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AN ANALYSIS OF THE JOB OF FARM MANAGER IN A CORPORATE FARMING VENTURE.

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A thesis presented in partial fulfilment of the requirements for the degree of Master of Agricultural Science in Farm Management at Massey University.

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ABSTRACT

The development of corporate farming in New Zealand has lead to the enhancement of the occupational category "Professional Farm Manager". A review of literature on farm labour revealed that little research has been done on the job of Farm Manager. It was hypothesized that a technique commonly used in industrial psychology, Job Analysis, would provide useful information on the job of Farm Manager.

The research was carried out using the Morton-Read Farming Corporation as a case study. The small sample size had implications for the survey results obtained.

A job description and selection criteria for Farm Managers in the Morton-Read Farming Corporation was developed.

Job Analysis was found to have potential for describing the job of Farm Manager. As a result of the research, problems with the method were identified.

It was concluded that to further define the job of Farm Manager, and develop useful selection criteria, more information needs to be gathered about the cognitive aspects of the job. This is of particular importance when considering the role of the Farm Manager in the on-farm implementation of the Farming Corporation's policy.

TABLE OF CONTENTS

Page No.

CHAPTER ONE: INTRODUCTION

1.1 The Present Situation of New Zealand Agriculture 1

1.2 The Development of Corporate Farming in New Zealand. 2

1.3 Motivation for the Study 3

1.4 Objectives of the Study. 4

1.5 Job Analysis and Study Context. 4

1.6 Position of the Study in Contemporary Farm Management Research. 5

1.7 Thesis Outline. 5

CHAPTER TWO: THE DEVELOPMENT OF THE "PROFESSIONAL FARM MANAGER".

2.1 Introduction. 7

2.2 The Place of Job Analysis in Farm Management Research 7

2.3 Review of Research on Labour and Management. 8

2.4 Staff Selection. 10

2.5 Conclusion. 11

CHAPTER THREE: JOB ANALYSIS

3.1 Chapter Introduction. 13

3.2 Definition of Job Analysis. 13

3.3 Definition of Terms. 14

3.4 History of Job Analysis. 15

3.5 Approaches to Job Analysis. 16

3.5.1 Task-Oriented Methods. 17

3.5.2 Worker-Oriented Methods. 20

3.5.3 Abilities-Oriented Method. 23

3.6 Job Analysis and the Study Context. 23

3.7 Conclusion. 24

CHAPTER FOUR: RESEARCH METHOD

4.1 Introduction. 26

4.2 Preparatory Work 26

4.3 Manager's Task Questionnaire. 26

4.4 Manager's Job Description. 28

4.5 Test of the Job Description. 29

4.6 Time Spent and Importance Rating of Tasks. 29

4.7 Collation and Analysis of Responses. 30

4.8 Problems Encountered. 31

CHAPTER FIVE: RESULTS

5.1 Introduction. 32

5.2 Manager's Task Questionnaire. 32

5.3 Task Groupings. 32

5.4 Job Description. 35

5.5 Time Spent on Tasks. 37

5.6 Importance Ratings. 37

5.7 Tasks Used for Selection. 42

5.8 Tasks for Selection. 44

5.9 Critical Incidents. 45

5.10 Selection Criteria. 46

CHAPTER SIX: CONCLUSION AND DISCUSSION

6.1 Overview. 47

6.2 Success of the Study Relative to the Objectives. 47

6.3 Evaluation of the Research Methodology 48

6.3.1 Incomplete Information. 49

6.3.2 Ambiguity in Task Descriptions. 49

6.3.3 Method of Estimating Time Spent 49

6.3.4 Inability to Differentiate between Tasks Completed Concurrently 50

6.3.5 Conclusions on the Research Method 50

6.3.6 Suggested Changes to the Method for Future Studies 51

6.4 Implications for the Morton-Read Farming Corporation. 52

6.5 Areas for Further Research. 52

6.6 Conclusion. 52

6.7 Epilogue 53

TABLES

Page No.

5.1 Tasks Performed by Managers in the Morton-Read Farming Corporation. 33

5.2 Task Groupings. 34

5.3 Time Spent Annually per Task per Manager. 38

5.4 Importance Ratings of Tasks. 40

5.5 Tasks Used in Developing Selection Criteria. 43

5.6 Tasks Used for Selection Criteria. 44

5.7 Critical Incidents. 45

5.8 Selection Criteria. 46

APPENDICES

I	Research Proposal to Mr J Read
II	Task Check List
III	Manager's Task Questionnaire
IV	Form for Recording Responses
V	Time Spent and Importance Questionnaire
VI	Actual Responses to Time Spent
VII	Actual Responses to Importance

CHAPTER 1

INTRODUCTION.

1.1 The Present (1989) Situation of New Zealand Agriculture.

In 1987 17,795 million (m) ha of land was farmed in New Zealand, producing a gross income $6,896 m. Of this income 22% came from sheep production, 11% from cattle and 22% from dairy production. The remaining 40% was earned by other agricultural, horticultural and forestry enterprises (M.A.F. Corp., 1988). In recent years the sheep sector has declined because of the combined effects of changes in Government agricultural policy and low international prices for sheep meat. In 1982, New Zealand had 70.3 m sheep. By 1986 this had declined to 67.5 m sheep - a drop of 4%. Cattle numbers have remained steady at 4.7m and there are 3.4m dairy cattle. Declining sheep numbers have been reflected in decreased lamb meat production and increased mutton production - down 14% and up 55% respectively from September 1986 to September 1987. (New Zealand Official Yearbook,1988)

The decline in sheep numbers and the 1.4% drop in pastoral product earnings in the 1988 June year (National Business Review, 1989) are evidence of the change in the primary sector over the last four years. Deregulation of the economy in general, and the removal of all farm subsidies in particular, have altered the profitability of many New Zealand farms. Some farmers with low equity or high debt servicing costs have been forced to sell, while others attempted to stay in business by reducing expenditure on farm inputs (particularly fertilizer), and accepting a lower personal standard of living (Hughes et. al., 1989). Other farmers have adapted to the changed situation quickly and capitalised on the opportunities created by lower capital requirements for land and livestock.

One of the opportunities created by depressed land prices was for individuals or organisations to buy up large tracts of land, to be farmed as one unit gaining supposed advantages of economies of scale.

Agriculture,and associated service industries employed 161,634 people in 1988 (NZ O Y). Of these, 86,653 were working owners, leaseholders and sharemilkers, and 20,650 were permanent full-time workers. A section of the latter category, those that are in charge of the day-to-day operations of farm(s), are the focus of this study.

1.2 The Development of Corporate Farming in New Zealand.

The term Corporate farming describes a wide variety of land-based enterprises that are not owner-operated. No definition for corporate farming has yet been provided for New Zealand conditions. A definition based on the Collins Dictionary (1981) would be .. a group of people with a charter granting them certain of the legal powers, rights and liabilities of an individual, involved in the business of farming. The feature that is generally agreed to be common to corporate farms, is that ownership is divorced from the general running of the farm. For example, companies employ managers for the day-to-day running of the farm, but the farm plan and long-term investment decisions are made by a separate group similar to a Board of Directors (eg. Aglands). However, this is not true of a company such as the New Zealand Rural Property Trust, where the properties are leased to and investment decisions are made by the lessee, or of dairyfarm sharemilking agreements, where the owner determines the long-term investment decisions for the property but is not directly involved in the day-to-day running of the farm. These are not classed as corporate farms, despite falling within the bounds of the definition above.

For the purposes of this study, corporate farming was defined as farming businesses where ownership and policy-making are divorced from the day-to-day running of the farm and the farm managers are working together, not as individuals, but for the greater good of the corporation.

Traditionally New Zealand farms have been primarily owner-operated. Farms commonly pass from generation to generation, amalgamate with neighbouring properties, or are divided to provide separate farms for children. It is only in recent times that corporate farming, usually involving large areas of land, has increased in popularity. The major exception is Landcorp (previously the Land and Survey Department) which has farmed large tracts of Government owned land in a corporate sense since its formation in 1896, with the primary objective making land available for purchase by ballot. The formation of Landcorp as a State Owned Enterprise has changed this role and a policy of achieving bottom line profit (National Business Review, 1987) is now pursued. Landcorp still is

New Zealand's largest corporate farmer, and in 1988 ran about 2 m stock units on 170 properties throughout the country (New Zealand Official Yearbook,1988)

During the 1980's several land-based companies were floated for public issue. These were based on the concept of several farms being run as one unit to gain advantage from economies of scale, a range of climates, specialization of skills and taxation savings. They also provided the opportunity to spread production risk and capital requirements between investors. The initial developments were greeted with criticism from farming leaders who saw the move to corporate farming as the death knell to the traditional family farm. They also believed managers would not work hard for an unseen boss, that corporate farms would have an unfair advantage in buying and selling stock because of the large numbers traded, and that they had greater financial reserves to draw on to purchase land, keeping the 'real' farmers out and artificially inflating land prices (National Business Review, Feb. 1987). Despite these fears the family farm in 1989 still accounted for 87% of the ownership structures of farm land in New Zealand (Department of Statistics, 1989) although there were many more corporate farming ventures.

Corporate farming structures face different decision-making problems to owner-operated farm businesses. In the traditional owner-operator farming structure, the farmer fulfils the combined roles of policy-setter, planner, manager, worker and evaluator. Within a corporate structure these functions are usually split, with the policy-setter, planner, evaluator roles being the responsibility of the owner, and the on-farm implementation of policy being the domain of the employed manager/worker. A corporate structure provides opportunities for specialisation in areas such as accounting and animal health programmes, but requires an efficient communication network between the parties concerned to be successful. Human resource management, and effective communication in particular, is vital for the success of any farming venture involving more than one person.

1.3 Motivation for the Study

Human resource management is an important area in industry because technical efficiency is not maximised unless it is coupled with human efficiency. Management in agriculture is very similar to that of any other industry in that it is based on people doing a job. Despite this there has been very little research into job description, and the skills and knowledge required to complete agricultural tasks successfully.

The separation of the role of 'farmer' into parts, where the person setting the farm policy and developing plans is not necessarily responsible for implementation is a feature of corporate farming structures. This has lead to job specialization and the enhancement of occupational categories such as 'professional farm manager' and farm supervisor.

In order to identify opportunities to improve management skills and the use of time, information must be gathered on what managers currently do.

1.4 Objectives of the Study

The objectives of the study were:

a) To develop a method of job analysis that could be used in an agricultural situation

b) To use this method to;

   i) gather data on what corporate farm managers do

   ii) develop a job description of a corporate farm manager

   iii) develop selection criteria for employing farm managers on a corporate farm.

c) To identify opportunities to improve the efficiency of corporate farm managers.

1.5 Job Analysis and Study Context

To achieve the objectives outlined in Section 1.3, a case study approach was used because the area of study was new and the research techniques required development for the agricultural context. Initially Landcorp, the largest corporate farming organization in New Zealand was approached with a research proposition. However, due to internal restructuring of Landcorp it was not possible to establish a research contract. The

Morton-Read Farming Corporation, which is based in the Manawatu region, was then approached with a similar research proposal (Appendix I). The proposal was accepted and a timetable for the study was drawn up.

The Morton-Read Farming Corporation was originally formed to be floated as a public company in 1987, but, due to the sharemarket crash in October 1987, that plan was shelved and a smaller corporate farming venture was financed through private investors, loans and amalgamation with Morton Farms. The new corporation comprised 18 farms situated within a 36 kilometre radius of Feilding. The five managers, who were the focus of this study, were employed to run 2223 ha of land ranging from hill country to finishing land. A total of 31,000 stock units including sheep, cattle and deer were farmed.

1.6 Position of the Study in Contemporary Farm Management Research

Farm Management research relates to the study of the economic efficiency and productivity of farm resources. It's specific objectives are:

1. To guide individual farmers in the best use of their resources, and in a manner compatible with the welfare of society, and

2. To provide fundamental analyses of the efficiency of farm resource combinations which can serve as a basis for bettering the public administration of resources where agricultural policy or institutions which condition production efficiency are concerned.

(Heady, 1948)

This study focuses on the best use of resources, in particular the use of labour. An expanded discussion on the place of this study in Farm Management research is included in Chapter Two.

1.7 Thesis Outline

In Chapter Two the development of the occuational category "Professional Farm Manager" is discussed along with a review of research on labour and management.

The review of literature is continued in Chapter Three. Job Analysis is first defined, then its history, development and current status is reviewed. Some of the many approaches to

conducting a job analysis are critique in general then discussed in relation to the possible application in an agricultural setting in general, and the particular application in this study. Chapter Three concludes with a description of the technique for job analysis that was adopted for this study.

In Chapter Four the methodology used in the study is outlined and some of the problems in conducting the research for the study are discussed.

The results are summarized in Chapter Five and conclusions presented in Chapter Six.

CHAPTER 2

The Development of the "Professional Farm Manager".

2.1 Introduction

In this Chapter the development of the occupational category of "Professional Farm Manager" is discussed along with a review of research on labour and management. The literature on published research on how Farm Managers spend their time, and staff selection is also reviewed.

2.2 The Place of the Study in Farm Management Research.

Farm management by definition involves the organization and deployment of the resources put into a farm business - land, capital, labour and the ability and skills of the individual farmer . Most farm management research has concentrated on the land, capital and farmer resources . Relatively little has been published about the labour component of farm management. This probably reflects the fact that in New Zealand at least, the majority of farms are owner-operated (Dept. of Statistics, 1988) and as a consequence additional labour is not a significant resource of the farming system.

However, as the number of farms in New Zealand decreases and the size increases, labour will become a more significant resource in farm management. Although technological advances in agriculture have lead to the development of labour-saving devices (eg.pour-on dips), this is frequently paralleled by an increase in farm size, which in many cases requires additional labour over and above that of the owner-operator. The increase in farm size has been brought about both by owner-operator farmers increasing their personal land holding and by farming investors (eg. corporate farms).

The development of corporate farming in New Zealand has increased the opportunities for people to develop as "Professional Farm Managers". The limited history of this occupational class means that it is difficult for an employer to appoint a Farm Manager in a corporate farm structure who will perform the job successfully, unless the exact nature

of the job is known and what selection criteria can be used to select people with the necessary skills and knowledge to adequately fulfil the job requirements.

In corporate farming, ownership is normally separated from management. Thus, landowners employ managers to oversee the day-to-day running of the farm. This new category of labour, the professional farm manager, can be distinguished from both the traditional owner-operator and the farm worker. Beattie (1978) described labour as the element which performs the physical work on the farm. She defined labour as being separate from management (decision-making). By this definition, the owner-operator is both labour and management. The corporate farm manager, who is involved in physical farm work (labour), day-to-day decision-making and some policy-setting (components of management), falls somewhere in between.

2.3 Review of Research on Labour and Management.

Labour is a fundamental component of a farming system that requires management. Despite this, and as mentioned earlier, very little research on how this component is utilized has been published. Ansell & Giles (1969) for example, report that the literature offers very little empirical evidence of how agricultural managers do in fact spend their time. This is despite Mathews (1978), who reported that in England and Wales the category of farm manager was increasing significantly in numbers. However, this is also true of the industrial field. The absence of such data might be explained by problems of measurement, or by the inconvenience of the exercise to the individuals concerned, or simply by an understandable failure of managers, generally, to realise that one of the resources they control is the management of their own time. The utilization of time is not as readily measurable as lambing percentage or bull liveweights. Yet knowledge of what farm managers do is important for the efficient running of a farm business.

