

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

---

# A Training Needs Analysis for the New Zealand Forestry Industry

A thesis presented in partial fulfilment  
of the requirements for the degree of

Master of Science in Psychology

at

Massey University

Helen Patricia Moffat

2000

---

## Abstract

Forestry work is inherently dangerous, and logging workers are injured and killed at work at a rate considerably higher than other occupations. A training needs analysis was conducted for the New Zealand Forestry Industry to: identify if there were any deficiencies in the currently available training for logging workers; assess the perceived effectiveness of current training methods regarding safety messages; assess the perceived utility of the currently available pre-employment training; and to determine if there are factors other than training that may be contributing to the poor occupational health and safety record of logging workers. Logging workers, logging contractors and forestry trainers from three geographical regions were invited to complete specially developed questionnaires. In total, 396 crew members, 48 contractors and 23 trainers participated. The results found a number of deficiencies in the current training - particularly the lack of training available for machine operators. Safety training was not especially effective in delivering safety messages, indicating that miscommunication between contractors and logging workers occurs regarding safety. Pre-employment training was viewed positively by logging workers, but contractors had problems with the amount of practical experience given and the level of safety awareness of the graduates. The results also indicated that the logging industry has a highly mobile, transient workforce, which may be contributing to the poor occupational health and safety record.

## Acknowledgements

The collection of the data reported in this thesis was supported by funding from the Accident Rehabilitation and Compensation Insurance Corporation and the New Zealand Forest Owners Association. The following people and organisations are thanked for their advice and assistance in completing the training needs analysis for logging workers: Kevin Goodman, Forestry Contractors Association of New Zealand; Mark Fielder, Occupational Health and Safety; Rob Prebble, Logging & Forestry Industry Training Board; Greg Steele, Forestry Industry Training and Education Council; Carter Holt Harvey Forests (Northern region & South Island); Fletcher Challenge Forests (Northern & Southern); Hawkes Bay Forests Limited; Liro Limited; P.F. Olsen and Co.; and Weyerhaeuser. I'm especially grateful to all the forestry crew members, contractors and those people involved in forestry training who completed questionnaires.

The effort and support of my supervisors, Dr Judith Brook and Dr Ross Flett is gratefully acknowledged. Thank you for your advice, support, encouragement and friendship.

My thanks also go to:

Dr Richard Brook for his assistance with data analysis and associated issues; and Patrick and Tina from Liro for their unstinting friendship and assistance. Both of you are a joy to work with, and your knowledge and expertise in regarding the human factors aspect of the logging industry is amazing.

Thanks to Cathie and Lynne, your friendship had been an added bonus on my thesis journey.

Finally, thanks to Mike for making coffee and continually asking how my thesis is going. One of those I couldn't have lived without, the other I could.

# Table of Contents

<b>ABSTRACT.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>iii</b>
<b>TABLE OF CONTENTS.....</b>	<b>iv</b>
<b>LIST OF TABLES.....</b>	<b>vii</b>
<b>LIST OF FIGURES.....</b>	<b>ix</b>
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1 Chapter Overview.....	1
1.2 What is a Training Needs Analysis (TNA).....	1
1.3 Why TNA can be a useful tool for organisations	9
1.4 How TNA is conducted.....	16
1.5 Beyond Organisations: TNA applied to a profession or industry.....	21
1.6 Why a TNA could be useful for the forestry industry.....	30
1.7 Aims of this research.....	33
<b>CHAPTER TWO: METHODOLOGY.....</b>	<b>36</b>
2.1 Chapter Overview.....	36
2.2 Questionnaire Development and Testing.....	36
2.3 Sampling Design.....	37
2.4 Sampling Procedure.....	37
2.5 Sampling Results.....	38
2.6 Measures.....	38
2.7 Data Collection Methods.....	41
<b>CHAPTER THREE: RESULTS.....</b>	<b>42</b>
3.1 Chapter Overview.....	42
3.2 Analysis of Demographic Characteristics.....	42
3.2.1 <i>Gender and Ethnicity</i> .....	42
3.2.2 <i>Age</i> .....	43

