or engineers, and possibly a few others. All of them would have some background expertise of relevance, similarly they would all have lacks of experience or technical knowledge and this would have to be made up. Some of them will go on to manage logging operations, and these will need the most extensive training.

Field Supervisor training for logging has also been neglected. Any analysis of logging effectiveness has normally shown that they are the most important people influencing performance. A supervisor must be aware of the technology (he must know his job). He must be able to manage the operation and he must take responsibility for training others.

Apart from the specialists and supervisors in control positions, there are others who need training in particular aspects of operations, such as planning or transportation or cable logging, and others again who need an understanding of the principles but who will not be involved in direct control. For example, busn inspectors or equipment people.

Therefore, if we have the above range of people who need either overall training in logging as a specialty, or parts of it, the obvious and economical way to tackle the problem would be a modular system. Then people could either pick the parts of it they require, or take the whole course aimed at training the logging specialist. Recognition by certificate or diploma would be an important component of such training.

What Content in a Training System?

A modular outline has been prepared (see Appendix). This outline, along with the contents of each module, has now been distributed to a number of people in the industry for comment. The intention

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*M.J. NEWBOLD "The Logging and Forest Industry Training Board" Research and development in Tree Harvesting and Transportation. Proceedings. June 1983.

is to form a working group to finalise a proposal for overall specialist training. The principles of the modules for specialist training as outlined are:

1. An assumption that about four years of training is required for a logging specialist. This need not be over four calendar years, but desirably could be spread out over a longer time.

2. Any module or the specialist training could be taken independantly by somebody who seeks specialist knowledge of, for example, cable systems or transport systems.

3. The person taking the specialist training, or any component or it, need not be a product of a tertiary education system, but some module might need either earlier modules or training as a prerequisite.

4. The components of the system as outlined in the appendix are:

   (a) Thirteen course modules, basically one week each, but one or two may require more time.

   (b) Eight elements of a practical experience programme, each from three to six months.

   (c) Three projects done in the aspiring specialists own time. An evaluation, a logging plan and an operational report.

Who Does the Training?

The primary requirement is to avoid duplication and to capitalise on existing institutions and programmes. This would require an overall co-ordination between the training institutions and the main users. This is one of the reasons for using a working party approach to the overall proposal. It is envisaged that training systems, or parts of them, that are in existance at present in the various institutions would form modules of the training programme, and this is illustated in the overhead projector diagram.

For example, if we take some of what we have now got in place, or is under development, and look at where it fits. (I will also take the liberty of making some comment on how these existing programmes might be modified to fit.)

1. LFITB training and certification scheme give practical experience, particularly in chainsaws, felling and skid work. This to the first level of certification would be a necessary component. To date LFITB has concentrated on upgrading existing skills to certification level, but eventually it is the best place to incorporate new systems and this might mean retraining instructors.

2. NZFS tractor logging training, as introduced at Whaka, is an encouraging start. It is exploiting the new systems and equipment and has a specialised machine for dual training. As it develops it will require further investment in new machines to cover all the ground based systems. The fact that a further training crew in cables is to be set up at Golden Downs will be complementary. These NZFS schemes will only apply to the NZFS personnel for the foreseeable future. Other larger organisations might emulate them and some consistency in the training between organisations would be desirable, probably co-ordinated by LFITB.

3. NZ Forest Products workshop training centre have excellent facilities for machine operator training. They currently cover basic familiarisation, the how-it-works, how to look after it, and principle of operation aspects. The programmes are aimed to produce "operators" rather than "steerers". The training is available to industry, but there is limited capacity. A particular aspect has been conversion training to new machines for existing operators, particularly in transport. The problem common to the larger organisations that have mechanical divisions is ensuring there is a smooth transition between the training in the mechanical basis and on-the-job training. Liaison could be improved.

4. LIRA/FTC courses. LIRA entered a vacuum where it either had the expertise to teach, or could recruit it from a range of sources. The big advantages or these courses is that they are open to all in industry, and the smaller organisations and contractors are encouraged. The original intention of LIRA as expressed by its previous Director, was not to be a training institution and the cable course for instance was originally scheduled to be passed to FTC. On the other hand Clas Norin of Skogsarbaten pointed out to last year's Seminar the real advantages of research organisations upgrading technology in industry by presenting technical courses and this approach should be continued.