To the author's knowledge, no formal analyses of the job of Farm Manager has been conducted under New Zealand farming conditions before. A search of the Canadian and American literature on the subject revealed virtually no directly reported research about the job of farm manager. In the United Kingdom where farming companies and farming co-operatives are well established, job analyses have concentrated mainly on conditions of employment and gross measures of the farm managers job (Buchanan & Giles, 1981; Miles, 1978; Giles, 1976).

Giles (1976) and Buchanan & Giles (1981) surveyed British farm managers, through the Big Farm Management magazine, on aspects of their job including farm location, age and gender of respondent, Farm Management Association membership, farm size, number of employees, amount of tenant capital under their control, degree of responsibility and their method and level of payment. The survey, based on a pilot study in 1969, was repeated in 1975/76 and 1980/81. In each of the latter years a low response rate of 10% and 6.6% respectively was received, and as the sample was self-selected, neither statistical significance nor any strict comparability could be claimed. Little change was observed between the two surveys, except for the amount of tenant capital the managers were in charge of. This had increased by approximately the same amount as the retail price index over the same period. The authors major conclusion from both surveys, that employment agreements will depend very much on the individuals concerned, emphasizes pay remuneration and conditions of employment, one of the main focuses of both studies.

The small amount of data that has been gathered on the job farm managers do is highlighted in a survey of agricultural co-operative managers Miles (1978). A question asking respondents to give an approximate breakdown of their activities during an average working day drew more non-responses than to most other questions. One or two respondents even went so far as to answer "not possible" or "it is really not possible to define an average working week with this breakdown." However, as implied by the last response, the question was poorly structured to obtain the required information, and was only appended to the survey whose main focus was conditions of employment and forms of co-operative structures.

Norman (1986) conducted a comprehensive survey of farm managers to obtain information on their management work time and to identify their use of particular farm business management techniques. For five separate one-month periods during 1984/85, a group of 16 managers and 24 farmers in the Hampshire area kept detailed records of how they spent their working time. The job of management was divided into sixteen categories (including farm husbandry, physical work and other work)into which managers allocated their use of time. The analysis indicated that on average managers spent 45% of their total working time on farm business management work (eg. recording information, decision-making). The greatest amount of time spent on farm business management work (40%) was devoted to supervising staff and communications. Less than 5% of time was devoted to budgeting, using recorded information and computers. All farmers and managers spent time doing physical work(44%). Although this survey provides valuable information on how

managers spend their time, it does not differentiate between managers and owner-operators or attempt to specify the complete range of activities that make up the job of Farm Manager (i.e. the tasks involved in farm husbandry, physical work and other work).

Errington(1980) suggested that in respect to manpower planning, that what people do in a job is more informative than the job title alone. Using a survey completed by the British Agricultural Training Board (ATM), he illustrated that the assumption that individuals with the same job title are involved in comparable activities requiring comparable skills is incorrect, at least in the case of British agriculture. Thus, comparisons between individuals with the same job title showed considerable differences in the respective check-list of activities. For example, almost a quarter of those with the title 'foreman' were not involved in the traditional supervisory activities of checking the work of others to see that it was up to standard and taking remedial action if it was not. Errington concluded that job titles alone cannot be relied upon to define what people do in their work. Developing an occupational classification based on what people do, rather than what they are called, would therefore provide a firmer and more meaningful base for planning human resource requirements.

2.4 Staff Selection

Knowledge of what the job of farm manager entails is important for making correct staff selection decisions since choosing the right applicant for a job requires the matching of the applicants abilities against those needed in the job. Without exact knowledge of the abilities and skills needed to successfully perform a job it is difficult to determine effective selection criteria.

Shouksmith, (1971) commented that many employers, including farmers, often complain about the staff they have or can get, yet often they have no clear idea of what constitutes a "good" worker. Poor selection decisions result because little thought has been given to job requirements. Shouksmith therefore recommended that an employer view applicants for a position in the light of their ASPECTS[1]. This would give farmer employers a more effective criteria on which to compare potential employees and would help to avoid what Shouksmith described as an otherwise "chancy" or "hit-and-miss affair".

[1] A=Ages, S = Sex, P = Physique, E = Experience, C = Character, T = Training, S = Social

Bradford, (1971) also advocated selecting farm employees on an objective basis. He suggested using a series of preliminary questions to sort out unsuitable applicants initially, then a questionnaire to rate the remaining applicants on aspects such as length of farming experience, level of education and objection to boarding another farm worker. His final advice was to look for the person with the right attitude and qualities to fit the particular job.

Thornton & Byham (1982) state that the frequency tasks are performed is an indication of the importance of that task to the job, and therefore the weight it should be given selection.

Shouksmith, Bradford and Thorton & Byham all advise that farmer employers should attempt to make selection decisions on some objective criteria, rather than a subjective overall assessment of candidates. The basis for the system proposed by each author is the farmer's opinion of what are necessary attributes of employees. Although this is an improvement on random selection, it still does not adequately address the issue raised by Giles (1975), that providing a person with a suitable job should involve careful job and person specification in the first place followed by equally careful advertising, interviewing and selection methods. (i.e. it is important to know the tasks involved in a job to be able to successfully match a person to the job).

It is also important to know what aspects of a job employees consider important. Cant & Woods, (1968) attempted to define the aspects of a farm worker's job that led to job-satisfaction or dissatisfaction. The factor identified as most important was 'Man Management', which includes good personal relations between employer and employee, recognition for work well done, ensuring that the employee had a good standing in the community and that sources of job-dissatisfaction were removed. They recommended that when selecting employees, the farmer should identify factors of the job that were better than average, and employ a person who rates these factors highly. This strategy is an attempt to adhere to Giles' principle of matching the person to the job.

2.5 Conclusion

The lack of New Zealand research on what farmer managers do, may reflect that the occupational category of farm manager has only recently developed. Researching what farm managers (labour) do is also typically more difficult than studying aspects of the physical production system, because many of the variables of interest cannot be readily

quantified. It is likely that many of the research techniques developed in other disciplines for the study of work can be applied to farming. This study attempted to test this hypothesis, in particular that Job Analysis - a technique developed in Industrial Psychology - could be applied in an agricultural situation.

The dissatisfaction that many farmers feel about staff they have hired may be related to the fact that these staff have been hired on the basis of incorrect criteria. These criteria cannot be defined until an understanding of how managers spend their time (what they do in their work) is quantified. By testing the above hypothesis this study undertook to provide a job description, from which relevant selection criteria could be obtained for the successful employment of Farm Managers in a Corporate Farm organisation.

CHAPTER 3

Job Analysis.

3.1 Chapter Introduction

In this Chapter the technique of Job Analysis is defined and some of the commonly used terminology is explained. The literature pertaining to the history, development and current status of Job Analysis is reviewed.

Some of the common approaches to conducting Job Analyses are outlined and the potential applicability of these approaches to agricultural situations are discussed.

3.2 Definition of Job Analysis.

Job analysis is a technique used for obtaining and presenting factual job information (Bernadin & Beatty,1984). The United States Employment Service (USES,1982) defined job analysis as "..the gathering, evaluating, and recording of accurate, objective, and complete job data".

Job analysis identifies and describes, in a systematic and comprehensive but succinct manner;

- what the worker does in terms of activities or functions;
- how the work is done (methods, techniques, or processes involved, and the equipment used);
- the results of the work (goods produced, services rendered, or materials used);
- the worker characteristics (skills, knowledge, abilities and adaptabilities) needed to accomplish the job; and the

- the context of the work in terms of environmental and organizational factors, which include the nature of the worker's discretion, responsibility, or accountability.

Job analysis is the base of many personnel management decisions e.g. selection, job evaluation, job design and redesign, performance assessment.

3.3 Definition of Terms.

The following definitions of terms commonly used in job analysis were derived from Gael (1983), Roff & Watson (1976), USES (1982) and Cornelius, Carron & Collins, (1979)

There are two common approaches to job analysis; task-oriented and worker-oriented. Some authors (Ash, 1982, Lewin,1976) argue for a third approach; abilities-oriented.

In the Task-oriented approach, each job is broken down into elemental units called tasks. The focus of analysis is upon the work activity itself.

In the Worker-oriented approach, the units of analysis are the generalized human behaviours required to do the work.

In the Abilities-oriented approach, the units of analysis are the underlying abilities and aptitudes of the workers. Jobs are studied in terms of the profiles of abilities required to perform the work.

Worker functions are the ways in which a worker is required to function in relation to data, people, and things, as expressed by mental, interpersonal, and physical worker actions. Worker functions incorporate the skills, knowledges, abilities, and adaptabilities needed to accomplish the tasks involved in a job.

A task is defined as a major element of work intended to achieve a specific result. It is a grouping of work activities that have a common purpose. They are closely related in terms of methods, materials, products, services, and types and sequences of worker actions.

Work activities are the physical actions and mental processes by which workers achieve an establishment's objectives.

The smallest unit into which it is practicable to divide a work activity is a job element. This is a component of a task, but is more comprehensive than the individual motions of a worker.

A job is a collection of tasks which constitute the work of one person. The array of work activities involved in any one job differs significantly from those of other jobs. Jobs and their component tasks can only be adequately defined after the collection and analysis of data describing job tasks has been completed.

One of the most common products of a job analysis is a job description. This is an organized presentation of the facts about the job which distinguishes it from other jobs, including its purpose, tasks, responsibilities, and worker characteristics.

3.4 History of Job Analysis.

The concept of job analysis first appeared in management literature around the turn of the century (Gorpade & Atchison, 1980). In the early 1900's, job analysis techniques focused on elemental work motions and the time it took to perform them (Gael, 1983). Since then, job analysis methods have cycled through stages of loose and unsystematic examinations of global aspects of work to rigorous, quantitative and systematic job studies in which large amounts of data are collected and analyzed. Job analysis suffered a decline in the late 1940's and 1950's when it was seen to be only of use for wage-fixing and time-and-motion studies (Gorpade & Atchison, 1980). In the USA, job analysis was brought back into vogue in response to the Equal Employment Opportunity(EEO) legislation, which required that tests and personnel tools must be "valid". Tests had to provide measures that were directly relevant to resultant job proficiency, and could not be biased with respect to a population. Thus Lewin (1976) stated, "Because of the stimulus provided by the 1972 amendment to the Civil Rights Act,...,public jurisdictions have been paying increased attention to the job relevance and validity of their selection tests. In many instances this increased attention has promoted a search for a practical method of job analysis to provide a basis for the needed job relevance and test validity." This appears to have been the major stimulus for re-examination of job analysis techniques.

Since the late 1960's the field of job analysis has expanded rapidly and the information generated by this technique is now used for a wide range of purposes. For example, Roff & Watson (1976) identified seven major uses of job analysis; placement, training,

establishment of wage and salary scales, safety, job classification, methods of improvement and organizational planning.

Prien & Ronan (1971) and Ghorpade & Atchison (1980) have extensively reviewed the literature pertinent to job analysis. In addition, the importance of job analysis as a tool for personnel management is acknowledged by many authors (Gael,1983, Ghorpade & Atchison, 1980), yet often it is included as an appendum to the main topic or discussed in passing in the introduction to a text (Prien, 1977). However, this is changing as job analysis is recognized as an important initial step in personnel management decisions. A reflection of the growing interest in job analysis is the proliferation of workshops and conferences on job analysis in recent years (Gael, 1983),and the number of articles on the subject in recent issues of professional journals such as Public Personnel Management and the Journal of Applied Psychology.

Although it is currently receiving more attention, job analysis techniques are still subject to confusion and disagreement. Ghorpade & Atchison, (1980) stated,

> *"Everybody who has written on the subject agrees on the fundamental thrust of job analysis i.e. to gather information about jobs. However, writers are in disagreement about the types of information that comprises the unique responsibility of the job analyst, the uses to be made of such information, the sequence of steps involved in gathering job related information, and the terminology of job analysis."*

The level of confusion about job analysis was reiterated in 1983 by Gael who commented that the literature on job analysis was replete with examples of confusion about job analysis in general, about definitions of key terms, and about specific applications of methods and techniques.

3.5 Approaches to Job Analysis

Numerous methods of job analysis have been devised. To critically review them all is beyond the scope of this work. Instead, only those which were considered for this study will be reviewed; first in the broad context of a general approach and second, more specifically, in the context of this study.

3.5.1 Task-oriented Methods

1. Task Analysis

Task and task-like descriptions of work vary from the general, (typified by responsibility statements) to the specific, (typified by time-and-motion studies). This is expanded on by Prien (1977) who states that the degree of specificity of task elements obtained in the analysis depends to an extent on the purpose of the analysis. If the purpose is at the total systems level (concerned with organization of functions) the analysis can be general. If the purpose concerns development of performance criteria or training, the analysis may have to be extremely detailed.

The principal use of task analysis results has been as an interim step in personnel research and development. Specific, detailed information of the activities individuals perform is an essential step in performance description and evaluation, selection, training, and organizational studies.

Data for task analysis is obtained by questionnaires and interviews with job knowledge experts to analyze the job into component tasks, and interviewing incumbents to indicate to what extent functions and roles are important in the job.

A task analysis approach has been used in New Zealand agriculture by the Agricultural Training Council to develop the Farm Training Record for the Farm Cadet programme. The job of farm worker was broken down into tasks, and each task had two components, a practical component and a knowledge component. Part of the qualification for the Trade Certificate Board's Certificate in Farming involved the satisfactory completion of the practical and knowledge components of tasks listed in the Farm Training Record.

This illustrated that task analysis could and has been adapted to the job of farm worker and provided a valuable base reference for some of the tasks involved in the job of farm manager, the focus of this study. However, task analysis alone was not a suitable method for the study of farm managers as it is poor at describing parts of a job other than manual tasks. A farm manager is involved in both cognitive and manual work. The human element and interactions between workers, other than those directly involved in the task, are often excluded in task analysis. Although farm managers often work alone, in the corporate situation, human interaction was hypothesized to be an important part of the job. The

resultant task analysis information therefore has to be converted to behavioural statements to develop selection criteria. This requires an intuitive leap on the part of the analyst, to link tasks to behaviours.

In summary, task analysis was used in this study to provide detailed information on the activities farm managers performed, but it could not provide information on the cognitive tasks performed by the farm managers nor on the human interactions involved in their work.

2. Position Analysis Questionnaire (PAQ)

The Position Analysis Questionnaire, developed by McCormick, Jenneret & Mecham, (1972), was a successor to an earlier method, WAP (Worker Activity Profile). Position Analysis Questionnaire consists of 189 job elements. A job element in this context is a generalized class of behaviourally related job activities (e.g., use of keyboard devices). of a "worker-oriented" nature, that categorizes jobs in terms of human behaviour and provides for the subsequent analysis of the dimensional or factorial structure of jobs based on such behaviour. Although PAQ can be used to study a wide range of positions, it is best suited to manual/blue collar jobs. Cornelius et al, (1984) and Levine et. al., (1980) reported that although the Position Analysis Questionnaire uses non-specific job language it is based on generic, esoteric terminology that study participants appeared to have problems with.

The Position Analysis Questionnaire was not selected for use in this study for two reasons. First Tornow & Pinto, (1976) found that it was not be suitable for the study of managerial level positions, and second it is expensive to use because the questionnaire has to be sent to U.S.A. for analysis. Levine et. al. (1980) also reported that in comparison with three other job analysis methods the Position Analysis Questionnaire, was less suitable for highlighting general job areas, specific job components and for providing adequate information for developing performance measures.