3.3	Analysis of items relating to currently available training.....	44
3.3.1	<i>Job types crew members were involved with.....</i>	44
3.3.2	<i>Main job crew members involved in today.....</i>	46
3.3.3	<i>Tasks crew members involved in today.....</i>	48
3.3.4	<i>Type of trainer.....</i>	52
3.3.5	<i>What jobs do trainers provide training for?.....</i>	52
3.3.6	<i>Contractor activities.....</i>	53
3.3.7	<i>Who trains crew members?.....</i>	53
3.3.8	<i>Who is the main trainer for crew members?.....</i>	55
3.3.9	<i>Did crew members receive sufficient training when they first started in logging?.....</i>	55
3.3.10	<i>Does the FIRS module cover all the required skills?.....</i>	57
3.4	Analysis of items relating to perceived effectiveness of safety training... ..	58
3.4.1	<i>Safety issues covered in training.....</i>	58
3.4.2	<i>Rating of safety issue coverage in training.....</i>	59
3.4.3	<i>Other safety issues covered in training.....</i>	61
3.4.4	<i>Safety issues which needed to be added to training.....</i>	61
3.5	Analysis of items relating to perceived utility of pre-employment training.....	62
3.5.1	<i>How common is pre-employment training and what forms does it take?.....</i>	62
3.5.2	<i>Rating of 'usefulness' of pre-employment training.....</i>	63
3.5.3	<i>Suggestions for improving pre-employment training.....</i>	64
3.5.4	<i>How well does pre-employment training cover safety issues?.....</i>	64
3.5.5	<i>Suggestions for improving the safety training aspect of pre-employment training.....</i>	65
3.6	Analysis of items relating to tenure and organisational climate.....	65
3.6.1	<i>Length of time spent working in logging.....</i>	66
3.6.2	<i>Length of time spent working in current job.....</i>	67
3.6.3	<i>Length of time spent working in current crew.....</i>	67
3.6.4	<i>Length of time spent working as a contractor.....</i>	68
3.6.5	<i>Length of time spent working as a trainer.....</i>	68
3.6.6	<i>Organisational Climate.....</i>	69



## List of Tables

Table 1.	Crew ethnicity by Region.....	42
Table 2.	Age distribution of crew members and contractors by region.....	44
Table 3.	Jobs crew members were involved with.....	45
Table 4.	Job combinations indicated by crew members.....	46
Table 5.	Crew members main job.....	46
Table 6.	Number and percentage of crews for each job by region as reported by contractors.....	47
Table 7.	Crew members main job by region.....	48
Table 8.	Crew members rating of importance, difficulty to learn, and frequency of logging skills.....	49
Table 9.	Contractor and Trainer ratings of importance, frequency, and difficulty to learn of logging skills.....	50
Table 10.	Number and percentage of trainers that train crew members for that job.....	52
Table 11.	Type of trainer identified by crew members and contractors.....	54
Table 12.	Combination of trainers identified by crew members.....	54
Table 13.	Main trainer as identified by crew members and contractors.....	55
Table 14.	Crew members identification of safety issues covered in their training....	59
Table 15.	Crew member rating of safety issue training by main trainer.....	60
Table 16.	Other safety issues identified by crew members and contractors.....	61
Table 17.	Crew members and contractors identification of pre-employment training providers.....	63
Table 18.	Rating of pre-employment training according to group.....	64
Table 19.	Rating of safety issue coverage of pre-employment training according to group.....	65
Table 20.	Average length of time in years spent working in logging for crew members and contractors by ethnicity and region.....	66
Table 21.	Average length of time in years, spent working by crew member in their current job by ethnicity and region.....	67

Table 22.	Average length of time in years, spent by crew members working in their current crew.....	68
Table 23.	Average length of time in years spent working as a contractor by ethnicity and region.....	68
Table 24.	Contractor and Trainer median scores for industry climate scale.....	70

## List of figures

Figure 1.	Solving 'Performance deficiency training problems?' algorithm.....	12
Figure 2.	Linking causes and solutions for performance deficiencies.....	13
Figure 3.	Contingency model of needs assessment methods.....	19