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# **“The Change Equation”**

## **A Holistic Analysis of Organisational Change**

**A Thesis presented in partial fulfilment of the requirements for the  
degree of Master of Business Studies in Human Resource  
Management at Massey University, New Zealand.**

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## **ABSTRACT.**

Introduction of new systems for clarifying work responsibilities within organisations require careful design. By fundamentally altering the way individual duties are defined impacts dramatically on organisational and sociotechnical systems. In this research a case study is used to explore the development and implementation of a system of Job Modelling for process management. The need for a holistic approach to change is highlighted.

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## TABLE OF CONTENTS.

<b>Abstract</b>	<b>1</b>
<b>Acknowledgements</b>	<b>2</b>
<b>Table of Contents</b>	<b>3</b>
<b>List of Tables</b>	<b>5</b>
<b>List of Figures</b>	<b>5</b>
<b>1. Introduction</b>	<b>6</b>
<b>2. Literature Review</b>	<b>9</b>
2.0 Introduction	10
2.1 Development of Human Resource Management in Context	10
2.2 Strategic Focus of Human Resource Management	13
2.3 Attaining Competitive Advantage through Human Resource Management	15
2.4 Attaining Competitive Advantage through Economies of Scale	16
2.5 Contrasts between Eastern and Western Philosophies of Human Resource Management	18
2.6 The Use of Theory in Human Resource Management	20
2.6.1 Functions of Human Resource Systems	22
2.6.2 Motivation	24
2.6.3 The Introduction of New Technology	25
2.6.4 Causes and Consequences of Stress within Organisations	26
2.6.5 A Need for a Change in Management Style - from Patriarchy to Partnership	28
<b>3. Case Study: Departmental/Operational Analysis</b>	<b>30</b>
3.0 Introduction	31
3.1 Description of the Organisation	32
3.2 Methodology	33
3.3 The Change Process	34
3.4 The Process of Tracking Results	35
3.5 Description of the "Vision"	36
3.6 Description of the "Current Reality" before Intervention	37
3.7 Moving from the "Current Reality" towards the "Vision"	42
3.7.1 Departmental Structures and the KAIZEN Philosophy	42
3.7.2 Incorporating the KAIZEN Philosophy into Departmental Structures	48
3.7.3 Developing a scale from the KAIZEN Model	51
3.8 The Dairy Industry Skills Matrix and Job Analysis	55
3.9 Job Models	58
3.10 The System as a Strategic Tool	60
3.10.1 How to use the results	63
3.11 The "Usefulness" of the System	62
3.12 Summary	60

<b>4. Case Study: Organisational/Systems Analysis</b>	<b>67</b>
4.0 Introduction	68
4.1 The Function of Human Resource Systems	68
4.2 Motivation	72
4.3 The Introduction of New Technology	74
4.4 The Need for Participative Management	75
<b>5. Conclusion</b>	<b>81</b>
5.0 Conclusion	82
5.1 Implications for Future Research	85
<b>References</b>	<b>87</b>
<b>Appendices</b>	
Appendix 1. Example of Departmental Analysis	
Appendix 2. Developed Dairy Industry Skills Matrix	
Appendix 3. Departmental Matrix	
Appendix 4. Examples of Job Models	
Appendix 5. Job Description developed from Job Model	

## LIST OF TABLES

Table 3.1 Departmental Results compared to “KAIZEN line”	61
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## LIST OF FIGURES

Figure 2.1 The Human Resource Cycle	24
Figure 3.1 Original Structure versus Restructure in Organisational Chart for Company	37
Figure 3.2 Outline of New Responsibilities with respect to Restructure	38
Figure 3.3 Aligning Training Recommendations with Positions	41
Figure 3.4 Process-oriented versus Result-oriented Criteria	43
Figure 3.5 Perceptions of Job Functions - the KAIZEN Model	46
Figure 3.6 Innovation plus KAIZEN	46
Figure 3.7 Hierarchy of KAIZEN Involvement	47
Figure 3.8 Comparing Structures on a Functional Basis	49
Figure 3.9 How to test Structures in line with KAIZEN	50
Figure 3.10 A Reactive mode of Organisational Accountabilities	50
Figure 3.11 An Overemphasis of Planning and Organising	50
Figure 3.12 Developing a scale from the “KAIZEN line”	52
Figure 3.14 The Human Resource Callibrator: developed from the KAIZEN Model	54
Figure 3.15 The “KAIZEN line”	54
Figure 3.16 Departmental Results represented graphically on KAIZEN Model	62

## **SECTION 1.**

### **INTRODUCTION**

## 1. INTRODUCTION

With the increasing turbulence and complexity of the business environment many organisations are struggling with the challenge presented by change (Wardman-O'Reilly, 1995). Frequently, the challenge is focused around where people fit in the change equation. Many planned changes in organisations are unable to be effectively implemented because of the relationship those doing the planning have with those directly affected by the change.

According to management philosopher Charles Hampden-Turner (1990), the difficulties arise because an organisation is a living system. While a planner may have a purpose or direction in mind for the organisation, as a living system the organisation contains elements that have their own energy, purpose and direction. Planners who have experienced success in managing dead systems, will struggle to manage living systems, if they carry over assumptions about how elements of systems can be treated.

The globalisation of business has added to these difficulties. Managers may attempt to introduce techniques or practises that have been developed in organisations operating in significantly different cultures, by managers holding different assumptions about people and change. Trompenaars (1994) has described how managers in English-speaking democracies, such as New Zealand, are more likely to treat people as instruments than are managers in Asia or Latin countries such as Spain or Mexico. Similarly, New Zealand managers are more likely to view change analytically (with planning treated as separate from implementation), where Asian managers will view it holistically (Hampden-Turner, 1993). Attempts by New Zealand organisations to introduce practises developed in Japan, are likely to find that people involved in organisational systems act in ways that they have not expected.

Some organisations respond to these difficulties by attempting to perfect the techniques while continuing to treat people as instruments. Others withdraw from attempts at improving or changing systems involving people, or allow people to have whatever systems they want. A growing body of literature advocates approaches to this dilemma

based upon partnership between people at different levels of the organisation (Block, 1993).

This research explores organisational attempts to introduce change, looking at the change from a holistic viewpoint. It uses a case-study approach, tracking the outcomes of a New Zealand company's work to increase productivity and gain competitive advantage through better management of its human resources. The nature of this study lends itself to use of action research as a method of investigation. With action research investigators recognise that they are involved in the process of change, provide context to actions planned and taken, and explore what can be learned from the results achieved.