3.Executive Position Description Questionnaire (EPDQ)

The EPDQ method was developed by Hemphill, (1960), to deal with supervisory and executive positions. Hemphill developed concepts which described the work of executives. An executive position is distinguished by the fact that the incumbent supervises the work of another individual, who in turn supervises the work of other individuals. The EPDQ was developed by using an analysis of 93 executives, who described their positions by

using a 575 item Executive Position Description. From this ten factors which described executive postions were derived:

1. Staff service,

2. Supervision of work,

3. Business control,

4. Technical products and markets,

5. Human affairs,

6. Planning,

7. Broad power,

8. Business reputation,

9. Personnel demands, and

10. Preservation of assets.

These ten factors of the Executive Position Description Questionnaire could be applied to supervisory/executive positions in agriculture. Tornow & Pinto (1976), believe that the Executive Position Description Questionnaire has several methodological difficulties. It has also been criticised for the "behavioural sterility of dimensions" (Campbell et. al., 1970 cited by Tornow & Pinto, 1976) suggesting that it too, along with task analysis, provides little insight into behavioural aspects of a job. A strength of the Executive Description Position Questionnaire is that it is good at differentiating between jobs.

The Executive Position Description Questionnaire was not used for this study as the managers in the Morton-Read Corporation were not executives as defined by Hemphill. While at times, the Morton-Read Corporation managers are involved in supervising the work of others, these do not in turn supervise the work of other individuals. Had this study focused on the level above the farm managers, (eg. the farm supervisor), the Executive Position Description Questionnaire may have been a suitable job analysis technique.

3.5.2 Work-oriented Methods

1. Critical Incident Technique

As an outgrowth of studies in the Aviation Psychology Program of the United States Army Air Forces in World War II, Flanagan (1954) developed the Critical Incident Technique. The programme was established to develop procedures for the selection and classification of aircrews. Flanagan proposed that the principal objective of job analysis should be the determination of critical requirements, including those which have been demonstrated to have made the difference between success and failure in carrying out an important part of the job assigned in a significant number of instances. The procedure was to obtain first-hand reports, or reports from objective records, of satisfactory and unsatisfactory execution of the task assigned. Situations in which individuals achieved success or failure was determined by specific reported causes.

Thus, the critical incident technique outlines procedures for collecting observed incidents having special significance. An incident is any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act. To be critical, an incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effects.

Levine et al(1980) identified that the critical incident technique was the best technique for performance appraisal and developing exam plans (for selection)

The critical incident technique provides valuable information for devising selection criteria. Latham et. al. (1980) also showed that patterned interviews using questions developed on the basis of incidents during performance of the job were highly reliable and valid as predictors of future performance in the job. A criticism of the technique is that the data tends to be more vulnerable to contamination and/or being insufficient than task-oriented data.

The critical incident technique was incorporated as part of the method of job analysis in this study because it was expected to yield valuable information for devising valid selection criteria for hiring future farm managers.

2. Job Elements

Developed by Primoff (1974) cited by Bernerdin & Beatty,(1984), the job elements method involves supervisors and experienced employers being surveyed to determine all important elements of successful performance in a job, in terms of knowledge, skills, abilities (KSA) and personal characteristics. Each of the elements identified is rated on its relative importance. The scores are used to classify behaviours into categories labelled critical (i.e. required for minimum performance), superior (i.e. indicative of superior performance), and satisfactory (i.e. indicative of satisfactory performance). Primoff also provides criteria to decide which items should be included in a selection test.

The technique is effective for establishing minimum job qualifications and highlighting specific job components (Levine et al 1980). Rouleau & Krain (1975) suggest as a minimum, that job analyses should identify the major duties in their relative order of importance (to success of the job and by frequency of occurrence). The skills, knowledge and abilities and the personal characteristics associated with each of the major duties should also be identified.

The advantage of the job elements technique over task-oriented methods is that it identifies cognitive-based activities, by pinpointing the knowledge, skills and abilities necessary for successful performance of the job.

The technique was therefore incorporated into the final method because it would provide information on the cognitive tasks performed in the job of farm manager and help to identify tasks which were important to success on the job. This information does not duplicate that obtained from the critical incident data as it focuses on tasks which are important to success in the job, rather than on examples of poor or good performance of "critical" tasks.

3. Functional Job Analysis (FJA)

Functional Job Analysis emerged from the work done on "job families". Job families were designed to group jobs according to varying degrees of commonality with a critical or base job and purports to be a taxonomy of worker-oriented behaviours. Developed by Fine (1955), FJA provides a standardized, controlled language to describe what workers do and a means of assessing and measuring the level and orientation of what workers do.

What workers do is described in relation to Data, People and Things. All jobs involve workers, to some extent, with information and ideas (Data), with clients or co-workers (People), and with machines or equipment (Things). While there may be an infinite number of ways of describing tasks, there is only a handful of significant patterns of behaviour (functions) which describe how workers respond in relation to Data, People, and Things. Those patterns of behaviour which can be articulated reliably have been defined in Worker Function Scales.

The three hierarchies of Data, People, and Things functions provide two ways of systematically comparing and measuring the requirements of any task in any job. These two measures are job level and job orientation. The level measure indicates the relative complexity or simplicity of a task when it is compared to other tasks. The orientation measure indicates the relative involvement of the worker with Data, People, and Things as a given task is performed.

Since the level and orientation measures can be applied to all tasks and, by integration, to all jobs, the Worker Function Scales provide a means for comparing all tasks and all jobs on a common basis. Agricultural jobs could also be compared within the industry and across other industries using this technique.

The strength of Functional Job Analysis is that it is a ready and precise method for analyzing jobs, and sophisticated statistical methods (eg. the Position Analysis Questionnaire) are not required. It is used for performance appraisal, job evaluation, identifying job families, occupational promotional ladders, and training needs.

Functional Job Analysis was not used in this study as it is not recommended for identifying selection criteria. Also, to achieve reliable results the analyst needs one week training and 6 months supervision (Fine, 1955), both of which were not feasible for this study. Another disadvantage reported by Fine is that the Worker Function Scales are ordinal, so they cannot be quantified reliably across different worker environments.

3.5.3 Abilities-oriented Method

1. Abilities Requirement Scale (ARS)

Developed by Fleishman (1972), the unit of analysis of this approach is underlying abilities and aptitudes. Jobs are therefore studied in terms of the profiles of abilities required to perform the work. Data is gathered from knowledgeable incumbents or subject matter experts. The Abilities Requirement Scale is based on the notion that there is a finite set of dimensions - a taxonomy of aptitudes, abilities or characteristics - that can be used to describe a job and that account for the variability of human performance. In this regard, Fleishman has developed a taxonomy of psychomotor abilities, physical proficiency abilities, and cognitive abilities that are necessary for task performance.

The Abilities Requirement Scale was not used in the present study as there is considerable debate in the literature as to how useful this approach is for understanding the total number of jobs under study. Prien (1977), suggests ten psychomotor factors and nine physical proficiency factors alone are inadequate for describing total job performance.

3.6 Job Analysis and the Study Context.

Job Analysis is a technique that is used in many other industries to provide the information to firstly define the job, and secondly provide selection criteria. In this study it was hypothesized that Job Analysis could be used in an agricultural context to provide the same information for the job of Farm Manager in a corporate farming structure.

Numerous methods of job analysis have been utilized for the analysis of lower level and technical jobs. This includes direct observation of workers, personal interview, job checklists, activity profiles, questionnaires, diaries, previous written source material and training manuals. Certain features of these methods limit their usefulness for managerial positions, and hence their usefulness in the context of the manager in the agricultural setting. Many facets of management jobs are not amenable to observation because some activities are unobservable, occur infrequently, and must be private. The job of farm manager is varied, and a lot of activities revolve around seasonal operations eg. lambing. The Job Analysis technique used had to be able to accommodate the special circumstances of a Farm Manager's work.

3.7 Conclusion

The two most common job analysis techniques for evaluating management jobs are Incumbent Interviews and the retrospective Critical Incident technique. Thornton & Byham (1982) suggest that in most cases they should be used in conjunction with each other.

For this study the author concluded that a combination of a task-oriented and a worker-oriented approach was needed as the literature on job analysis fails to categorically support one method over the other. Indeed, Prien (1977), after having discussed the data generated from each approach concluded that there is insufficient evidence for the sole use of any method for the construction of a content valid test. Thus, in order to account for issues of specific job content knowledge and contamination of worker-oriented data, multiple methods of job analysis were used. Other researchers in the field of job analysis also support a multi-method approach (Ash, 1982, Veres et.al., 1987). For the job of farm manager, which involves both physical and cognitive tasks, and a range of knowledges, skills and abilities, both task-oriented and worker-oriented data were needed to determine the true nature of the job. Task-oriented data were necessary as one of the objectives of the research was to develop selection criteria for the employment of farm managers. Worker-oriented data were necessary to identify the skills, knowledges and abilities that were part of the job of farm manager in the Morton-Read Farming Corporation.

The final methodology used in this study combined aspects of the Task Analysis, Job Elements and Critical Incidents approaches - an approach supported by Brumback (cited by Ash, 1982) who concluded that no method by itself was sufficient. As a minimum, he recommended the use of a task checklist, the critical incident technique and a modified job elements method.

The combination of these three techniques was based on methods described by Thornton & Byham (1982) and the Department of Psychology, Massey University (undated). Both proposals outlined a procedure designed specifically for describing managerial positions. The job analysis procedure outlined by Thornton & Byham (1982) was selected for the study as it provided .."valid and reliable results.." and was a simple, user-friendly procedure that could be easily adapted to small sample in the present study. It was also felt that a practical approach that could be easily followed by others in the future, would encourage

more groups to adopt an objective approach not only for developing staff selection criteria, but also for worker training programmes, performance assessment and job evaluation.

The combined approach provided from;

- task analysis: specific, detailed descriptions of what the managers did,
- critical incidents: examples of good and bad performance of tasks,
- job elements: a description of the knowledge, skills and abilities needed for successful performance of the job, rated on relative importance.

The data were combined to generate a job description and selection criteria.

CHAPTER 4

Research Method

4.1 Introduction

In this Chapter the steps of the method used are detailed. The information that was obtained and the manner in which the results were analyzed is described. Some difficulties that were encountered in the research method are outlined.

4.2 Preparatory Work.

Before obtaining specific information on the job of manager in the case study, other relevant job descriptions and job analysis were reviewed.

Of these, the most helpful was the Farm Training Record for the Farm Cadet programme which details many tasks that are performed on New Zealand farms.

This information was used by the author to prepare a checklist of tasks (Appendix II) that may have been involved in the job of Farm Manager in the case study.

4.3 Manager's Task Questionnaire.

The Manager's Task Questionnaire (Appendix III) was devised to obtain information about job tasks performed by farm managers in the Morton-Read Farming Corporation. An open-ended question format was used to avoid possible interview bias. The questionnaire began with questions about the physical features of the unit the manager was responsible for, and basic data on the manager's background. These were non-threatening questions designed to build the respondents confidence. Each manager was then required to list all the duties that were part of his current job (task analysis). To ensure that the task list compiled at each interview was complete, the task list generated by each manager was compared with the pre-prepared checklist. The manager was prompted if any task appeared to have been left out. For each task identified, the Manager was asked to describe;

a) the Task Sequence

the steps involved in performing the task, the resources needed, decisions, deadlines and feedback received on the result,

b) the Task Requirements

the skills, knowledge and abilities needed to perform the task,

c) Critical Incidents

an example of very good or very bad performance of the task.

After the Task Analysis section of the questionnaire was completed, the Manager was asked to describe further aspects of the job, in particular communication links, the responsibilities and decisions of the job and any special knowledge not already covered, that was necessary to be able to do the job.

Finally, the Manager was asked if there were any general comments that would be useful in describing the job.

Each interview was tape recorded to check that all information was collected, and to allow more scope for feedback from and encouragement of the respondent during the interview. The interviewer took written notes as the interview progressed - these were later checked against the tape recording.

Interview times were arranged by telephone a few days before the farm visit. An attempt was made to co-ordinate the interviews to reduce travelling, but only once did this enable two interviews to be completed in one day. Interviews were held between 12 December and 24 December 1988. In two cases the respondents had not been briefed fully by Mr Read prior to the interview. They only had a vague idea of the purpose of the interview. However, this did not appear to cause suspicion in these respondents or to affect their responses to the questionnaire. One respondent had discussed the interview with a manager who had been interviewed. This also did not appear to affect the response. All respondents

reacted positively to the interview and appeared to enjoy the opportunity to talk about their job.

The Manager of Keeble Farm, Massey University; Mr Mark Aspin, was asked to pilot the first questionnaire. He was selected as the structure of the Massey University farms and the job of manager was considered to be similar to that of the Morton-Read Farming Corporation.

The interview lasted two and a half hours and was conducted at the manager's residence.

The Manager found it difficult to recall the complete range of tasks he performed as part of his job. With prompting, the list of tasks performed expanded considerably. It was then decided to give each respondent a copy of the pre-prepared task checklist and to ask them to mark each of the tasks they performed as part of their current job. It was stressed that only those tasks that were performed as part of their current job should be marked. Tasks they were able to perform but were not part of their job as manager for the Morton-Read Farming Corporation were to be left unmarked. This did not reduce the time taken for each interview, but ensured that a complete task list was generated at an early stage in the interview for each manger with less respondent fatigue.

To improve the written record of each interview, a form was devised to take down information about each task (Appendix IV). This made the note-taking during the interview, and the later reconciliation of the tape recording and the written record easier.

The duration of the pilot interview highlighted the need to ensure that the subsequent interviews did not stray off-course. To do this, the interviewer did not allow the conversation to wander aimlessly, but kept each respondent talking about the subject wherever possible. The interviews with the five respondents took between two and a half and three hours.

4.4 Manager's Job Description

The responses to the Manager's Task Questionnaire were collated into a task inventory which was used as the basis of the job description. The data was reduced into task clusters manually, by grouping the tasks under ten major areas. Tasks were assigned to groups using a "make sense" judgement criteria. The proposed task groupings were also discussed with other Farm Management academics to reinforce the logic of the groupings. Had the

sample size been larger, cluster analysis would have been used to complete this step. An example of cluster analysis is given by Ash, 1982.

The task analysis data was complemented by the Task Sequence and Task Requirement information, obtained from the Manager's Task Questionnaire, in completing the Job Description.

4.5 Test of the Job Description.

A meeting was arranged for early February 1989 for the researcher to discuss the job description developed from the Manager's Task Questionnaire with Mr Read and the five managers who provided the task information.

Each task cluster was discussed with the managers. Opportunity was provided for them to question the rationale for the clustering of duties, the responsibilities designated under each heading, and the phraseology used. The managers were satisfied that the job description was an accurate representation of the majority of their current job, but requested that an additional task be included. The managers, and Mr Read, felt that part of the job was to keep up-to-date and interested in new farming developments. This aspect was never mentioned in any of the previous interviews.

The meeting with the managers to discuss the job description was also used to describe to them the format of the second stage of the study. This allowed the researcher to deal with any ambiguities in the written instructions. This proved beneficial, as there was some confusion amongst the managers as to what was required of them when completing the second stage of the study.

4.6 Time Spent and Importance Rating of Tasks.

The second questionnaire (Appendix V), designed to determine the time spent on and the importance of each task, was distributed to the managers by post in late February. For each task identified in the job description, the managers were asked to firstly, rate the importance of the task to the overall job on a one to five scale, and secondly calculate the proportion of time spent on that task in a year. Time Spent was calculated on an annual basis due to the seasonal nature of many of the tasks involved in the job of farm manager.

The Manager of Keeble Farm was again asked to pilot the second questionnaire. Mr Aspin experienced no problems in completing the questionnaire (and the result of the Time Spent section was reasonable) so no modification was necessary. The questionnaire was posted to each of the managers.

The first completed return was received on March 3 (the date the researcher had asked that all returns be in by) and the remainder between then and March 30.