5. Organisations such as ACC, the Technical Institutes and Community Colleges present technical courses mainly aimed at Technical Specialists from the variety or industries. For example, on work study or safety engineering. These are normally valid only to a few specialists but they could be tailored to the needs or our industry if encouragement was given.

6. The Forest Training Centre, apart from its courses for the forestry certificate, present two logging management courses. These are mainly aimed at the NZFS but a small percentage of outsiders attend and/or contribute to them. They should be more freely available to industry at large. It is notable that in the 1940's and 50's the NZFS, directed by A.R. Entrican set out to train the industry by training more people than it could absorb, and it did this successfully. I believe it should again assume a similar role.

7. At university level the Forestry School presents harvesting as a part of its professional course and it is pleasing to see this being revised and upgraded. Unfortunately, there is virtually nothing in the engineering schools that is specifically oriented to forestry or logging although this is being explored. I don't believe we are presently able to set up a forest engineering or harvesting option as such in New Zealand, but the Forestry School, for example, might present selected post-graduate extension courses on the business of logging or operational management.

Who Pays?

Presently there are two industry co-operatives - LIRA and LFITB. Both are funded by voluntary levy. Both of these organisations got off to shakey financial starts but the effectiveness or their work has gained general support. Such organisations cannot rest on their laurels, in fact I believe they need to keep proving their usefulness to remain erficient. At the same time, industry cannot afford to let such organisations fail, thus provision for permanent funding by levy must eventually be accepted.

The training institutions or industry companies who run specialist courses should be based on the user-pay principle. The courses should sell themselves. This would mean that the FTC of the NZFS also should be charging realistic prices for courses, at least to outsiders. Freebees are looked at as being suspect in value.

A problem exists with the small companies, particularly in the more remote and the newer developing areas. Wherever possible, the training systems at least at the field and operative level should be taken to them by the more mobile organisations, and this is being done to a certain extent, particularly by L & FITB and in specialised circumstances by LIRA. Direct payment at least in part for such services is desirable.

Another problem exists with the contractors, who are often the people most in need of training assistance, but the nature of their contracts means they cannot spare themselves particularly, or their men, off the job. It behoves the employers, at least in the first instance, to encourage them to undertake training, to provide it where practical, and to subsidise it where necessary. Only in this way will the most innovative sector of our industry be able to exploit its potential.

To Summarise

Some new initiatives have been taken recently in developing training within the New Zealand logging industry. However, there is still a requirement for improved training in a number of sectors to achieve satisfactory levels of safety, productivity and profitability. European systems might serve as a model even if the high level of training given there is impractical at present in the New Zealand environment.

The L. & FITB scheme has promoted the safety and status of bushworkers and stimulated or rejuvenated training at this level in a number of companies. It aims to cover the whole of the country and needs assured finance to do this, particularly in the smaller companies and more remote areas.

Formal operator training has been mostly within the bigger organisations but there is a need for better co-ordination of mechanical operational and certification requirements. Little of such training for logging machines is available to smaller organisations or contractors and a way must be found to do this.

Training in supervision, planning, management and technical areas is piecemeal and unevenly spread. These areas will be best served by putting in place a modular system as outlined. This will enable best use of existing training organisations and facilities and avoid duplication.

To mount a full-time forest engineering course at University level in New Zealand is not warranted. The revised curricular for harvesting at the School of Forestry should serve as a good background for careers in the logging area and there is a need for a suitable option for undergraduate engineers.

LOGGING SPECIALISTS TRAINING

Module Outline

	Units
Basics of Logging - Introductory Module	1
Practical Experience Programme (3-6 months each component)	
- Chainsaws and Skidwork	1
- Ground based systems	1
- Hauler systems	1
- Transport System	1
- Work Study	1
- Planning	1
- Operational Supervision	1
- Mechanical servicing; procurement of materials	1
Logging Systems Module :	1*
- Felling, delimbing, logmaking	1
- Ground based systems	1
- Cable Systems	1
- Transport Systems	1
Planning Module :	1*
- Submit prepared logging plan	1
Logging Machinery Module :	1
- Operation, maintenance and repair	
- Hydraulics	1
Safety Engineering Module	1
Industrial Engineering Module	1
Operations Management Module	1*
- Costing and Business of Logging	1
Personal Project Requirements	
- Analytical or Evaluation Report and Recommendation	1
- Operations Report and Recommendation	1
	24 Units