## **SECTION 2.**

### **LITERATURE REVIEW**

## 2. LITERATURE REVIEW

### 2.0 Introduction

Most organisations seek to improve their capacity to achieve the results that are important to them. Because people are central to the achievement of organisational goals many attempts at improvement centre around how they are managed.

Approaches to managing people are influenced by a variety of factors, including the way the discipline of Human Resource Management has developed, cultural dynamics and economic influences on organisations.

This section reviews literature around some of the major themes shaping organisational approaches to managing people.

### 2.1 Development of Human Resource Management (HRM) in context

The practice of Human Resource Management(HRM) has emerged in conjunction with the evolution of the nature of work itself. Therefore, it is necessary to trace the development of HRM in a social-historical perspective, as the different theoretical and practitioner approaches have been a result of changes within social, economic and political environments. In other words, as society has changed, so too has the nature of work and consequently the way the work is managed. Today, HRM is in the process of revolutionising, again, the way people are perceived within the “work equation”.

However, it is important to understand the reasons and recognise the symptoms of past management practice in order to appreciate the need for change and to understand the potential resistance to change.

At the turn of the century, with the advent of Industry, the nature of work underwent dramatic changes. The skills associated with craftsmanship were broken down into component parts and transposed into mass production. Consequently a new concept of work organisation arose, as with mass production came a shortage of skilled labour

pools. The increasing difficulty in locating and hiring skilled people was the main impetus for the development of Scientific Management (Toulson, 1995).

Frederick Taylor's (1911) Scientific Management approach was built on the principle of the division of labour, which he saw as a vehicle for increasing output per man hour (Wall and Martin, 1987). The explicit logic behind this was that greater dexterity would arise when employees "specialised" in small functions of the process; not having to change from one task to another would save time; employees were more likely to invent labour saving devices if the focus of work was narrowed and learning times would be reduced by the fragmentation of work. It was believed that this would produce savings in training and reduce the need for skilled labour which would inadvertently mean cheaper labour. This logic was coupled with the assumption that management should assume responsibility for the design of jobs and control the execution of work "...management was to assume more regulation and 'workers' less, over how and when work was to be completed. There was a separation between planning and control on the one hand, and 'doing' on the other" (Wall and Martin, 1987, p.175).

Due to job fractionalisation, skilled employees were made supervisors to ensure that unskilled workers did the job correctly, thus controlling the workplace activities. As a result, the emphasis switched away from the employees being responsible for the work to supervisors 'holding' responsibility. Consequently, workers were often not able to identify with the final product and tended to experience greater levels of dissatisfaction (Dewe, 1989).

The revolution in Industrial Psychology came in the form of the Hawthorne Studies (see Roethlisberger and Dickson, 1939) which were a series of field experiments that helped to highlight the complexity of work behaviour (Landy, 1989). They concluded that organisations were not just formal structures "they are social structures, in which people interact, seek acceptance from and give approval to fellow workers, and find enjoyment not only in the work, but also in the social exchange that occurs while doing the work" (Hodgetts, 1980, p.15).

The Human Relations approach “established the importance of the work group and highlighted the fact that the social relationships that develop between members of a group are a powerful motivating force” (Dewe, 1989,p.8). “Elements of both Scientific Management and Human Relations approach are still prominent today. That is, both schools of thought suggested important principles for management that are major elements of current organisational practice” (Mitchell, 1982,p.25).

During the 1950’s and 60’s organisations experienced sustained economic growth, organisational expansion, prosperity and security (Dewe, 1989). Traditional Personnel Management during this time was concerned with stability and maintenance of the status quo. “It led to the development of massive bureaucratic structures in industry and personnel management was very much associated with maintaining this stability and order, through ‘fire-fighting’ activities designed to get things back onto an even keel” (Toulson, 1995, p.6).

Personnel Management in New Zealand has been partly based on the British idea of welfarism and has also been restricted by a highly regulated Industrial Relations system (Toulson, 1995). This has in part prevented a more proactive role for management, however with the advent of global competition in the 1980’s a major change took place with respect to industry. Individual workers were now the focus of an “untapped resource of unlimited potential. Developing and utilising the individual’s potential became the objective of the Human Resource Movement” (Dewe, 1989, p.9).

Torrington (1988, cited in Grant, 1988) suggests that Personnel Management is directed at finding and training employees, arranging pays and contracts and explaining company expectations. Human Resouce Management, on the other hand, starts from the organisation’s need for human resources emphasizing strategy and planning.

Beer and Spector (1985) identified basic assumptions that underlie the policies of the Human Resource Management (HRM) transformation.

<u>Human Resource Management</u>	<u>Personnel Management</u>
Proactive - provides systems-wide intervention and cultural change	Reactive - piecemeal in response to specific problems
People perceived as social capital capable of development	People perceived as variable cost
Seeks power equalization for trust and collaboration	Bargaining and confrontation
Emphasises open channels of communication	Control of information flow
Based on participation and informed choice	Compliance and control from top

Walton (1985) describes this fundamental paradigm shift as *"the new HRM Model composed of policies that promote mutuality, mutual goals, mutual influence, mutual respect, mutual rewards and mutual responsibility. The theory is that policies of mutuality will elicit commitment which in turn will yield both better economic performance and greater human development"* (cited in Beer and Spector, 1985, p.23)

## **2.2 Strategic Focus of Human Resource Management**

The field of Human Resource Management (HRM) consists of various practices used to manage people in organisations which have commonly been grouped into subdisciplines of selection, training, appraisal and rewards (Fombrun, Tichy and Devanna, 1984). Each of the various HRM functions have evolved in relative isolation from one another, with little coordination across disciplines. In other words, each function has evolved through technical innovations focusing primarily on a micro-perspective of individual functions (Wright and McMahan, 1992). Schuler and Walker (1990) believe Strategic Human Resource Management (SHRM) to be "a set of processes and activities jointly shared by human resources and line managers to solve people related business problems" (p.7). Guest (1989) suggest "human resource

management is fully integrated into strategic planning; that HRM policies cohere both across policy areas and across hierarchies and that HRM practices are accepted and used by line managers as part of their everyday work” (p.48).

In a highly competitive environment production efficiency and flexibility have become essential. The role of senior management now is not to make the final decisions, but to make sure the decisions the team is making are ones that fit in with the vision of the company “... such profound decentralisation requires a high level of training and support and demands that such factories become learning organisations, encouraging a culture of continuous improvement and of risk-taking. The learning process begins when an organisation realistically evaluates its present position by comparing itself with the roadmap of its vision in order to identify opportunities for improvement” (Yarwood, 1993, p.63).