The Importance Rating section of the questionnaire was also sent to the Farm Supervisor to complete.

4.7 Collation and Analysis of Responses.

Each task identified from the Manager's Task Questionnaire was described in terms of the duties and responsibilities involved, and the skills, knowledge and abilities needed to perform the task. The description of each manager was amalgamated into one detailed description of the tasks. These were incorporated into the Job Description as described in 4.4.

The responses to the second stage of the study were separated into "Time Spent" and "Importance" ratings for analysis.

The "Time Spent" data was entered onto a Multiplan spreadsheet developed specifically to analyze this data. Each manager's response was analyzed individually to calculate the percentage of total time spent on each task on an annual basis. These results were then combined to obtain the average time spent on each task per annum.

The Importance ratings from the Managers and the Supervisor were used to develop selection criteria.

Once the tasks to be used for future selection were identified the Critical Incidents relating to those tasks from the Manager's Task Questionnaire were matched to the tasks.

4.8 Problems Encountered.

1. Arranging the initial interviews.

Arrangements for the Manager's Task Questionnaire were to have been made by Mr Read at a monthly managers meeting. Mr Read would notify the managers of the of the reasons for the project, the time it would involve and when the interviews would occur. This meeting never eventuated. The interviewer therefore had to contact each manager individually to set-up the first interview time (which was more convenient than arranging the interviews through Mr Read as he was not fully aware of each Manager's day-to-day schedule), but not all managers knew what the interview would entail.

2. Timing of the interview.

The December period is a very busy time of the year for sheep and beef farmers. This added to the difficulty for arranging a compact interview schedule. It was not possible to interview at another time of year, as the author had deadlines in mid-March to meet.

3. Duration of the interview.

The thought of having to talk for two and a half to three hours intimidated some of the respondents initially, but once they began the interview, none were found to struggle for words!

4. Gaps in the data.

The instruction sheet did not get the respondents to check that they had correctly completed all questions. This may have avoided questions not being answered (e.g. at the end of the page).

CHAPTER 5

Results.

5.1 Introduction

In this Chapter the results that were obtained from each step in the study are presented, and the job description and selection criteria that were developed using this information are outlined.

5.2 Manager's Task Questionnaire.

After the initial interview with each Manager, at which the Manager's Task Questionnaire was completed, the list of tasks (Task Analysis) that the Managers performed in the job was compiled. This is detailed in Table 5.1

5.3 Task Groupings.

The Tasks identified as part of the job (Table 5.1) were manually clustered in to groups according to the general area of work they related to. These are detailed in Table 5.2.

TABLE 5.1

TASKS PERFORMED BY MANAGERS IN THE MORTON READ FARMING CORPORATION

1	Check sheep and paddock conditions	39	Vaccinate sheep.
2	Check cattle etc	40	Vaccinate cattle.
3	Feed budget (planning and allocating feed)	41	Dip sheep.
4	Wean ewes and lambs	42	Dip cattle.
5	Shed off at lambing	43	Identify and treat bloat.
6	Prepare rams for tupping	44	Dehorn cattle.
7	Clerical duties; order forms	45	Footrot sheep (includes catch a sheep).
8	Clerical duties; telephone work (eg stock transport)	46	Docking (includes mustering for docking)
9	Clerical duties; complete farm diary	47	Lamb a ewe (includes catch a sheep).
10	Collect pasture cover and growth rate data	48	Mother-up a lamb.
11	Weigh cattle	49	Plan an animal health programme.
12	Weigh sheep	50	Monitor stock health.
13	Eartag sheep	51	Identify animal health requirements.
14	Eartag cattle	52	Use equipment (Tractor)
15	Tally livestock	53	Establish and keep up an equipment maintenance programme.
16	Analyze and interpret weight data	54	Maintain fences.
17	Evaluate and alter if necessary the feed plan	55	Maintain water supply.
18	Communicate with other group farm managers	56	Maintain buildings.
19	Communicate with farm staff	57	Maintain drainage.
20	Communicate with stock agents	58	Identify weeds and pests.
21	Communicate with neighbouring property owners	59	Plant and tend to shelter.
22	Communicate with family	60	Mouth sheep.
23	Communicate with other farmers	61	Determine culling policy.
24	Communicate with farm supervisor informal(telephone)	62	Shed-up for shearing.
25	Communicate with farm supervisor on-farm contact	63	Pen-up for shearers.
26	Communicate with farm supervisor monthly report	64	Tally for shearers.
27	Communicate with farm supervisor other meetings	65	Press wool.
28	Evaluate alternative farm policies	66	Determine the policy for wool clip preparation.
29	Move a mob of sheep(includes using dogs)	67	Prepare wool for sale.
30	Move a mob of ewes and lambs.	68	Set up and maintain woolshed equipment.
31	Move a mob of cattle.	69	Dag.
32	Draft sheep.	70	Travel to and from properties.
33	Draft cattle.	71	Read farming journals.
34	Load sheep on to truck.	72	Attend field days.
35	Load cattle on to truck.	73	Monitor weather patterns.
36	Care for dogs (includes dogtucker)	74	Follow cost and price movements.
37	Drench sheep (includes mustering and moving in yards)	75	Follow product prices.
38	Drench cattle.		

TABLE 5.2

TASK GROUPINGS		
1	**Feed Allocation**	Feed Budget
		Check stock and paddock conditions
		Wean
		Shed off at lambing
		Prepare ram for tupping
2	**Data collection**	Weigh stock
		Assess stock feed requirements
		Assess pasture
		Clerical duties
		Tally stock
		Eartag stock
3	**Co-ordination**	Communication between Farm Managers
4	**Supervisor**	Communication with Farm Supervisor (F.S.)
5	**Animal Health**	Drench stock
		Vaccinate Stock
		Dip stock
		Dehorn cattle
		Identify and treat bloat
		Earmark lambs
		Dock lambs
6	**Stock Movement**	Draft stock
		Move stock in yards
		Load stock
		Move sheep
		Move ewes and lambs
		Move cattle
		Catch & hold a sheep
		Dogs
7	**Maintenance**	Truck
		Drainage
		Fences
		Buildings
		Water
		Weeds
		Other equipment
8	**Culling**	Mouth sheep
		Drafting
9	**Shearing**	Shed up, pen up and dag ready for shearing
		Press wool
		Prepare wool for sale
		Tally for shearers
		Set up and maintain gear

5.4 Job Description

The Job Description for the job of Farm Manager in the Morton-Read Farming Corporation, was verified with the Farm Managers and the Farm Supervisor before further analysis commenced. Each section of the Job Description relates to a general area of work, as outlined in Table 5.2.

JOB DESCRIPTION

JOB TITLE: Farm Manager

RESPONSIBLE TO: Farm Supervisor of the Farm Corporation

JOB PURPOSE: To fulfil the Corporation's objectives by carrying out the general day-to-day running of the farm, completing all stock management activities, collecting on-farm data, and to recognize opportunities to improve on set production targets.

DUTIES

1. To use formal feed budgeting as an aid to achieving the feed and liveweight targets, to implement and monitor correct feed allocation to all classes of stock and regularly check stock and paddock conditions.

2. To monitor progress towards liveweight and pasture performance targets by collecting and using on-farm data gathered from eartagging, regularly weighing, assessing and tallying stock, and assessing pasture.

3. To arrange/organize/co-ordinate the movement of labour, plant and machinery on farm and between farms in the group by maintaining regular contact with other group farm managers. To co-ordinate livestock movements between the farms (as initiated by the Farm Supervisor) with other farm managers.

JOB DESCRIPTION (continued)

4. To supply the supervisor with timely and accurate information of on-farm developments, pasture conditions and general farming activities which may affect the planned results through regular informal (telephone) contact with the Farm Supervisor. A written report detailing stock liveweights, numbers and animal health operations is to be provided monthly.

5. To maintain a highly productive level of stock health by monitoring stock health and following the specified animal health programme for drenching, vaccinating, dipping, dehorning and docking stock.

6. To effect the efficient movement of livestock throughout the farm and yards, by using careful stockmanship skills and having good dogs.

7. To maintain the capital facilities by conducting regular minor maintenance on buildings, yards, fences, equipment, water supply and drainage.

8. To cull stock by drafting to criteria of weight and physical performance as decided in consultation with the Farm Supervisor.

9. To arrange for, and assist when necessary, in the shearing, dagging, crutching of sheep and preparation of wool for sale by presenting sheep ready for shearing and monitoring the shearing and shed-hand work to ensure that the set standard of shearing and wool preparation is maintained.

10. To recognize opportunities by maintaining an awareness and interest in farming.

5.5 Time Spent on Tasks

The second questionnaire asked the Managers to estimate the amount of time they spent annually on each of the tasks identified in the task analysis. The number of hours spent annually are listed in Table 5.3, detailing each manager's response individually, and the average of these for each task. The actual responses to the questionnaire are detailed in Appendix VI.

The data in Table 5.3 shows that not all the Managers performed every task. This reflected that the stock mix on each of the properties differed. In particular, Manager 5 performed only 56% of the seventy-five tasks. For some tasks the time spent annually varied considerably between Managers, e.g. Manager 1 spent 8000 hours annually on "2. Check cattle and paddock conditions", yet Manager 3 spent only 100 hours annually on this task.

5.6 Importance Ratings

The second questionnaire asked the managers to rate the importance of each of the task on a scale of one (least important) to five (most important) in performing the job of Farm Manager. The results of this are given in Table 5.4. The Farm Supervisor was asked to complete the questionnaire and his answers are detailed in the table.

The Manager's individual responses are detailed in Appendix VII.

The results show that the Managers and the Supervisor rated the importance similarly for most tasks. However they rated a few tasks quite differently e.g. "55. Maintain water supply" 4.4 (Managers) compared to 3.0 (Supervisor).

TABLE 5.3

TIME (HOURS) SPENT ANNUALLY PER MANAGER

TASK	1	2	3	4	5	AVERAGE
1	6000	150	300	100	0	222.8
2	8000	200	100	300	825	445.0
3	120	100	18	24	0	52.4
4	45	40	54	6	0	28.9
5	0	0	16	10	0	5.2
6	4	10	1	1	0	3.4
7	0	0	0	0	25	5.0
8	413	275	92	115	46	187.9
9	138	138	23	23	69	77.9
10	18	96	24	30	18	33.6
11	336	288	144	192	192	230.4
12	48	72	8	12	0	28.0
13	4	0	8	4	0	3.2
14	8	8	5	16	14	10.2
15	36	275	30	24	24	77.8
16	24	240	12	48	18	68.4
17	120	275	108	129	25	131.5
18	50	50	69	69	60	59.5
19	0	48	18	25	69	31.7
20	0	25	0	25	0	10.0
21	12	24	50	100	6	38.4
22	550	0	688	1100	1100	687.5
23	50	0	75	50	50	45.0
24	17	25	50	50	25	33.3
25	36	36	36	24	150	56.4
26	6	12	6	12	12	9.6
27	8	0	8	8	0	4.8
28	24	60	24	8	60	35.2
29	300	300	1100	525	0	445.0
30	0	36	20	20	0	15.2
31	150	200	150	96	300	179.2
32	108	108	216	216	0	129.6
33	36	96	30	64	36	52.4
34	36	72	14	16	0	27.6
35	54	24	3	10	18	21.8
36	275	138	46	46	46	110.0
37	120	192	40	30	0	76.4
38	288	144	33	60	144	133.7
39	16	12	18	18	0	12.8
40	72	0	4	0	4	16.0
41	24	24	14	8	0	14.0
42	30	16	8	8	12	14.8
43	0	0	0	0	18	3.6
44	30	7	3	8	24	14.4

TABLE 5.3 (continued)

45	24	0	0	0	0	4.8
46	100	50	90	90	0	66.0
47	0	8	4	0	0	2.5
48	0	0	3	0	6	1.7
49	3	48	2	2	0	11.0
50	120	48	46	46	0	51.9
51	60	36	4	4	0	20.8
52	24	900	1031	972	200	625.4
53	24	50	19	25	45	32.6
54	12	150	80	120	90	90.4
55	24	100	75	225	40	92.8
56	12	24	0	0	80	23.2
57	12	192	0	0	16	44.0
58	12	12	0	0	6	6.0
59	0	8	0	0	18	5.2
60	24	10	16	4	0	10.8
61	3	8	0	0	0	2.2
62	12	16	8	1	0	7.4
63	8	0	10	6	0	4.8
64	24	8	5	3	0	7.9
65	24	32	10	4	0	14.0
66	12	24	1	0	0	7.4
67	24	32	0	0	0	11.2
68	3	20	3	2	0	5.5
69	18	11	10	3	0	8.2
70	48	275	50	138	138	129.6
71	500	150	50	75	206	196.3
72	48	192	64	64	0	73.6
73	46	138	0	46	23	50.4
74	225	138	23	46	25	91.3
75	12	138	23	8	25	41.2

TABLE 5.4

IMPORTANCE RATINGS OF TASKS

TASK		MANAGER	SUPERVISOR
1	Check sheep and paddock conditions	3.5	3.0
2	Check cattle and paddock conditions	4.0	3.0
3	Feed budget	4.3	4.0
4	Wean ewes and lambs	3.8	4.0
5	Shed off at lambing	1.7	3.0
6	Prepare rams for tupping	3.5	5.0
7	Clerical duties; order forms	2.5	2.0
8	Clerical duties; telephone work	3.2	2.0
9	Clerical duties; complete farm diary	3.6	4.0
10	Collect pasture cover and GR data	3.6	4.0
11	Weigh cattle	3.6	4.0
12	Weigh sheep	3.8	3.0
13	Eartag sheep	2.5	2.0
14	Eartag cattle	3.0	2.0
15	Tally livestock	4.0	3.0
16	Analyze and interpret weight data	3.8	3.0
17	Evaluate the feed plan	4.8	4.0
18	Communicate with group farm managers	3.2	3.0
19	Communicate with farm staff	3.3	4.0
20	Communicate with stock agents	1.3	2.0
21	Communicate with neighbours	1.6	2.0
22	Communicate with family	3.8	4.0
23	Communicate with other farmers	3.0	3.0
24	Communicate with F.S. informal	4.6	5.0
25	Communicate with F.S. on-farm contact	4.2	4.0
26	Communicate with F.S. monthly report	3.8	5.0
27	Communicate with F.S. other meetings	2.6	3.0
28	Evaluate alternative farm policies	3.8	4.0
29	Move a mob of sheep	4.3	3.0
30	Move a mob of ewes and lambs	3.8	3.0
31	Move a mob of cattle	4.4	3.0
32	Draft sheep	3.8	3.0
33	Draft cattle	3.8	3.0
34	Load sheep on to truck	3.0	2.0
35	Load cattle on to truck	3.4	2.0
36	Care for dogs (includes dogtucker)	5.0	4.0
37	Drench sheep	3.8	5.0
38	Drench cattle	4.2	5.0
39	Vaccinate sheep	3.5	2.0
40	Vaccinate cattle	3.0	2.0
41	Dip sheep	4.0	2.0
42	Dip cattle	3.8	2.0
43	Identify and treat bloat	1.8	4.0
44	Dehorn cattle	3.4	2.0

TABLE 5.4 (continued)

45	Footrot sheep	1.8	2.0
46	Docking	3.7	4.0
47	Lamb a ewe	1.3	2.0
48	Mother-up a lamb	1.0	2.0
49	Plan an animal health programme	4.4	3.0
50	Monitor stock health	4.6	4.0
51	Identify animal health requirements	4.2	5.0
52	Use equipment	3.4	4.0
53	Establish & do equipment maintenance	3.4	5.0
54	Maintain fences	2.4	3.0
55	Maintain water supply	4.4	3.0
56	Maintain buildings	2.2	2.0
57	Maintain drainage	2.6	2.0
58	Identify weeds and pests	2.4	3.0
59	Plant and tend to shelter	1.8	3.0
60	Mouth sheep	3.8	2.0
61	Determine culling policy	4.0	3.0
62	Shed-up for shearing	3.0	2.0
63	Pen-up for shearers	2.3	2.0
64	Tally for shearers	2.5	2.0
65	Press wool	2.5	2.0
66	Determine policy for wool preparation	4.3	3.0
67	Prepare wool for sale	3.8	4.0
68	Set up & maintain woolshed equipment	3.5	4.0
69	Dag	3.3	2.0
70	Travel to and from properties	4.4	3.0
71	Read farming journals	3.8	3.0
72	Attend field days	4.0	3.0
73	Monitor weather patterns	2.6	3.0
74	Follow cost and price movements	3.8	3.0
75	Follow product prices	4.0	3.0

5.7 Tasks Used For Selection.

The importance ratings of the average of the Farm Managers and the Supervisor were compared for all seventy-five tasks. A list was compiled for each of tasks which rated greater than or equal to three (51 tasks remaining).

The number of tasks was further reduced by deleting those tasks which were not common to the Managers' and Supervisor's list (43 tasks remaining). Of the tasks deleted, none were rated greater than four by either the Managers or the Supervisor. The deleted tasks were in the general work areas of maintenance, culling and shearing.

The importance ratings of the Farm Supervisor and the Farm Managers were averaged for the final forty-three tasks and ranked in order of importance, to be used in developing selection criteria. The final forty-three tasks are detailed in Table 5.5.

TABLE 5.5

TASKS USED IN DEVELOPING SELECTION CRITERIA

TASK		AVERAGE IMPORTANCE
24	Communicate F.S. Informal	4.80
26	Communicate F.S. monthly report	4.70
51	Identify animal health requirements	4.60
38	Drench cattle	4.60
36	Care for dogs	4.50
17	Evaluate feed plan	4.40
37	Drench sheep	4.40
50	Monitor stock health	4.30
6	Prepare rams for tupping	4.25
3	Feedbudget	4.15
25	Communicate F.S. on farm	4.10
28	Evaluate alternative policies	3.90
46	Docking	3.85
10	Collect Pasture cover & GR data	3.80
9	Clerical - diary	3.80
11	Weigh cattle	3.80
68	Woolshed equipment	3.75
4	Wean ewes and lambs	3.70
52	Use equipment	3.70
31	Move cattle	3.70
49	Plan an animal health programme	3.70
70	Travel	3.70
67	Prepare wool for sale	3.70
55	Maintain water supply	3.70
22	Communicate family	3.70
66	Determine policy for wool preparation	3.65
29	Move sheep	3.65
61	Determine culling policy	3.50
75	Follow product prices	3.50
15	Tally livestock	3.50
72	Attend field days	3.50
2	Check cattle & paddocks	3.50
33	Draft cattle	3.40
32	Draft sheep	3.40
74	Follow cost & price movements	3.40
71	Read farming journals	3.40
30	Move ewes & lambs	3.40
16	Analyze & interpret weight data	3.40
12	Weigh sheep	3.40
43	Check sheep & paddocks	3.25
18	Communicate other managers	3.10
23	Communicate other farmers	3.00

5.8 Tasks for Selection

Of the forty-three tasks identified in Table 5.5, the tasks that were to be used to develop selection criteria were chosen using a pre-determined decision rule i.e. any task with an averaged importance rating of greater than or equal to four. The resultant eleven tasks that were used to develop selection criteria are listed in Table 5.6.

TABLE 5.6

TASKS FOR SELECTION

TASK		AVERAGE IMPORTANCE
24	Communicate F. S. informal	4.80
26	Communicate F.S. monthly report	4.70
51	Identify animal health requirements	4.60
38	Drench cattle	4.60
36	Care for dogs	4.50
17	Evaluate feed plan	4.40
37	Drench sheep	4.40
50	Monitor stock health	4.30
6	Prepare rams for tupping	4.25
3	Feedbudget	4.15
25	Communicate F.S. on farm	4.10

The general areas of the job that these tasks encompass are communication, animal health and feed allocation.

5.9 Critical Incidents

As part of the Manager's Task Questionnaire each manager was asked to give examples of good or bad performance (Critical Incidents) of tasks involved in the job. Table 5.7 details the Critical Incidents that were collected for the tasks that were later chosen to be used as the basis of selection criteria. A Critical Incident was not collected for each task in Table 5.6. The reason for and implications of this are discussed in Chapter 6.

TABLE 5.7

CRITICAL INCIDENTS

TASK		Good Performance	Bad Performance
38	Drench cattle		The drench goes down the wrong way, causing choking. Incorrect dose, so drench not effective.
36	Care for dogs	A good dog is equivalent to an extra person.	If dogs are not looked after, they will stop work at a critical time in stock work.
3	Feedbudget	Over winter bulls that were control grazed were only 10 kg lighter than those ad lib fed.	Poor stock and run out of grass.

5.10 Selection Criteria

The selection criteria that were developed for the job of Farm Manager in the Morton Read Farming Corporation are listed in Table 5.8. For each of the eleven tasks chosen as the basis for selection criteria, the accompanying knowledge, skills and abilities (Job Elements) needed to perform them and examples of good and bad performance (Critical Incidents) of each task (where the information was gathered) are also detailed.

TABLE 5.8

SELECTION CRITERIA

TASK		KNOWLEDGE, SKILLS & ABILITIES	CRITICAL INCIDENTS	
			GOOD	BAD
24	Communicate F.S. informal			
26	Communicate F.S. monthly report			
51	Identify Animal health requirements			
38	Drench cattle	How to calculate the correct dosage and insure that the animal gets the full dose.		Drench goes down the wrong way and the animal dies.
36	Care for dogs	Patience, strictness. Be prepared to spend time with and like the dogs. Stocksense - when to command the dog.	All stock work completed effectively. A good dog is equivalent to an extra person.	Dog sits down at critical time.
17	Evaluate feed plan			
37	Drench sheep	The importance of a vigorous programme.		
50	Monitor stock health			
6	Prepare rams for tupping	Able to catch and hold a ram, fit and change crayons		
3	Feedbudget	Expected pasture growth rates and animal intake data, specific farm knowledge when interpreting the results. Have to be committed to doing it properly.	Bulls on a controlled grazing system came out of the winter only 10 kg lighter than those ad lib fed.	Poor stock and no grass.
25	Communicate F.S. on farm			

CHAPTER 6

Conclusion and Discussion.

6.1 Overview

In this Chapter the results of the study relative to the original objectives are reviewed. The implication of the results for the Morton-Read Farming Corporation are discussed and conclusions drawn.

Possible areas for further research, and a summary of the use of the method of Job Analysis in an agricultural situation are discussed.

6.2 Success of the Study Relative to the Objectives

The motivation for this study was that the development of corporate farming in New Zealand has lead to the enhancement of the job of Farm Manager. It was hypothesized that to employ Farm Managers with the knowledge, skills and abilities to perform the job successfully, it was necessary to have a clear understanding of the precise nature of the job. A review of the literature confirmed that little is documented about the job of Farm Manager and suggested that the procedure of Job Analysis would be appropriate to investigate this area of farm labour. It was necessary to use a method which would enable information to be collected and analyzed on this aspect of the farm system, particularly as little research had been conducted in the field the job "Farm Manager" in the past.

The study had three objectives;

a) To develop a method of Job Analysis that could be used in an agricultural situation.

b) To use this method to:

   i) gather data on what a corporate farm manager does,

ii) develop a Job Description of a corporate Farm Manager,

iii) develop selection criteria for employing Farm Managers on a corporate farm.

c) To identify opportunities to improve the efficiency of corporate Farm Managers.

In the process of developing selection criteria (Objective a) (iii)) for Farm Managers in the Morton-Read Farming Corporation, data was gathered on what the Managers were currently doing (Objective a) (i)) and this was used to develop a Job Description (Objective a) (ii)).

In completing this process a method of Job Analysis was developed that could be used in agriculture (Objective b)). But as discussed later in this Chapter, the method used in this study was not adequate to fully describe the job of Farm Manager.

The "Time Spent" data gave some indications of opportunities to improve efficiency (Objective c)). Some of the most time consuming tasks the Managers performed were relatively low in importance e.g."43. Check sheep and paddock conditions"; ranked 5th in Time Spent and only 40th in Importance. This may not be a sign of inefficiency, but a weakness in the research method. "Check sheep and paddock conditions" involves components of "17. Evaluate feed plan" and "50. Monitor stock health". These tasks are rated 6th and 8th respectively in Importance. Also the two most time consuming tasks; "52. Use equipment" and "22. Communicate with family" are likely to have been affected by incorrect interpretation of the question by the respondents. Both of these points will be further discussed later in this Chapter.

6.3 Evaluation of the Research Methodology

One of the factors influencing the results obtained from the study was deficiencies due to problems encountered in the research method. In some instances these could have been rectified by changes to the method, but in other cases the problem was inherent in the method. The results must be interpreted with this in mind.

6.3.1 Incomplete information

The Manager's Task Questionnaire took between two and two and a half hours to complete. Because the author was aware that the interview process was lengthy, Managers were not pressed if they could not immediately recall a Critical Incident for each task identified. This proved to have been a mistake, as when the tasks used as a basis for selection criteria were identified, it became apparent that Critical Incidents were not available for each task. This weakened their use as selection criteria. At this stage it was not convenient to return to the Managers to obtain the relevant information.

6.3.2 Ambiguity in Task Descriptions.

All managers appeared to interpret incorrectly the category, "22. Communication with family", to mean the time spent with their families, rather than the time they spent discussing aspects of the job.

It also appeared that the task "52. Use equipment" was misinterpreted. Managers were to indicate the time they spent using equipment when not engaged in a task covered elsewhere. Given the result, it appeared that this instruction was misunderstood, and time spent on "52. Use equipment" was effectively doubled.

The affect on the overall result of the study of these misinterpretations is that the ranking of tasks, in terms of Time Spent, is likely to be incorrect. The results indicate that a large inefficiency in the current performance of the job of Farm Manager in the Morton Read Farming Corporation is the excessive amount of time managers spend communicating with their families - on farm matters - relative to the importance of this task to the overall job. In practice it is very likely that the Time Spent on this task has been largely overestimated, and so does not represent an opportunity for efficiency gains.

6.3.3 Method of Estimating Time Spent.

After the pilot of the second questionnaire was analyzed, a base for time spent comparisons was developed. This was calculated using a working year of 50 weeks, five an a half days per week and nine hours per day (a total of 2475 hours per year). For each of the managers, the time spent per task was calculated as a percentage of total time. The sum of the percentage time on each task was totalled, and should have equalled one hundred percent.

In the pilot this worked out exactly. In the study it ranged from 174% to 247% (16 to 24 hours per day).

The problem of over-estimating the total time spent on tasks could be attributed to the difficulty in estimating the amount of time spent performing tasks that are only completed over a small part of the year e.g."30. Move ewes and lambs". Many tasks in the job of Farm Manager are in this category i.e. seasonal. The time spent on some tasks e.g. Maintenance, varies considerably over the year. More time is spent on maintenance in the autumn than the spring, and this factor may have caused the Managers difficulty when estimating the total time spent annually.

Another reason for the Managers to over-estimate the time spent on tasks may have been a sub-conscious insecurity, in their own limited knowledge of how they spent their working day. The Manager who piloted the questionnaire was not under this pressure as the results from the pilot went no further than the Researcher. But the Managers in the case study knew that the results of their questionnaire, albeit in a combined form, would be presented to the Farm Supervisor. This may have caused them to be generous in their estimations of time spent to avoid the results showing they had a lot of time unaccounted for.

6.3.4 Inability to differentiate between tasks completed concurrently.

The method used to estimate the time spent annually on each task did not account for times when more than one task was being completed at a time. For example, all Managers spent time on "70. Travel to and from properties". During this time it is likely they would perform other cognitive tasks e.g. "17. Evaluate feed plan", "61. Determine culling policy" etc. Thus in the questionnaire, that period of time was accounted for twice. This problem did not appear in the pilot study, but was consistent in each return from the case study responses. It is also one of the likely reasons for the over-estimation of total time spent as discussed in 6.3.3.

6.3.5 Conclusions on the Research Method.

The three problems with the method discussed above i.e. ambiguity in task descriptions, method of estimating time spent, and inability to differentiate between tasks completed concurrently, are all inter-related and are the major weakness in the agricultural application of this method of Job Analysis. They all centre on the problem that in the Job of Farm Manager frequently more than one task is performed at one time.

In the Chapter One the definition of corporate farming was given as "Farming Enterprises where ownership and policy-making are divorced from the day-to-day running of the farm and managers are working together, not as individuals, but for the greater good of the corporation." It was surmised that in the corporate farm situation the traditional role of owner/operator was separated into "policy setter, planner and evaluator" being the responsibility of the owner, and "on-farm implementation" the responsibility of the manager. In this study it became evident that although major policy and decision-making is the responsibility of the owner, in the process of effective on-farm implementation of that policy the manager has significant decisions to make on a day-to-day basis. Although a Job Description which encompassed the cognitive aspects of the job was developed, this was not fully complemented by the other data gathered, in particular Time Spent due to the difficulty in estimating it.

This highlights the problem that very little research has been done on the decision making process in agriculture. Managers are frequently thinking subconsciously or consciously as they are performing other manual tasks. This method of Job Analysis has not dealt with this aspect of the job of Farm Manager well. The results are not conclusive as to how much time is spent on cognitive tasks relative to manual tasks, as the method of estimating Time Spent did not adequately differentiate between the two.

The usefulness of the Selection Criteria was weakened because of the incomplete list of Critical Incidents for the tasks chosen as the base. This was more a problem with the ordering and timing of the research, than with the method itself.

6.3.6 Suggested Changes to the Method for Future Studies.

To ensure that full information on the "important" tasks is collected Critical Incident and Job Element data should be gathered once the tasks to be used for selection criteria have been identified. If the researcher attempted to get full information on all tasks initially, the interview would be a very tedious procedure.

To identify opportunities to improve efficiency, it may be advantageous to devise a "model" Job Description and compare this with the actual derived from the Job Analysis. Until a more effective way is devised for estimating Time Spent on cognitive as well as manual tasks, this method will not adequately highlight potential areas for efficiency gains.

6.4 Implications For the Morton-Read Farming Corporation

Should Morton-Read employ another Manager in the future, the organisation now has an accurate description of the job they are employing for, which is useful for them as a benchmark and for the potential employee to get a good idea as to what the job entails. The selection criteria are essentially the most important parts of the overall job of Farm Manager. They can be used as the basis for performance evaluation and training programmes.

Each manager can be assessed on how well they perform on the most important aspects of the job. They can use this information themselves to set personal performance targets. Areas of weakness can be identified and an appropriate training programme devised. This can also be used to develop more junior farm staff so that in time they will have the skills and abilities to be a Farm Manager.

6.5 Areas for Further Research

The major weakness the study highlighted is the lack of knowledge on the decision making process in farm management. The study showed that Farm Managers in a corporate farm structure were involved in decision making as part of their job. To fully understand the nature of the job of Farm Manager, more research must be done on the nature of decision making and how this is influenced by the organisations structure and the other information that is available to the decision maker.