Strategic planning is the process through which the basic mission of an organisation is identified, its objectives are set, and the allocation of resources to achieve these objectives are specified (Latham, 1984). Mason and Mitroff (1981) describe the complexity of strategic planning as (1) numerous complicated linkages among organisational and environmental elements (2) dynamic and uncertain environments (3) ambiguity of available information (4) lack of complete information and (5) conflicts concerning the outcomes of decisions among interested parties. Such complexity often forces top managers to draw inferences and assumptions about their organisations and environments from available information, then try to define and solve problems.

Hamel and Prahalad (1989) describe this system as a “strategy hierarchy” in which “corporate goals guide business unit strategies and business unit strategies guide functional tactics” (p. 75). In other words, senior management formulates strategies and lower levels execute them. However such a dichotomy undermines competitiveness by “fostering an elitist view of management that tends to disenfranchise most of the organisation. Employees fail to identify with corporate goals or involve themselves deeply in the work of becoming more competitive” (p75). Such elitist strategy formulation restricts creativity and innovation as other perspectives

from functional levels throughout an organisation are not considered, potentially leaving conventional thinking ('wisdom') unchallenged.

Planning needs to take place within the context of the goals of the individual, the group and the organisation (Lippett, 1982). First, by setting goals and developing strategies to achieve them; and second, by translating that strategy into detailed operational programs and ensuring that the integral plans are carried out. The management of Human Resources must become an indispensable consideration in both strategy formulation and implementation (Fombrun, et. al., 1982).

### **2.3 Attaining Competitive Advantage through Human Resource Management**

There has been a growing recognition of the crucial link between work organisation and competitiveness. Especially since the 1980's, organisations have become more concerned with enhancement of productivity rather than improvement of working conditions for the sake of higher worker morale per se and industrial peace.

*"Intensifying competition in globalised markets has made enterprise survival dependent upon continuous improvement in productivity, in product and service quality and in speed of delivery" (Muneto, 1996,p.37).*

Changes in the way work is organised vary considerably, designed mostly to "adapt work organisation to new technologies, make work more flexible and responsive to volatile market demands, and enhance workers' contributions to the continuous drive for higher quality and productivity" (Muneto, 1996,p.55).

According to Dawson (1995) companies should address the following key factors in their quest for international competitive advantage:

- (1) Development of clear links with customers for more rapid response to market shifts.
- (2) Development of closer relationships with suppliers to cut inventory costs, ensuring on time quality deliveries.



- (3) Appropriate choice and integration of new technology for the purpose of attaining strategic advantage.
- (4) Use of benchmarking to identify performance gaps.
- (5) Adoption of flatter organisational structures to improve communication and decision-making.
- (6) Implementation of Human Resource practices which remove demarcations and promote teamwork, flexibility and commitment.
- (7) Establishing employee training schedules, develop career paths and appropriate remuneration practices.
- (8) Continuous and simultaneous improvement in quality, cost and delivery.

Dawson also stresses that the approach needs to be holistic rather than piecemeal and aligned to the company's strategic objectives.

To maintain competitive edge, an organisation needs to develop its own human skills, so the strategy of HRM moves to a development strategy...here the reliance is on intervention by training rather than by rules to modify behaviour. Fombrun, Tichy and Devanna (1984) suggest that if global competition is to be met, enterprises will have to be planning to sell products and services that are not yet known.

*"In an economy where the only certainty is uncertainty, one sure source of lasting competitive advantage is knowledge...successful companies are those that consistently create new knowledge, disseminate it widely throughout the organisation and quickly embody it in new technologies and products" (Nonaka, 1991,p.70).* Nonaka describes such enterprises as "knowledge-creating" companies whose sole business is continuous innovation.

## **2.4 Attaining Competitive Advantage through Economies of Scale**

In some industries it is far cheaper to have production carried out by one firm rather than by a number of different firms. One reason this may occur is because of economies of large scale production (Baumol, Blinder, Gunther and Hicks, 1992).



Economies of scale are savings that are acquired through increases in quantities produced. In other words, when output goes up by say 10 per cent, total cost goes up by less than 10 per cent, so that the average cost, which is the ratio of total cost to quantity ( $TC/C$ ) will fall. Production is said to involve economies of scale if when all quantities are doubled, the quantity of output has more than doubled. Production functions with economies of scale lead to long-run average cost curves that decline as output expands. Supply by a number of smaller competing firms will be far more costly and use up larger quantities of resources than supply of goods by a monopoly. The most important advantage of 'bigness' is to be found in those industries in which technology dictates that small-scale operation is inefficient.

Some current Human Resource practices work against economies of scale. For example, Lawler (1990) suggests that traditional pay systems based on a bureaucratic model has produced high wage and benefit costs which cannot compete effectively on the world market. Many organisations have tried to reduce their Human Resource costs by downsizing and cutbacks in pay (that is, Human Resources are considered merely a variable cost). However, past a certain point this approach cannot continue if a certain level of service and production is to be maintained (Pojidaeff, 1995). "The only competitive advantage then left is in human productivity and recreating an organisational climate that support and enhances it" (p.4). Thinking now needs to occur at the 'bottom' of the organisation as well as at the 'top', this needs to become the basis of a pay structure rather than hierarchical position. This unharnessing of human talent and innovation can be, when managed appropriately, the main source of gaining competitive edge.

McLagan (1989) views job design as a process of assigning or reassigning outputs to jobs based on (1) the organisation's current and future needs (2) the current capability, motivation and development priorities of individuals and (3) the current capabilities motives and development priorities of others in the organisation or work team. "HRM, organisational development and job design need to be flexible, provide appropriate guidance for decision making under uncertainty and reflect strategies and future needs of the business" (McLagan, 1989,p.369). One approach having these features is

flexible Job Modelling. This process views an organisation as an open social system that is constantly changing in response to outside influences and provides a conceptual framework for integrating all HR systems. "Because outputs, not individual job descriptions are the basic building blocks of job design, individual jobs can be highly flexible and draw on unique individual competencies to assure optimal use of the competencies available to the team" (p.384).