6.6 Conclusion

Job Analysis has potential as a method for gathering information on the job of Farm Manager in a corporate farming organisation. This study has provided a basic description of the tasks involved and a specific Job Description for the job of Farm Manager in the Morton-Read Farming Corporation. The study did not provide information to highlight areas for potential efficiency gains. This was due in part to aspects of the method that could be improved should the study be repeated, but also in part to the fundamental problem that a farmer or manager is involved in both cognitive and manual tasks, often completing both concurrently. The method used in this study could not cater for this aspect of the farm system.

In contemporary literature, job analyses have been performed over large sample sizes. While the size of the sample in this study was small in comparison it was felt that this need not invalidate the study as it was a pilot study into an area new to agriculture.

The five participants restricted the type of analytical techniques that could be applied. However the methodology used is the same as if the population was 500. With a larger population multivariate analysis techniques such as cluster analysis (Ash,1982) could have been used for data analysis.

6.7 Epilogue.

Since the time the study was undertaken (late 1988 - early 1989) and the time of completion of the write up (late 1990), the ownership and management structure of Morton Read Farming Corporation has changed.

The assets of Morton Read were offered for sale in April 1989 following the death of Mr William Morton, the owner of the company, in October 1988. In October 1989 Austral Read Farms purchased the assets of the Morton Read Farming Corporation and became responsible for the farming of the properties back dated to 1 July 1989. Mr Read continued as Supervisor for the farms in the group and was appointed as Chief Executive.

Two of the five Managers that were part of the case study have since left Morton Read (now Austral Read Farms) and they were replaced with a full time farm worker and a permanent part time casual worker. This has streamlined the management structure leaving three managers in charge of a similar amount of land and stock, with slightly less labour.

Appendix I

THESIS/FUN/WJP5

PROPOSAL FOR FUNDING OF MASTERATE (M.AGR.SC.) THESIS

Title: "An evaluation of staff management and development in a farming corporation"

Candidate: Ms Bridgit Hawkins (B.Agr.Sc., Massey), Tutor in Farm Management

Supervisors: Dr Alan Wright (M.Agr.Sc., Massey, Ph.D., New England) Reader in Farm Management
Mr Warren Parker (M.Agr.Sc., Massey) Senior Lecturer in Farm Management

Other technical assistance:

Mr Joe Hughes (M.Agr.Sc., Massey; M.S., Wisconsin) Senior Lecturer in Agricultural Extension
Professor Frank Anderson (B.Agr.Econ., Univ. New England, Ph.D. Oregon) Head of Agricultural and Horticultural Systems Management Department.

OUTLINE OF RESEARCH PROJECT (Background, study programme and objectives):

Agriculture in New Zealand has gone through a radical change since the election of the 1984 Labour Government and the associated discontinuation of all subsidies, the adoption of a floating exchange rate policy and the implementation of "market led" product pricing. One result of this restructuring is that while a significant number of farms have become uneconomic and their owners have been forced to exit the industry, new opportunities for larger farming organisations with economies of size and specialisation of staff have been created. These larger farms have taken the form of Property Trusts, Companies listed on the Stock Exchange and Corporations, as well as expanded owner-operated family units.

If the present low profit margin for most agricultural commodities continue the trend towards larger farming organisations is likely to accelerate. This will present their proponents with new management challenges, particularly with respect to staffing and organisation, as management structures more akin to commercial industry are implemented.

One such large farming organisation in the Manawatu region is the Morton-Read Farming Corporation formed in November 1987. This currently comprises 18 farms supporting 60,000 stock units (su). The overall charter and policy for the corporation are set by a Board of four directors, but responsibility for implementation of policy at the farm level and the day to day operation of the farms is entrusted to a farm supervisor (John Read) and 11 farm managers respectively. An accountant has recently been hired to service all the Corporation's accounts. A future aim of the Corporation is to increase in size to over 100,000 su to obtain greater economies of size.

The mission statement of the Corporation is to "procure profit from agribusiness". Five goals to achieve this mission have been specified:

1. To implement effective farming systems.
2. To optimise returns from farming operations.
3. To minimise the cost of inputs.
4. To recognise and achieve opportunities.
5. To implement effective information systems.

The objective of the proposed masterate study is to investigate aspects of the fifth goal, particularly in relation to the training and development of farm staff, and the transfer of information within the Corporation's management structure, especially between the farm supervisor and farm staff. The study should also provide important information in relation to the other goals of the Corporation.

The first phase of the study will involve the description of the present organisational structure of the Corporation, the farms and the attributes of each of the farm managers. The working relationship and process of communication between the farm supervisor and the farm managers will be evaluated. A personal interview approach (approximately half day per manager) will be adopted to obtain the relevant information. This research will commence in October 1988.

The second phase of the study will centre on developing programmes for training farm managers (e.g. analysis and application of objective data collected on farms), procedures for maintaining staff performance over time, the setting of short and long term objectives at the farm level and processes used to measure the attainment of these, and the procedures for hiring (and firing) staff. For each of these aspects of the study consideration will be given to the impact of the Corporation doubling in size. Information for this part of the study will be derived from the survey results, the experience of other business organisations and the literature on staff training and development. The results from Mr D. Marriott's research project (MBA student) will also be drawn upon. Proposals for staff development will be presented to group meetings of farm staff and the farm supervisor to obtain feedback about the practicability of the proposals and to allow staff to make a positive contribution to the development of programmes that they may subsequently be involved in.

The final stage of the study will be the writing-up and presentation of results. Writing-up should be completed by June 1989.

A study of this nature will require close cooperation between the farm supervisor, farm managers and the researcher. Staff must have the

assurance that they are able to speak freely and confidentially. The researcher, on her part, will be required to maintain that confidentiality. Regular meetings will be held with the supervisor to keep him informed of proposals and progress. This will assist to allay any problems that might arise.

FUNDING:

Financial support from the Morton-Read Farming Corporation is sought to fund the field work and analysis of data. A breakdown of estimated costs is shown below. Massey University will meet the costs of supervision and the balance of costs of administration. Travel expenses are based on the current daily rate for hiring University cars.

Travel: Survey 11 farm managers (1/2 day per farm)	
$85/day x 6 days	$510
Follow-up group meetings (two 1/2 days) $85/day x 2 days	$170
Computing: (data input and analysis)	$200
Administration: (typing, paper, photo-copying)	$200
	$1080
Contingency at 7.5%	$ 81
	$1161

Upon acceptance of the research proposal a formal contract between the University and the Morton-Read Farming Corporation would be signed. This would detail aspects such as the payment of research funds, and the confidentiality and publication of results.

SUPPORTING STATEMENT:

I certify that this project can be conducted within the Department of Agricultural and Horticultural Systems Management, Massey University.

Head of Department Frank M Anderson Date 2/8/88

Appendix II

DUTIES

STOCK:

Sheep
- [ ] Check sheep and paddock conditions
- [ ] Move a mob of sheep
- [ ] Lamb a ewe
- [ ] Shed-off at lambing
- [ ] Mother a lamb
- [ ] Move a mob of ewes and lambs
- [ ] Restrain a sheep
- [ ] Catch or hold a sheep
- [ ] Move sheep in yards
- [ ] Draft sheep
- [ ] Catch lambs
- [ ] Castrate lambs
- [ ] Tail lambs
- [ ] Earmark lambs
- [ ] Eartag
- [ ] Mouth
- [ ] Wean
- [ ] Prepare ram for tupping
- [ ] Load sheep into a truck
- [ ] Count
- [ ] Weigh
- [ ] Drench
- [ ] Vaccinate
- [ ] Dip
- [ ] Footrot
- [ ] Shed up
- [ ] Pen up
- [ ] Tally for shearers
- [ ] Dag
- [ ] Crutch
- [ ] Shear
- [ ] Set up and maintain gear
- [ ] Assess sheep condition
- [ ] Fleeco
- [ ] Press
- [ ] Prepare wool for sale

Feed
- [ ] Assess pasture
- [ ] Assess stock requirements
- [ ] Feed out
- [ ] Feedbudget

Cattle
- [ ] Check on cattle
- [ ] Move a mob
- [ ] Identify and treat bloat
- [ ] Move cattle in yards
- [ ] Draft
- [ ] Load onto truck
- [ ] Weigh
- [ ] Drench
- [ ] Vaccinate
- [ ] Eartag
- [ ] Dehorn
- [ ] Dip

☐	**Feed**	Recognise suitable feed
☐		Assess feed requirements
☐		Feed out
☐	**Dogs**	Feed and care for
☐		Work heading dog
☐		Work huntaway dog
☐		Work in yards
☐		Train
☐		Rear pups
☐	**Fieldwork**	
☐		Plough
☐		Disc
☐		Harrow
☐		Drill
☐		Roll
☐		Rotary hoe
☐		Prepare seedbed
☐		Establish a crop
☐		Fertilise
☐	**Weeds**	Identify weeds
☐		Spray
☐		Identify pests
☐		Spray
	Conservation	
☐		Check paddock to be shut up
☐		Make hay
☐		Make silage
	Equipment	
☐		Drive a tractor
☐		Maintenance
☐		Ride farm bike
☐		Maintenance
☐		Drive a truck
☐		Maintenance
☐		Tools (manual and power)
☐		Chainsaw
☐		Front end loader
☐		Grader blade
☐		Welder
	Fencing	
☐		Repairing
☐		New permanent
☐		New electric
☐		Swing gate
☐	Water	Lay new mains
☐		Repair
☐		Maintain pump
☐		Maintain water troughs

Buildings

- [ ] Maintenance of buildings and yards
- [ ] New buildings and yards

Drainage

- [ ] Lay mole and tile
- [ ] Maintain " "
- [ ] Open drains

Other

- [ ] Shelter
- [ ] Dog tucker/house meat
- [ ] Tracks

Clerical

- [ ] Invoice/receipting

Communication

- [ ] Between farm managers)
- [ ] Between farm staff) within M-R
- [ ] Between Manager and Supervisor)

- [ ] FM - stock agents)
- [ ] - reps)
- [ ] - bankers?) outside M-R
- [ ] - owner of leased land)
- [ ] - neighbours
- [ ] - family

Responsibilities

- [ ] For staff (safety)
- [ ] Purchase inputs
- [ ] Purchase stock
- [ ] Sale stock/wool
- [ ] Plant and machinery
- [ ] Coordinating operations
- [ ] Budgeting/planning (feed and/or financial)
- [ ] Setting targets
- [ ] Recording data
  - [ ] Diary of daily events
  - [ ] Record of weather (rainfall)
  - [ ] Record of management inputs e.g. drench dates/ram dates; amt/area for fertiliser...

Decisions

- [ ] Lambing
- [ ] Shearing
- [ ] Hay/silage making
- [ ] Lamb selling policy
- [ ] Cattle selling policy/buying
- [ ] Lamb buying/selling
- [ ] Culling
- [ ] Selecting replacements
- [ ] Ram/bull purchase

Knowledge

- [ ] Animal health

- [ ] Plant species (weeds)
- [ ] Plant pests and diseases
- [ ] Fertiliser
- [ ] Pasture assessment techniques
- [ ] Feed budgeting
- [ ] Sampling stock
- [ ] Computing
- [ ] Accounting
- [ ] Wool classing/preparation for sale
- [ ] Stock growth rates and intakes
- [ ] Stock target weights
- [ ] Soil type characteristics
- [ ] Fertility measures

Appendix III

MMEAD/JA/BWH

JOB ANALYSIS FOR FARM MANAGERS IN THE MORTON-READ FARMING CORPORATION LTD

JOB ANALYST: DATE:

INTERVIEWEE:

AGE:

EDUCATION:

PREVIOUS WORK EXPERIENCE:

FARM SIZE (ha):

STOCK UNITS:

STAGE OF DEVELOPMENT:

POSITION/TITLE:

GENERAL JOB DESCRIPTION:

DUTIES: (What duties are required of the individual to fulfil the purpose of the job. Provide a brief, one sentence description of each).

TASK ANALYSIS:

For each duty described in the previous section, incorporate the following points:

Task sequence:

(a) Describe the steps involved in actually doing the task. This description should be in behavioural terms showing what is actually done.

(b) Describe what resources are used to do the task. These may include dogs, vehicles, machinery, outside contractors etc.

(c) Include what decisions are needed. Can the individual make these decisions? Is a higher authority needed?

(d) Describe any time pressures or deadlines involved.

(e) Where does the result of the task go and is there any feedback on the quallity of the work done?

Task requirements:

(a) What knowledge is needed to successfully complete the task?

(b) What specific skills or abilities are needed to successfully complete the task?

Critical Incidents:

Ask the incumbent to recall and describe particular incidents that have occurred in the past and illustrate particularly successful or poor performance on this task.

NB:

Use a separate page/section for each duty analysed. Number or name the duties involved. Use behavioural descriptions.

Once the task analysis has been completed, request the information outlined on the next page.

COMMUNICATION: (describe the communication links between yourself and others, within and outside the M-R Corp., concerning the job).

RESPONSIBILITIES/DECISIONS: (describe the responsibilities and decisions you have to make within the job).

SPECIAL KNOWLEDGE: (describe any special knowledge necessary, not already covered, to do this job).

GENERAL: (is there any information not collected above that could be useful in describing the job).

Appendix IV

Task:

Step:

Resources:

Decisions:

Deadlines: Feedback:

Knowledge:

Skills:

Critical Incidents: - Good:

- Bad:

Task:

Step:

Resources:

Decisions:

Deadlines: Feedback:

Knowledge:

Skills:

Critical Incidents: - Good:

- Bad:

Appendix V

TIME SPENT AND IMPORTANCE RATINGS OF TASKS

On the following pages you will find a comprehensive list of tasks performed by managers in the Morton-Read Farming Corporation, derived from interviews with the managers. First go through the tasks and rate them as to the time you spend doing each task, over a year. The tasks are listed again, this time for you to rate the importance you believe each task has in the overall job of farm manager. Listed below are instructions for rating each task on the dimensions of time spent and importance. Please fill in each box for each task, after carefully reading the instructions on the following pages.

TIME SPENT RATING

Read each task carefully. If you do not perform the task in your current job (as a manager in the Morton-Read Farming Corporation), write 0 in the box next to the task in the Time/Task (hrs & mins) column. Please note, think only of the tasks you perform as a manager in the Morton-Read Farming Corporation - write 0 in the box if you do not perform them, even though you may be capable of doing the task.

If you do perform the task (wholly or in part), complete the Time Spent/Task columns. Be sure to fill in both Time/Task and Frequency for each task you perform. Below are four examples of how to fill in the columns.

Examples

	Time/task hrs	Time/task min	Frequency Daily	Frequency Wkly	Frequency Mnthly	Frequency Yrly
a)Wean ewes and lambs.....	48					1
b)Move a mob of sheep.....	1	30	1			
c)Communicate with farm staff.....		20		2		
d)Communicate with stock agents.....	0	00				

1.e. a)You spend four days (12 hours/day) weaning and it is an annual event.

b)You spend on average 1hr 30mins each time you move sheep and it is done every day.

c)You spend 20mins, each time, communicating with farm staff and you do this on average twice a week.

d)You do not perform this task.

REMOVE THIS SHEET FROM THE FOLDER AND REFER TO IT AS

YOU WORK THROUGH THE TASKS ON EACH PAGE.

TASKS PERFORMED BY MANAGERS IN THE MORTON-READ FARMING CORPORATION

TIME SPENT/TASK

	Time/Task		Frequency			
	hrs	mins	Daily	Wkly	Mnthly	Yrly
Check sheep and paddock conditions.....						
Check cattle and paddock conditions....						
Feed budget (planning and allocating feed).....						
Wean ewes and lambs.....						
Shed off at lambing.....						
Prepare rams for tupping.....						
Clerical duties						
order forms.....						
telephone work(eg stock transport)						
complete farm diary.....						
Collect pasture cover and growth rate data.....						
Weigh cattle.....						
Weigh sheep.....						
Eartag sheep.....						
Eartag cattle.....						
Tally livestock.....						
Analyse and interpret weight data.....						
Evaluate and alter if necessary the feed plan.....						
Communicate with other group farm managers.....						
Communicate with farm staff.....						