## **2.5 Contrasts between Eastern and Western Philosophies of HRM.**

Deeply ingrained in the traditions of Western management is the perception of the organisation as a machine for "information processing" (Nonaka, 1991). The success of highly competitive companies in Japan, like Honda, Canon, Matsushita, NEC, Sharp and KAO, is primarily due to their "ability to respond quickly to customers, create new markets, rapidly develop new products and dominate emergent technologies" (Nonaka, 1991, p. 72). This has been described by Nonaka as Japan's unique ability to manage the creation of new knowledge. While both West and East recognise that relative competitive advantage determines relative profitability, "...the first emphasizes the search for inherently sustainable advantages, the second emphasizes the need to accelerate organisational learning to outpace competitors in building new advantages" (Hamel and Prahalad, 1989, p. 64)

Dobson and Starkey (1993) believe Japan's success is due to their ability to innovate by "leveraging resources to achieve unattainable ends. In comparison, the emphasis in most Western firms has been on Strategic fit. Rather than 'leveraging resources to achieve the impossible' Western firms tend to trim ambition to match available resources" (p. 98). Both models recognise the need for consistency in action across organisational levels. However, the Japanese believe business-functional consistency comes from allegiance to intermediate-term goals, with lower level employees encouraged to *invent* how these goals will be achieved, opposed to the Western belief of tightly restricting the *means* the business uses to achieve strategy so-as to establish more predictable business-functions (Hamel and Prahalad, 1989). In addition, when Western organisations experience difficulties in instilling new paradigms of thinking they typically put it down to "communication" problems, with the unstated assumption

that if only downward communication were more effective - "if only middle management would get the message straight" - the new program would quickly take root (Hamel and Prahalad, 1989). The need for upward communication is often not considered or taken to mean anything more than feedback. In contrast, Japanese companies win "not because they have smarter managers, but because they have developed ways to harness the "wisdom of the anthill" " (Hamel and Prahalad, 1989, p. 75).

Dobson and Starkey (1993) describe the Japanese system as a set of shared rules and beliefs about how to deal with Human Resources. The focus reflects the belief that a key source of strategic success is the maximum utilization of available "human assets". The main strategic thrusts are as follows: (1) Emphasis on the internal labour market made up of employees with the desired skills both technical and social to induce employee longterm employment (2) A unique company philosophy with a sense of meaning and future direction and (3) New employees undergo an intensive period of induction to teach them what it means to be part of the company. Management systems need to be operationalised through specific management techniques, in which employee skills are developed continuously through job rotation, focusing on a broad range of skills and ongoing training; employees should be appraised on a variety of criteria including contribution to team achievement, rather than just individual results; work needs to be structured to be carried out by teams which are given the maximum autonomy possible - expected to maximise agreed organisational goals; decision making must be preceded by extensive consultation; and concern between management and the managed is seen as mutual. (Dobson and Starkey, 1993). The emphasis is strongly on internal growth as a means of ensuring the survival of the corporation.

Main factors that account for the National differences include the lack of Human Resource Management expertise available within corporations and the labour relations traditions such as employers perception of managerial prerogatives and union attitudes towards participative management (Muneto, 1996). "On the one hand, many unions are still wary of adopting this approach because it exposes them to the risk of being

drawn into managerial interests. On the other hand, a growing number of unions have opted for this strategy because their involvement can guarantee that direct participation serves not only to further management's productivity and quality objectives, but also to enhance the quality of work" (p.54).

In today's competitive business environment, delays in adopting the latest technology can be costly. The same can be said for not adopting improved management techniques. However, unlike machines, management techniques cannot be introduced in isolation to the rules and beliefs about its people. Imai (1986) describes the main difference in management techniques between Eastern and Western philosophy is the focus on results in the West compared to the process in the East. This fundamental difference in Eastern terminology is known as KAIZEN, which means continual improvement. This approach is based on a holistic view of organisations which incorporates management philosophy along with specific techniques.

## **2.6 The Use of Theory in HRM**

Organisational research often treats the modern corporation, and its managerial control as a naturally occurring, rather than politically created, forum (Deetz, 1990). However, what we know about the relationships between dimensions of organisational structure and communication practices can be used to provide a framework to attain greater understanding about how to respond to and guide "exigencies" in organisational life (Harrison, 1992).

Lippitt (1982) outlines the following linkages as related to organisations:

- (1) Organisational Structure - divisions of labour and authority. If not clear, confusion results, work can be repeated or not done, resulting in conflict.
- (2) Organisational Processes - internal dynamics that interact with structure
- (3) Levels of Organisational Processes - intrapersonal (an individual's relatedness with self), interpersonal (member to member), group (organisational role patterns) and intergroup (group to group relationships; the interdependence of subsystems in an organisation).

Although scientific research is typically aimed at describing empirical relationships between categories of organisational phenomena and explaining why these relationships exist, the importance of any theory lies in the understanding it provides of why certain relationships exist and why at times different behaviour patterns emerge (Dewe, 1989). For example, what influences peoples' behaviour, what satisfactions and dissatisfactions people derive from their work, and how is that behaviour is directed and sustained, can be examined in a systematic, scientific way (Dewe, 1989). Theoretical perspectives provide a way of thinking, a way of conceiving problems and a means through which research and action can be articulated, developed and explained (Cummings, 1987).

Brief and Dukerich (1991) describe the difference between what is "useful" and what is "practical" as "the difference between being prescriptive versus descriptive, between supplying factual answers versus posing provocative questions and between advocating a particular solution versus promoting further deliberation" (p. 341). The presumption in theory's practicality lies in "its ability to sensitize one to what may be, and not to predict firmly what will be" (p. 328). Miner (1984) construed a "useful" theory as one which has "clear implications for practice and application in some area of management of organisational functioning" (p. 297). "Realists, unlike many positivists, do not identify explanation with prediction; a successful prediction is a welcome addition to a successful explanation rather than something intrinsically related to it" (Outhwaite, 1983, p.324). Brief and Dukerich (1991) encapsulate these different perspectives "...thus a useful theory is one whose results are known a priori; and a realist perspective tells us this cannot be for theoretical knowledge is fallible knowledge" (p.331).

Baritz (1960, cited in Susman and Everad, 1978) wrote that "if the values and goals of managers were accepted as given by organisational behaviourists... the theories intended to be useful are constructed to meet the needs of managers. However, if the prescriptions derived from a theory lead to outcomes which favour management at the expense of, or to the exclusion of, subordinates for example, the ethics of the



prescription may be called into question” (p. 61). Brief and Dukerich (1991) epitomise the use of theory “by providing evidence and argument, the organisational behaviourist as educator, can supply a vision for the future and challenge the imagination” (p. 341).

*“The increasing emphasis in academic circles upon matters of epistemological validity, methodological rigor, and theoretical abstraction is widening the gulf between the rational goals of academic social science and the incremental praxis of social research utilization. Educating for a new type of professional specialist ie the applied social scientist, internally employed and familiar with the eclectic methods of diagnosing social problems and designing and developing social policies, may provide a solution” (Van de Val, et.al., 1976, p.173).*

Because the introduction of processes such as Job Modelling and Kaizen have such a major impact on the way people in an organisation go about their work, a wide range of theories of HRM will have a bearing on how that introduction can best be done, and on why organisation members act the way they do. In this section we will review theories relating to the function of HR systems; motivation; introduction of new technology; stress; and management style.

### **2.6.1 Function of HR Systems**

Once management has articulated a philosophy about people, it can begin to focus on the design of the HR system (Fombrun, Tichy and Devanna, 1984). Human Resource Management (HRM) includes such activities as job analysis, employee selection, performance appraisal, training, motivation, labour relations, decision making and leadership. To be effective, the organisation’s HR strategy should be integrated with its business strategy (Adler and Bartholomew, 1992). Simpler and Wilson (1992, cited in Dawson, 1995) argue that HRM holds the hope for economic advantage through providing “supporting strategies, structures and systems which will enable people to identify with the organisation’s vision and contribute to the organisation’s goals in which they feel they have a stake” (p. 47).

HRM is increasingly recognised as an important force in driving organisational effectiveness for the following reasons:

- (1) HR activities have a major impact on individual performance and hence on productivity and organisational performance.
- (2) The ability of organisations to innovate depends upon creating an organisational context supportive of innovation.
- (3) The quality of strategic decisions made in organisations is linked to the quality of HR data that feeds into the decision-making process.
- (4) Success in the implementation of strategic objectives depends to a great extent on how well the organisation has carried out its HR cycle and selected the right people, measured the proper behaviours, rewarded progress against the strategic objectives, and developed the skills needed to ensure the success of the strategy.

(Fombrun, Tichy and Devanna, 1984, p. 51)

Performance is a function relating to all parts of the HR cycle. For example, selecting people who are best able to perform the jobs defined by the structure, appraising their performance for the appropriate and equitable distribution of rewards, motivating people by linking performance to a reward system, and developing employees to improve current performance and prepare them for possible opportunities in the future (see Fig 2.1)

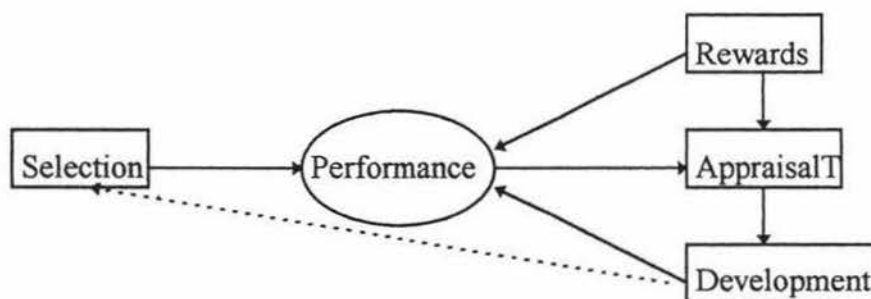


Fig 2.1 The HR Cycle (Fombrun, Tichy and Devanna, 1984, p. 41)

By aggregating data collected for performance appraisal purposes, an organisation can develop a profile of its existing skill mix.

### 2.6.2 Motivation

The problem of how to manage employees so they become and remain concerned with productivity has puzzled and frustrated managers for generations (Locke and Latham, 1990). The best they can do is to try to develop HR systems that will increase the probability that the right people are chosen and are motivated to do the right things on the job. Such systems need to include a comprehensive job analysis to ensure the development of valid selection procedures for hiring and promotion purposes, valid performance appraisal systems to ensure that the person is measured on the “right” things and receives appropriate feedback, effective training procedures to ensure that the person is adequately developed and labour relations that are conducive to employee motivation (Locke and Latham, 1990). Simply providing skill based pay so that people will be motivated to enrol themselves in training courses is not enough to improve individual capability (Lawler, 1985). It is essential that the HR system ensure people have good pre-employment skills, effective learning opportunities and a high degree of motivation.

“During the 1950’s and 1960’s research encouraged a more proactive, change-oriented research approach by describing how jobs should be redesigned and both challenged work simplification, not only by suggesting a wider range of tasks be included in jobs, but also by advocating that more autonomy and control be afforded to employees over the execution of work” (Wall and Martin, 1987, p. 64). Cox and MacKay (1982) found that machine-paced, repetitive work to be associated with higher levels of reported stress, but that high ‘attentional demands’ and socializing could serve to alleviate this effect. Broadbent (1985, cited in Wall and Martin, 1987) argued that job demands (work load and pacing) have effects primarily on anxiety, social isolation operates on depression, and repetitive unskilled work mainly effects job satisfaction.

The Job Characteristics Model (Hackman and Oldham, 1980) has been simplified to an approach concerned with direct causal links between job characteristics and outcome variables, with growth need strength indicated as a moderator (Wall and Martin, 1987). The Model specifies five core job dimensions relevant to job attitudes and behaviour.



These are task variety, task identity, task significance, autonomy and task feedback. “By (differentially) affecting the ‘critical psychological states’ of experienced meaning, responsibility and knowledge of results, the five core job characteristics are predicted to promote work motivation and job satisfaction and to reduce labour turnover and absenteeism” (Wall and Martin, 1987, p. 65).

The second main development concerns the concept of the autonomous work group (Wall and Martin, 1987). The major feature is that they provide for a high level of self determination by employees over the management of their everyday work. “Typically this involves collective control over the pace of work, distribution of tasks within the group and the timing and organisation of breaks; also the participation in the training and recruitment of new members” (Gulowsen, 1972; cited in Wall and Martin, 1987, p. 65). Originating from goal-setting theory (Umstog, Mitchell and Bell, 1978) is that the provision of autonomy requires clear performance objectives and feedback, and it is this which motivates performance (target setting/feedback leads to increased level of motivation which improves individual/group performance). On an organisational level, the assumption is that autonomous work groups will develop rapid and flexible response to production needs which improves organisational performance (Wall and Martin, 1987).

### **2.6.3 The Introduction of New Technology**

The emergence of high technology, and particularly automated systems has been likened to the 20<sup>th</sup> Century Industrial Revolution (Turnage, 1990). A recent study which investigated the success of the implementation of office technologies, found that 40 per cent had not achieved their intended results, even though less than 10 per cent of the failures were technical in nature (Bikson and Gutek, 1984). The major causes for failure, they found, were human and organisational; such as unclear problem definition, poor technology management, poor planning and lack of training.

Although many companies are turning to manufacturing technologies as a way to counter increased foreign competition, poor worker productivity, old factories and a

recession in the manufacturing sector (Majchrzak, 1988), it has been estimated that United States firms currently face a 50-70 per cent failure rate upon implementation (Ettlie, 1986a). Experts in organisational theory and manufacturing design warn that expectations for productivity gains will only be achieved by adapting management methods, HR methods and policies, and organisational structures and designs to the new technology (Majchrzak, 1988). This implies that the “socio-technical” (Pasmore and Sherwood, 1978), or “macroergonomic” (Hendrick, 1986) approach may be essential to reveal how firms can achieve gains in productivity by optimizing the fit between new technologies and their surrounding organisational context (Turnage, 1990).