Communicate with stock agents.....						
Communicate with neighbouring property owners.....						
Communicate with family.....						
Communicate with other farmers.....						
Communicate with farm supervisor informal(telephone).....						
on-farm contact.....						
monthly report.....						
other meetings.....						
Evaluate alternative farm policies.....						

Move a mob of sheep(includes using dogs)						
Move a mob of ewes and lambs.(").....						
Move a mob of cattle.....(").....						
Draft sheep.....(").....						
Draft cattle.....(").....						
Load sheep on to truck.....(").....						
Load cattle on to truck.....(").....						
Care for dogs(includes dogtucker).....						

Drench sheep(includes mustering and moving in yards).....						
Drench cattle.....(").....						
Vaccinate sheep....(").....						
Vaccinate cattle...(").....						
Dip sheep.....(").....						

Dip cattle.....(").....

Identify and treat bloat.....

Dehorn cattle.....

Footrot sheep(includes catch a sheep)..

Docking(includes mustering for docking)

Lamb a ewe(includes catch a sheep).....

Mother-up a lamb.....

Plan an animal health programme.....

Monitor stock health.....

Identify animal health requirements....

Use equipment.....
(Tractor, chainsaw & tools.)

Establish and keep up an equipment maintenance programme.....

Maintain fences.....

Maintain water supply.....

Maintain buildings.....

Maintain drainage.....

Identify weeds and pests.....

Plant and tend to shelter.....

Mouth sheep.....

Determine culling policy.....

Shed-up for shearing.....

Pen-up for shearers.....

Tally for shearers.....

Press wool.....						
Determine the policy for wool clip preparation.....						
Prepare wool for sale.....						
Set up and maintain woolshed equipment.						
Dag.....						
Travel to and from properties.....						
Read farming journals.....						
Attend field days.....						
Monitor weather patterns.....						
Follow cost and price movements.....						
Follow product prices.....						

IMPORTANCE RATING

For the tasks listed, in addition to showing the amount of time spent you are also asked to indicate the importance you believe each task has to the overall job.If you do not perform the task in your current job, cross out all the numbers in the Importance column for that task.

If you do perform the task (wholly or in part), circle the **scale number** which best represents the importance you feel the task has in the overall job.

1	2	3	4	5
Unimportant	Minor importance	Important	Very important	Extremely important

Below are four examples :

a)Wean ewes and lambs.....	1	2	3	4	(5)
b)Move a mob of sheep.....	1	(2)	3	4	5
c)Communicate with farm staff.....	(1)	2	3	4	5
d)Communicate with stock agents.....	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~

i.e.a)Weaning is an extremely important job.
b)Moving sheep has minor importance.
c)Communicating with farm staff is unimportant.
d)You don't do this task.

NB/
When deciding on the importance of each task, remember that it is not related to the amount of time you spend doing it. Some jobs only occur once a year eg weaning. At that time it is important that they are done on time, so they are given a high priority. In deciding what importance rating these tasks have, you must consider them in the context of the overall job of farm manager. How critical is the task to achieving the objectives of the overall job? The more critical the task, the higher the importance rating.

REMOVE THIS SHEET FROM THE FOLDER AND REFER TO IT AS

YOU WORK THROUGH THE TASKS ON EACH PAGE.

TASKS PERFORMED BY MANAGERS IN THE MORTON-READ FARMING CORPORATION

IMPORTANCE

Check sheep and paddock conditions.....	1	2	3	4	5
Check cattle and paddock conditions....	1	2	3	4	5
Feed budget (planning and allocating feed).....	1	2	3	4	5
Wean ewes and lambs.....	1	2	3	4	5
Shed off at lambing.....	1	2	3	4	5
Prepare rams for tupping.....	1	2	3	4	5
Clerical duties order forms.....	1	2	3	4	5
telephone work(eg stock transport)	1	2	3	4	5
complete farm diary.....	1	2	3	4	5
Collect pasture cover and growth rate data.....	1	2	3	4	5
Weigh cattle.....	1	2	3	4	5
Weigh sheep.....	1	2	3	4	5
Eartag sheep.....	1	2	3	4	5
Eartag cattle.....	1	2	3	4	5
Tally livestock.....	1	2	3	4	5
Analyse and interpret weight data.....	1	2	3	4	5
Evaluate and alter if necessary the feed plan.....	1	2	3	4	5
Communicate with other group farm managers.....	1	2	3	4	5
Communicate with farm staff.....	1	2	3	4	5

Communicate with stock agents.....	1	2	3	4	5
Communicate with neighbouring property owners.....	1	2	3	4	5
Communicate with family.....	1	2	3	4	5
Communicate with other farmers.....	1	2	3	4	5
Communicate with farm supervisor informal(telephone).....	1	2	3	4	5
on-farm contact.....	1	2	3	4	5
monthly report.....	1	2	3	4	5
other meetings.....	1	2	3	4	5
Evaluate alternative farm policies.....	1	2	3	4	5

Move a mob of sheep(includes using dogs)	1	2	3	4	5
Move a mob of ewes and lambs.(").....	1	2	3	4	5
Move a mob of cattle.....(").....	1	2	3	4	5
Draft sheep.....(").....	1	2	3	4	5
Draft cattle.....(").....	1	2	3	4	5
Load sheep on to truck.....(").....	1	2	3	4	5
Load cattle on to truck.....(").....	1	2	3	4	5
Care for dogs(includes dogtucker).....	1	2	3	4	5

Drench sheep(includes mustering and moving in yards).....	1	2	3	4	5
Drench cattle.....(").....	1	2	3	4	5
Vaccinate sheep....(").....	1	2	3	4	5
Vaccinate cattle...(").....	1	2	3	4	5
Dip sheep.....(").....	1	2	3	4	5

Dip cattle.....(").....	1	2	3	4	5
Identify and treat bloat.....	1	2	3	4	5
Dehorn cattle.....	1	2	3	4	5
Footrot sheep(includes catch a sheep)..	1	2	3	4	5
Docking(includes mustering for docking)	1	2	3	4	5
Lamb a ewe(includes catch a sheep).....	1	2	3	4	5
Mother-up a lamb.....	1	2	3	4	5
Plan an animal health programme.....	1	2	3	4	5
Monitor stock health.....	1	2	3	4	5
Identify animal health requirements....	1	2	3	4	5
Use equipment..... (Tractor, chainsaw & tools.)	1	2	3	4	5
Establish and keep up an equipment maintenance programme.....	1	2	3	4	5
Maintain fences.....	1	2	3	4	5
Maintain water supply.....	1	2	3	4	5
Maintain buildings.....	1	2	3	4	5
Maintain drainage.....	1	2	3	4	5
Identify weeds and pests.....	1	2	3	4	5
Plant and tend to shelter.....	1	2	3	4	5
Mouth sheep.....	1	2	3	4	5
Determine culling policy.....	1	2	3	4	5
Shed-up for shearing.....	1	2	3	4	5
Pen-up for shearers.....	1	2	3	4	5
Tally for shearers.....	1	2	3	4	5

Press wool.....	1	2	3	4	5
Determine the policy for wool clip preparation.....	1	2	3	4	5
Prepare wool for sale.....	1	2	3	4	5
Set up and maintain woolshed equipment.	1	2	3	4	5
Dag.....	1	2	3	4	5
Travel to and from properties.....	1	2	3	4	5
Read farming journals.....	1	2	3	4	5
Attend field days.....	1	2	3	4	5
Monitor weather patterns.....	1	2	3	4	
Follow cost and price movements.....	1	2	3	4	5
Follow product prices.....	1	2	3	4	5

Appendix VI

p Name:Manager 1

Task.	Mins	Daily	Weekly	Monthly	Yearly	% of time/	Total tim on task
1	180		4			24.24	36000
2	240		4			32.32	48000
3	300			2		4.85	7200
4	2700				1	1.82	2700
5						0.00	0
6	240				1	0.16	240
7						0.00	0
8	90	1				16.67	24750
9	30	1				5.56	8250
10	90			1		0.73	1080
11	1680			1		13.58	20160
12	240			1		1.94	2880
13	240				1	0.16	240
14	480				1	0.32	480
15	60			3		1.45	2160
16	120			1		0.97	1440
17	300			2		4.85	7200
18	30		2			2.02	3000
19	0					0.00	0
20	0					0.00	0
21	60			1		0.48	720
22	120	1				22.22	33000
23	60		1			2.02	3000
24	10		2			0.67	1000
25	180			1		1.45	2160
26	30			1		0.24	360
27	240				2	0.32	480
28	120			1		0.97	1440
29	120		3			12.12	18000
30	0					0.00	0
31	60		3			6.06	9000
32	180			3		4.36	6480
33	180			1		1.45	2160
34	60			3		1.45	2160
35	90			3		2.18	3240
36	60	1				11.11	16500
37	600			1		4.85	7200
38	1440			1		11.64	17280
39	960				1	0.65	960
40	1440				3	2.91	4320
41	1440				1	0.97	1440
42	1800				1	1.21	1800
43	0					0.00	0
44	1800				1	1.21	1800
45	120			1		0.97	1440
46	6000				1	4.04	6000
47	0					0.00	0
48	0					0.00	0
49	180				1	0.12	180
50	600			1		4.85	7200
51	300			1		2.42	3600
52	120			1		0.97	1440
53	120			1		0.97	1440
54	60			1		0.48	720
55	120			1		0.97	1440
56	60			1		0.48	720
57	60			1		0.48	720
58	60			1		0.48	720
59	0					0.00	0
60	1440				1	0.97	1440
61	180				1	0.12	180
62	90				8	0.48	720
63	240				2	0.32	480
64	180				8	0.97	1440
65	120			1		0.97	1440
66	60			1		0.48	720
67	180				8	0.97	1440
68	60				3	0.12	180
69	90			1		0.73	1080
70	60			4		1.94	2880
71	120		5			20.20	30000
72	240			1		1.94	2880
73	10	1				1.85	2750
74	90		3			9.09	13500
75	60			1		0.48	720
						261.11	387750.00

Average hours/week 129.25
Average hours/day 23.5

Name:Manager 2

Task.	Mins	Daily	Weekly	Monthly	Yearly	% of time/year	Total time on task
1	180		1			6.06	9000
2	240		1			8.08	12000
3	120		1			4.04	6000
4	2400				1	1.62	2400
5						0.00	0
6	600				1	0.40	600
7						0.00	0
8	60	1				11.11	16500
9	30	1				5.56	8250
10	240			2		3.88	5760
11	1440			1		11.64	17280
12	360			1		2.91	4320
13						0.00	0
14	480				1	0.32	480
15	60	1				11.11	16500
16	300			4		9.70	14400
17	60	1				11.11	16500
18	60		1			2.02	3000
19	120			2		1.94	2880
20	30		1			1.01	1500
21	60			2		0.97	1440
22						0.00	0
23						0.00	0
24	30		1			1.01	1500
25	180			1		1.45	2160
26	60			1		0.48	720
27						0.00	0
28	300			1		2.42	3600
29	120		3			12.12	18000
30	180			1		1.45	2160
31	60		4			8.08	12000
32	180			3		4.36	6480
33	240			2		3.88	5760
34	180			2		2.91	4320
35	120			1		0.97	1440
36	30	1				5.56	8250
37	480			2		7.76	11520
38	360			2		5.82	8640
39	720				1	0.48	720
40						0.00	0
41	1440				1	0.97	1440
42	960				1	0.65	960
43	1440					0.00	0
44	420				1	0.28	420
45						0.00	0
46	3000				1	2.02	3000
47	480				1	0.32	480
48						0.00	0
49	240			1		1.94	2880
50	120			2		1.94	2880
51	180			1		1.45	2160
52	360		3			36.36	54000
53	60		1			2.02	3000
54	60		3			6.06	9000
55	60		2			4.04	6000
56	480				3	0.97	1440
57	1440				8	7.76	11520
58	60			1		0.48	720
59	480				1	0.32	480
60	600				1	0.40	600
61	120				4	0.32	480
62	240				4	0.65	960
63						0.00	0
64	120				4	0.32	480
65	480				4	1.29	1920
66	360				4	0.97	1440
67	480				4	1.29	1920
68	300				4	0.81	1200
69	160				4	0.43	640
70	60	1				11.11	16500
71	90		2			6.06	9000
72	480			2		7.76	11520
73	30	1				5.56	8250
74	30	1				5.56	8250
75	30	1				5.56	8250
						267.93	397870

Average hours/week	132.6
Average hours/day	24.1

Name:Manager 3

Task.	Mins	Daily	Weekly	Monthly	Yearly	% of time/year	Total hrs on task
1	180		2			12.12	18000
2	60		2			4.04	6000
3	90			1		0.73	1080
4	3240				1	2.18	3240
5	960				1	0.65	960
6	85				1	0.06	85
7						0.00	0
8	20	1				3.70	5500
9	5	1				0.93	1375
10	120			1		0.97	1440
11	720			1		5.82	8640
12	480				1	0.32	480
13	480				1	0.32	480
14	300				1	0.20	300
15	150			1		1.21	1800
16	60			1		0.48	720
17	130		1			4.38	6500
18	15	1				2.78	4125
19	20		1			0.67	1000
20						0.00	0
21	60		1			2.02	3000
22	150	1				27.78	41250
23	90		1			3.03	4500
24	30		2			2.02	3000
25	180			1		1.45	2160
26	30			1		0.24	360
27	120				4	0.32	480
28	120			1		0.97	1440
29	240	1				44.44	66000
30	1200				1	0.81	1200
31	180		1			6.06	9000
32	1080			1		8.73	12960
33	450				4	1.21	1800
34	840				1	0.57	840
35	180				1	0.12	180
36	10	1				1.85	2750
37	480				5	1.62	2400
38	390				5	1.31	1950
39	360				3	0.73	1080
40	240				1	0.16	240
41	840				1	0.57	840
42	240				2	0.32	480
43						0.00	0
44	180				1	0.12	180
45						0.00	0
46	5400				1	3.64	5400
47	260				1	0.18	260
48	150				1	0.10	150
49	120				1	0.08	120
50	10	1				1.85	2750
51	20			1		0.16	240
52	225	1				41.67	61875
53	23		1			0.77	1150
54	4800				1	3.23	4800
55	90		1			3.03	4500
56						0.00	0
57						0.00	0
58						0.00	0
59						0.00	0
60	960				1	0.65	960
61	2				1	0.00	2
62	90				5	0.30	450
63	300				2	0.40	600
64	60				5	0.20	300
65	120				5	0.40	600
66	10				5	0.03	50
67						0.00	0
68	30				5	0.10	150
69	150				4	0.40	600
70	60		1			2.02	3000
71	30		2			2.02	3000
72	480				8	2.59	3840
73						0.00	0
74	5	1				0.93	1375
75	5	1				0.93	1375
						213.71	317362