#### **2.6.4 The Causes and Consequences of Stress within Organisations**

International Labour Organisation (1993) argues that “stress has become one of the most serious health issues of the twentieth century” (p. 65). Considerable attention has focused on the negative impact of role stress in the form of role ambiguity and role conflict. These role perceptions have been associated with work dissatisfaction, lower performance, job-induced tension and the propensity to terminate employment (Kahn, Wolfe, Quinn, Snoek and Rosenthal, 1964; Morris and Snyder, 1979; Szilagyi, 1977; cited in Mossholder, et. al., 1981).

Systematic research on the impact of stress suggests that it can influence physical and psychological wellbeing and even the course of an individual’s career (Baron and Greenberg, 1990). Stress keeps an individual off balance physiologically and upsets one’s internal chemistry by inhibiting the function of the immune system thus leaving the body vulnerable to disease and infection (Kalat, 1993).

The research findings of Voges et. al. (1982), reviewed by Shouksmith (1985) suggest the following as major occupational or work-based stressors:

- (1) Stressors specific to job-tasks
- (2) Role ambiguity - lack of clarity in the job specification causing uncertainty about the range or extent of tasks which have to be performed. Inadequacy of training can also produce role ambiguity.
- (3) Role Conflict - two or more aspects of the job may call for incompatible responses from the job incumbent, causing role conflict.
- (4) Task Loads - task overload occurs when events happen too quickly or when too much information has to be processed or when the physical or mental effort of the job becomes too great. Task underload, having too little or nothing to do for extended periods, can also lead to stress. Load variation which is too extensive or too rapid can be a stressor.
- (5) Interpersonal Relations - any work situation can produce stress through the interactions with other work colleagues being poor or inadequate. Supervisors, colleagues and those supervised can all cause stress.
- (6) Job Conditions - the physical nature of the work place, the constraints of a specific organisation, and the nature of imposed sanctions can also act to cause stress in any job.

According to the interactionist approach, reducing the stressfulness of a job involves firstly identifying those aspects of the job which are stressful then introducing moderators to reduce stress sources or to help the worker cope with those stressors which are present. Among variables thought to influence the occupational stress process are worker control (Spector, 1986), social support (House, 1981) and locus of control (Spector, 1982; Parkes, 1989).

Karasek's (1979) demand-control model suggests that when the psychological demands of a job are high and control over the job is low, health status and well-being are lowered. However, when demands and control are high, the individual will experience an increased motivation to perform. The concept that the interaction between control

and stressors lessens the impact upon well-being has been described by Fisher (1989) as having an “intuitive appeal” and would seem to have a logical basis. Ideas such as job autonomy and participation in decision-making are clearly related to worker control, since they relate to an individual's capacity to change aspects of the organisational environment (Daniels and Guppy, 1994). Stress is viewed by Lowe and Northcott (1995) as the result of “psychologically demanding work and job designs which do not allow workers sufficient opportunity to make decisions or to use their skills in responding to job demands. Over time, these conditions may result in a range of mental and physical health problems and in diminished organisational productivity through increased absenteeism, turnover and reduced employee performance” (p.420)

#### **2.6.5 A Need for a Change in Management Style - from Patriarchy to Partnership.**

According to Ackoff's (1981) model, the Industrial Revolution's image of the corporation likened the power/authority of the corporate owner to that of God (Heller, 1985). “As God had created the universe and man to serve Him, so the creators/owners of the corporations had created the Industrial organisation and the employees to serve themselves” (p.489). Heller describes the gradual decline of the authority of the organisation in society as (a) a shift in the base or source of organisational authority and (b) a loss of commitment and identification on the part of organisational memberships.

The nature of work organisation has shifted from work simplification and standardization to process integration within technological systems (Landy, 1989). Consequently, the way work is managed requires a fundamental shift in thinking. Instead of breaking a job down into component parts for workers to execute, technological systems have rejoined the component parts and the worker now needs an understanding of the underlying processes. It follows, that if the worker is now responsible for monitoring underlying processes of production, management now need to be responsible for the coordination of those processes within production. In other words, management must recognise people as resources that can add value to the

production process (Sherwood, 1988). "The creative challenge is to link people and technology in ways that optimize both the potential of the technology and the contributions of people" (p. 8).

To implement this form of partnership, management must change its ways of thinking primarily in three areas: the ways of viewing people, its ways of viewing work and its ways of viewing the role of management (Sherwood, 1988). "When management thinks of people principally as a variable cost (which can almost always be reduced) then it is most likely to seek changes in technology or in work methods (resulting in less labour input) as ways of controlling costs. However, if management views people as both resources and collaborators in the competitive marketplace, it is more likely to seek ways in which everyone's commitment, competence and intelligence can be aligned behind the company's purpose" (p.8). Block (1993) describes this as choosing partnership over patriarchy.

According to Block, patriarchy is based on the fundamental belief that in order to organise effort towards a common goal, people need to concentrate on maintaining control, consistency and predictability. This belief determines the need for a clear line of authority and decisions about policy, strategy and implementation become the responsibility and prerogative of the leader(s). However, patriarchy's need for control, consistency and predictability becomes its own obstacle, as it takes the accountability from the middle and the bottom of the organisation.

*"Patriarchy creates the bureaucratic mindset ... that high control creates low risk... when patriarchy asks its own organisation to be more entrepreneurial and empowered, it is asking people to break the rules that patriarchy itself created and enforces... with power, privilege and rewards concentrated at the top, it is patriarchy itself that breeds self-centredness and self interest and gives rise to the ponderous kind of internal political environment we call bureaucracy. If the issues of real power, control and choice are not addressed and renegotiated then our efforts to change organisations become an exercise in cosmetics." (Block, 1993, p. 26).*

### **SECTION 3.**

#### **CASE STUDY: Departmental/Operational Analysis**

### 3.0 INTRODUCTION TO CASE

The Dairy Industry is indicative of the changes in work organisation, mainly due to technological advancement. It started as a cottage industry in which individual farm units processed their own milk to make butter, cheese and other dairy products for their own consumption. Eventually, the market demanded higher volumes of produce which led in turn to the need for improved efficiencies.

As machinery was developed to process greater volumes of product, factories were established and jobs created to operate component parts of the process. In line with Taylor's Scientific Management practice (1911) jobs on production lines had a comparatively narrow focus, resulting in simplified, repetitive tasks for workers. The overall responsibility for production rested with supervisors and managers, which led to an autocratic style of management based on command and control.

It was believed that individual workers were probably not capable of appreciating or accepting responsibility for any more than their designated jobs, so the nature of work meant that 'thinking' and planning remain the right of management while the 'doing' was expected to be undertaken by the workers. Such organisation of responsibilities was reasonably successful while the size of individual factories was still moderate. However, as technology advanced to provide opportunities to produce greater and greater volumes, it became less and less efficient for factories to operate independently. Rather than replicate resources, factories began to amalgamate to form larger companies in order to capitalise on the economies of scale.

Today dairy factories have the technological capacity to produce extraordinary volumes, however the skills associated with operating and managing the technology have changed dramatically. A greater understanding of the underlying process is essential, hence the kind of person and their focus of the job has effectively changed from manual operator to process technician. As a result, this has created several fundamental paradigm shifts in the way work needs to be organised. Subsequently, this has led to work restructuring in the quest to maximise efficiency potentials.



The following case study traces one such “restructure” within a Dairy Company in New Zealand. One of the key objectives of Senior Management was to initiate a partnership between management and workers in an attempt to convince workers to move from the stronghold of a union-based collective contract to performance-based, individual contracts. However, the initiative was being met with reluctance to change, which Senior Management blamed on “the culture of the organisation” and “communication problems”. The following report provides an holistic analysis in an attempt to tease-out some of the fundamental issues that are creating the resistance and thus preventing the necessary changes.

The analysis will consist of two main perspectives. Firstly, the restructure will be assessed on a departmental or operational basis to ascertain, and try to alleviate, problems at the “hands-on” level. Secondly, an analysis of organisational systems, and case scenarios, to assess what supporting structures are in place to energize (or prevent) the change process.

### **3.1 Description of the Organisation**

The organisation consists of seven Production Halls, a central Laboratory, Maintenance and Service Department, Production Stores Department, Transport Department, and Administration which includes a Marketing Department, the Organisational Development Team, Information Services, Payroll and an Accounting and Finance Department. The Company employs around 900 people and services over 2000 suppliers.

The area of concern in this current analysis focuses primarily on the Production Halls, however it is also necessary to understand how the Halls interact with other departments to gain a full appreciation of outside constraints impacting on the operation.



### 3.2 Methodology

As our research methods and techniques have become more sophisticated, they have also become increasingly less useful for solving the practical problems that members of organisations face (Susman and Evered, 1978).

Kurt Lewin (1946; cited in Susman and Everad, 1978) introduced the term “action research” to denote a pioneering approach toward social research, which combines the generation of theory with changing the social system through the researcher acting on or in the social setting. Action research can be perceived as a cyclical process consisting of 5 phases: diagnosing, action planning, action taking, evaluating and specifying learning (Susman and Everad, 1978). Fundamentally, action research is oriented toward the future as it generates instruments for (1) alleviating the immediate problematic situation and (2) generating new knowledge about system processes.

According to Dubin (1976), theory is “the attempt to model some aspect of the empirical world... a good theory enables one to both predict what will happen given a set of values for certain variables and to understand why this predicted value should result” (cited in Wright and McMahan, 1992, p. 296). In action research, theory provides a guide for what should be considered in the diagnosis of organisational situations, as well as for developing potential courses of action to deal with problems as they arise. Lippett (1982) says this form of systems analysis makes “a problem understandable offering possible avenues for its solution and establishing criteria for the selection of the best alternative” (p. 32).

Paramount to the action researcher, is the recognition that the objectives, the problem definition and the method of the research must be generated from the process itself (Susman and Everad, 1978). Although the consequences of selected actions cannot be fully known ahead of time, appropriate action is based on knowing how key actors define their present situations so that planned actions are more likely to produce their intended outcomes, by co-producing solutions through collaboration with the people the problem is impacting on (Ackoff and Emery, 1972).

The action researcher brings theoretical knowledge as well as experience in the problem-solving process, while the “clients” bring practical knowledge and actual experience of the situations in which they are trying to solve problems. “Neither client nor researcher has better knowledge; in a sense they are both experts” (Susman and Evered, 1978, p 597). The success, or failure, of action research pivots on the understanding of the values of relevant actors, as this is what guides the selection and commitment of particular solutions. Accordingly, a methodological mix that combines in depth interviewing, qualitative data analysis and the use of grounded concepts will produce a contextual perspective more applicable to an organisational environment than a purely empirical approach (Van de Val, et. al., 1976).

Secord (1986) suggests that an action researcher “*must search for and describe the structural enablements and constraints that play a part in creating the problem, and s/he must find a way of transforming these elements to create the kind of situation desired*” (p. 219).

### **3.3 The Change Process**

The management of change, and especially the management of culture change literature, suggest that there are specific conditions which advance or impede managed organisational change and certain stages through which managed change needs to progress (Storey and Sisson, 1993). Robert Fritz (1989) describes the creation process as (1) developing a vision of what you want to create (2) finding what your current reality is and (3) working to move from current reality to the point where you can say your vision has been reached. Fritz believes the most common mistake organisations make is the omission of step (2), as without fully realising the deficiencies of the present situation, the discrepancy between what you have and what you want is unclear. Acknowledging the discrepancy forms a creative tension which then seeks resolution.

In the current research, the researcher's role was to communicate and clarify the need for change and to develop a site wide system to achieve the desired changes. The system of diagnosing and analysing current and future needs was based on Western concepts of Human Resource Management and incorporated Eastern philosophy using the KAIZEN Model as a reference point and framework from which to gauge the change process. Participative management techniques were adopted throughout the process, with an overarching rule that decisions were made by, and discussed with all those the decision would ultimately impact on. Although this would seem to slow the process down, it would potentially create a far more effective end result, as the system would incorporate all user-perspectives and hence greater acceptance of the final product.

Fritz's process of vision, current reality, and action, fits into the action research model in the action taking phase. The company had conducted its own diagnosis and had determined the need for process management based around Job Modelling. The researcher's role involved acting as a change agent in the action taking phase, with Fritz's model as a guiding principle.

### **3.4 Process of Tracking Results**

Two main forms of data were collected. Section 3 describes a system of Job Analysis using a Job Modelling approach. This was developed by operationalising the KAIZEN Model into a scale which was used to determine levels of accountabilities and competencies needed for individual skill units within the Dairy Industry Skills Matrix. This system is included in Appendices 2-5 and departmental results presented in Table 3.1.