Average hours/week 105.8
Average hours/day 19.2

Name:Manager 4

Task.	Mins	Daily	Weekly	Monthly	Yearly	% of time/year	Total time on task
1	60		2			4.04	6000
2	120		3			12.12	18000
3	120			1		0.97	1440
4	330				1	0.22	330
5	600				1	0.40	600
6	75				1	0.05	75
7						0.00	0
8	25	1				4.63	6875
9	5	1				0.93	1375
10	150			1		1.21	1800
11	960			1		7.76	11520
12	720				1	0.48	720
13	240				1	0.16	240
14	960				1	0.65	960
15	120			1		0.97	1440
16	240			1		1.94	2880
17	155		1			5.22	7750
18	15	1				2.78	4125
19	30		1			1.01	1500
20	30		1			1.01	1500
21	120		1			4.04	6000
22	240	1				44.44	66000
23	60		1			2.02	3000
24	60		1			2.02	3000
25	120			1		0.97	1440
26	60			1		0.48	720
27	120				4	0.32	480
28	120				4	0.32	480
29	210		3			21.21	31500
30	1200				1	0.81	1200
31	480			1		3.88	5760
32	1080			1		8.73	12960
33	480				8	2.59	3840
34	60				16	0.65	960
35	60				10	0.40	600
36	10	1				1.85	2750
37	360				5	1.21	1800
38	720				5	2.42	3600
39	360				3	0.73	1080
40						0.00	0
41	480				1	0.32	480
42	240				2	0.32	480
43						0.00	0
44	480				1	0.32	480
45						0.00	0
46	5400				1	3.64	5400
47						0.00	0
48						0.00	0
49	120				1	0.08	120
50	10	1				1.85	2750
51	20			1		0.16	240
52	212	1				39.26	58300
53	30		1			1.01	1500
54	7200				1	4.85	7200
55	90		3			9.09	13500
56						0.00	0
57						0.00	0
58						0.00	0
59						0.00	0
60	240				1	0.16	240
61	2				1	0.00	2
62	20				4	0.05	80
63	180				2	0.24	360
64	40				4	0.11	160
65	240				1	0.16	240
66	5				4	0.01	20
67						0.00	0
68	30				4	0.08	120
69	30				5	0.10	150
70	30	1				5.56	8250
71	30		3			3.03	4500
72	480				8	2.59	3840
73	10	1				1.85	2750
74	10	1				1.85	2750
75	10		1			0.34	500
						222.70	330712

Average hours/week 110.2
Average hours/day 20.0

Name:Manager 5

Task.	Mins	Daily	Weekly	Monthly	Yearly	% of time/year	Total time on task
1						0.00	0
2	180	1				33.33	49500
3						0.00	0
4						0.00	0
5						0.00	0
6						0.00	0
7	30		1			1.01	1500
8	10	1				1.85	2750
9	15	1				2.78	4125
10	90			1		0.73	1080
11	960			1		7.76	11520
12						0.00	0
13						0.00	0
14	840				1	0.57	840
15	120			1		0.97	1440
16	90			1		0.73	1080
17	30		1			1.01	1500
18	300			1		2.42	3600
19	15	1				2.78	4125
20						0.00	0
21	30			1		0.24	360
22	240	1				44.44	66000
23	60		1			2.02	3000
24	30		1			1.01	1500
25	180		1			6.06	9000
26	60			1		0.48	720
27						0.00	0
28	300			1		2.42	3600
29						0.00	0
30						0.00	0
31	360		1			12.12	18000
32						0.00	0
33	180			1		1.45	2160
34						0.00	0
35	1080				1	0.73	1080
36	10	1				1.85	2750
37						0.00	0
38	720			1		5.82	8640
39						0.00	0
40	240				1	0.16	240
41						0.00	0
42	720				1	0.48	720
43	1080				1	0.73	1080
44	1440				1	0.97	1440
45						0.00	0
46						0.00	0
47						0.00	0
48	30			1		0.24	360
49						0.00	0
50						0.00	0
51						0.00	0
52	12000				1	8.08	12000
53	2700				1	1.82	2700
54	5400				1	3.64	5400
55	2400				1	1.62	2400
56	4800				1	3.23	4800
57	960				1	0.65	960
58	30			1		0.24	360
59	1080				1	0.73	1080
60						0.00	0
61						0.00	0
62						0.00	0
63						0.00	0
64						0.00	0
65						0.00	0
66						0.00	0
67						0.00	0
68						0.00	0
69						0.00	0
70	30	1				5.56	8250
71	45	1				8.33	12375
72						0.00	0
73	5	1				0.93	1375
74	30		1			1.01	1500
75	30		1			1.01	1500
						174.01	258410

Average hours/week 86.1
Average hours/day 15.7

Name:Pilot

Task	Mins	Daily	Weekly	Monthly	Yearly	% of time/year	total time on task
1	60		4			8.08	12000
2	30		4			4.04	6000
3	120		1			4.04	6000
4	360				6	1.45	2160
5	45				3	0.09	135
6	90				8	0.48	720
7						0.00	0
8	10		1.5			0.51	750
9	10	1				1.85	2750
10						0.00	0
11	240			1		1.94	2880
12	120		1			4.04	6000
13	240				1	0.16	240
14	120				1	0.08	120
15	30			1		0.24	360
16	30			1		0.24	360
17	20		2			1.35	2000
18	20		4			2.69	4000
19	15	1				2.78	4125
20	20			2		0.32	480
21	20				6	0.08	120
22						0.00	0
23	30				8	0.16	240
24	20		5			3.37	5000
25	240			2		3.88	5760
26	60			1		0.48	720
27	120				10	0.81	1200
28	60			2		0.97	1440
29	60		3			6.06	9000
30	30			2		0.48	720
31	30		3			3.03	4500
32	90			2		1.45	2160
33	30				6	0.12	180
34	30			1		0.24	360
35	30				4	0.08	120
36	20	1				3.70	5500
37	180			1		1.45	2160
38	90			1		0.73	1080
39	180				3	0.36	540
40	60				1	0.04	60
41	480				4	1.29	1920
42	120				1	0.08	120
43	30				2	0.04	60
44	180				1	0.12	180
45						0.00	0
46	480				8	2.59	3840
47	15				20	0.20	300
48	30				10	0.20	300
49	180				1	0.12	180
50	20				5	0.07	100
51	120	1				22.22	33000
52	20			1		0.16	240
53	30			2		0.48	720
54	30			1		0.24	360
55	20			1		0.16	240
56	120				3	0.24	360
57	30				6	0.12	180
58	180				5	0.61	900
59	300				1	0.20	300
60	10				1	0.01	10
61	60				10	0.40	600
62						0.00	0
63	60				10	0.40	600
64						0.00	0
65	20				2	0.03	40
66	120				5	0.40	600
67	60			1		0.48	720
68						0.00	0
69	120				10	0.81	1200
70						0.00	0
71	60		1			2.02	3000
72	180				2	0.24	360
73	10	1				1.85	2750
74	20		1			0.67	1000
75	20		1			0.67	1000
						99.07	147120

Average hours/week 49.0
Average hours/day 8.9

Appendix VII

Importance Ratings

	Managers				
	1	2	3	4	5
Check sheep & pddk	3	3	5	3	
Check cattle & pddk	4	3	5	3	5
Feedbudget	4	4	5	4	
Wean ewes and lambs	2	4	5	4	
Shed off at lambing		2	1	2	
Prepare rams for tupping	3	3	5	3	
Clerical-order forms		1	3	1	5
-phoning	2	3	4	3	4
-diary	3	3	5	3	4
Pasture cover & GR	3	4	3	4	4
Weigh cattle	5	3	4	3	3
Weigh sheep	5	3	4	3	
Eartag sheep	3	2	3	2	
Eartag cattle	3	2	4	2	4
Tally livestock	4	3	5	3	5
Analyse weight data	4	4	4	4	3
Evaluate feed plan	5	5	4	5	5
Communicate-other mngrs	4	3	3	3	3
-farm staff	2	3		3	5
-stock agents	2	1		1	
-neighbours	1	1	2	2	2
-family	3	1	5	5	5
-other farmers	4	2	3	3	3
Farm sup-informal	5	3	5	5	5
Farm sup-on-farm	5	3	5	3	5
Farm sup-monthly report	3	3	5	3	5
Farm sup-other meetings	2	2	3	3	3
Evaluate other policies	4	4	3	4	4
Move sheep	4	4	5	4	
Move ewes and lambs	3	3	5	4	
Move cattle	4	4	5	4	5
Draft sheep	3	4	5	3	
Draft cattle	3	4	5	4	3
Load sheep	2	5	3	2	
Load cattle	2	5	3	3	4
Care for dogs	5	5	5	5	5
Drench sheep	4	3	5	3	
Drench cattle	4	3	5	4	5
Vaccinate sheep	2	3	5	4	
Vaccinate cattle	1	3	5	1	5
Dip sheep	4	3	5		
Dip cattle	2	3	5	5	4
Identify & treat bloat	2	1		1	5
Dehorn cattle	2	1	5	5	4
Footrot sheep	2	1	3	1	
Docking	3	4		4	
Lamb a ewe	2	1		1	
Mother-up a lamb		1		1	
Plan animal health prog.	4	4	5	4	5
Monitor stock health	5	4	5	4	5
Identify an health requ.	3	4	5	4	5
Use equipment	2	5	3	3	4
Establish & do maintenance	3	3	3	3	5
Fences	3	1	3	2	3
Water supply	5	4	3	5	5
Buildings	2	1	3	2	3
Drainage	4	1	3	1	4
Weeds & pests	3	1	3	1	4
Shelter	2	1		1	3
Mouth sheep	3	3	5	4	
Determine culling policy	3	3	5	5	
Shed-up for shearing	2	3	3	4	
Pen-up for shearing	2	2	3	2	
Tally for shearers	2	2	3	3	
Press wool	2	3	2	3	
Wool preparation-policy	5	4	5	3	
Wool preparation-for sale	4	3	5	3	
Woolshed equipment	3	4	3	4	
Dag	3	3	3	4	
Travel	4	5	3	5	5
Read journals	5	3	4	4	3
Attend feild days	5	3	4	5	3
Monitor weather	2	1	3	3	4
Follow cost & price	4	3	4	4	4
Follow product prices	4	3	4	4	5

REFERENCES.

Ansell, D.J, & Giles, A.K. (1969) The farmer and his time. An agricultural exercise in 'activity sampling'. *Miscellaneous Study No. 46*, Department of Agricultural Economics, University of Reading.

Ash, R. (1982) Job elements for task clusters: arguments for using multi-methodological approaches to job analysis and a demonstration of their utility. *Public Personnel Management* Journal Vol 11(1) p80-89

Beattie, A. J., (1978) Labour as a constraint to increases in agricultural production. MA Thesis, *Massey University*.

Bernardin, H. J. & Beatty, R. W. (1984) *Performance appraisal: Assessing human behaviour at work.* Boston: Kent

Bradford, P. V. (1971) Interviewing and choosing your man. *New Zealand Farmer* 92 (4) p10-12.

Buchanan, W. I. & Giles, A. K. (1981) Farm managers in 1980/81: their jobs and their pay. *Farm Management* 4 No 7 Autumn p297-307

Cant, R. G. & Woods, M. J. (1968) An analysis of factors which cause job-satisfaction or dissatisfaction among farm workers in New Zealand.*Lincoln College Technical Paper* No. 2.

Cornelius, E.T., Carron, T.J. & Collins, M.N. (1979) Job analysis models and job classification. *Personnel Psychology*Vol 32(4) p693-708

Cornelius, E. T., Denisi, A. S. & Blencoe, A. G. (1984) Expert and naive raters using the PAQ: does it matter? *Personnel Psychology* 37 (3) p453-464

Department of Psychology (undated) Job analysis for an assessment centre. *Massey University*

Errington, A. (1980) Occupational classification in British agriculture. *Journal of Agricultural Economics* p73-81

Fine, S. A. (1955) A structure of worker functions. *Personnel and Guidance Journal* 34 p66-73

Flanagan, J. C. (1954) The critical incident technique. *Psychological Bulletin* 51 p327-358

Fleishman, E. A. (1972) On the relation between abilities, learning and human performance. *American Psychologist* p1017-1032

Gael, S. (1983) Job analysis. A guide to assessing work activities. *Jossey-Baas Limited*

Ghorpade, J. & Atchison, Thomas J. (1980) The concept of job analysis: a review and some suggestions. *Public Personnel Management Journal* Vol 9(3) p134-144

Giles, A. K. (1975) The training and development of farm managers. *Farm Management* Vol 2 No 11 Spring p621-627

Giles, A. K. (1976) Farm managers in 1975/6: their jobs and their pay. *Farm Management* Vol 3 No 3 Summer p101-112

Heady. E. O. (1948) Elementary models in farm production economics research. *Journal of Farm Economics* Vol 30 p201-225

Hemphill, John K. (1960) Dimensions of executive positions. *The Ohio State University*

Hughes, J. (1989) Survey of Manawatu co-operative dairy company suppliers. Department of Agricultural & Horticultural Systems Management, *Massey University*

Latham, G.P., Saari, L.M., Pursell, E.D., & Campion, M.A. (1980) The situational interview. *Journal of Applied Psychology*, Vol 65, p422-427

Lewin, D. (1976) Cautions in using job analysis data for test planning. *Public Personnel Management Journal* Vol 5(4) p255-257

Levine, E. D., Ash, R. A. & Bennett, N. (1980) Exploratory comparitive studies of four job analysis methods. *Journal of Applied Psychology* Vol 62 No 5 p524-535

M.A.F. Corp (1988) Situation and outlook for New Zealand Agriculture. Department of Agricultural and Horticultural Systems Management *Massey University*

McCormick, E.J., Jeanneret, P.R. & Mecham, R.C. (1972) A study of job characteristics and job dimensions as based on the position analysis questionnaire (PAQ). *Journal of Applied Psychology* Vol 56(4) p347-368

Miles, F. D. (1978) Agricultural co-operative managers. A pilot study of the recruitment and training of the managers of United Kingdom agricultural co-operatives. Miscellaneous Study No 65 Department of Agricultural Economics and Management *University of Reading*

National Business Review (1987) Landcorp: the government as corporate farmer. *NBR Commentary* February 6 p18-19

National Business Review (1989) Hopes ride on farmer resilience. Marianne Kelly *NBR Outlook* Feb 3, p8

Norman, L. (1986) How do farmers and managers spend their management working time?. *Farm Management* Vol 6 No. 4 Winter p175-182.

New Zealand Department of Statistics (1988) Farms by legal status and size of farm. *File No 4255 Table 144*

New Zealand Official Yearbook (1988/1989) *Department of Statistics, Wellington*

Prien, E.P. (1977) The function of job analysis in content validation. *Personnel Pyschology* 30 p167-174

Prien, E.P. & Ronan, W.W. (1971) Job analysis: a review of research findings. *Personnel Psychology* 24 p371-396

Roff, H.E. & Watson, T.E. (1976) Job analysis. *Institute of Personnel Management*

Rouleau, E.J. & Krain, B.F. (1975) Using job analysis to design selection procedures. *Public Personnel Management* Sept-Oct p300-304

Shouksmith, G. A. (1971) Recruiting and supervising labour. *Dairy Farming Annual* p16-19

Thornton III, G.C. & Byham, W.C. (1982) Assessment centres and managerial performance. *Academic Press*

Thompson, D. & Thompson, T. (1982) Court standards for job analysis in test validation. *Personnel Psychology* 35 (4) p865-874 Tornow, W. W. & Pinto, P. R. (1976) The development of a managerial job taxonomy: a system for describing, classifying, and evaluating executive positions. *Journal of Applied Psychology* Vol 61 No 4 p410-418

United States Employment Service, Division of Occupational Analysis (1982) A guide to job analysis: A "how-to" publication for occupational analysts. *Materials Development Centre, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout-*

Veres, J.G., Lahey, M.A. & Buckley, R. (1987) A practical rationale for using multimethod job analysis. *Public Personnel Management Journal* Vol 16(2) p153-157.