Section 4 is a qualitative analysis of organisational systems which highlight the need for a holistic approach to change. The data comprised of a opinions collected from production managers and supervisors regarding existing systems. This was collected in the form of notes from meetings and transcripts from interviews during the development phase of section 3

### 3.5 Description of the “Vision”

The researcher was employed by the company to develop a Training Needs Analysis system to achieve the following objectives:

1. To allow full integration of positions across site ie to standardise positions so operational and managerial levels are transferable between departments.
2. To create a broader focus within positions to increase flexibility and provide a basis for multiskilling.
3. To flatten the structure to reduce hierarchical constraints and improve communication channels and the ability to respond quickly to market demands.
4. To provide performance measures to encourage a move away from the Dairy Workers' Award (collective contracts) toward Performance-Based Pay (individual contracts).

### 3.6 Description of the “Current Reality” before intervention

The Company had recently undergone a management restructure. The main reasoning behind this was to create a Site Manufacturing Team (SMT) which focused on the whole site and try to remove barriers between departments. The consequence of the restructure effectively meant nearly all positions were moved up a ‘rung’ on the organisational chart (see Fig 1.1)

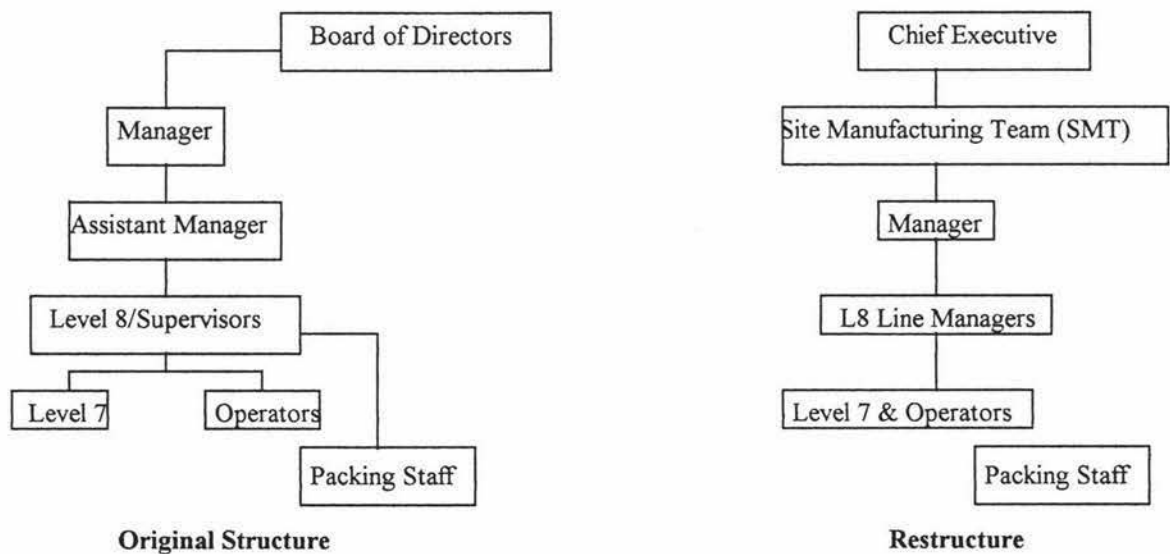


Fig 3.1 Original Structure vs Restructure in Organisational Chart for Company

The justification for this was two-fold. Firstly, substantial technological advancement potentially eliminated traditional “hands-on” positions which have been replaced with computer operated controls. Secondly, higher management roles were modified to enable more efficient and effective response to constantly changing market demands (see Fig 3.2)

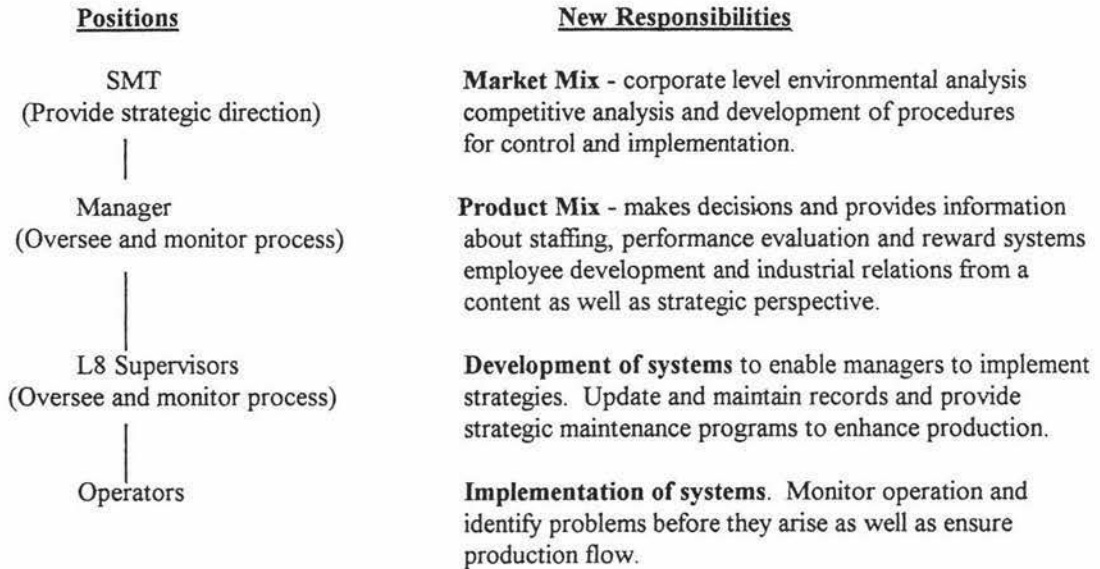


Fig 3.2 Outline of new responsibilities with respect to restructure.

However, although the logic for the changes appeared sensible, the restructure was not accompanied by a redefinition of roles or supported with the necessary training needed to enable people to fulfil their new roles effectively. The areas of responsibility appeared ill defined, resulting in increased levels of role stress and a tendency of individuals (both management and operational) to settle back into previous roles. The net effect left a gaping hole in the management's ability to oversee the operation as a whole, which ultimately impacted on production.

For example, the role of both supervisor and operator were changed dramatically. Historically, supervisors were general "fix-it" men for operators. If a problem should arise the operator would call on the supervisor who would rectify it by either fixing it themselves or calling in the relevant people to fix it for them. Since the restructure, supervisors were being called upon more to fill the role of what used to be the Assistant Manager - this involves a much closer liaison with production management and calls upon Human Resource skills such as training and development, recruitment, and performance appraisals.

At the same time operators were now expected to solve their own problems and identify production bottlenecks and potential trouble areas. As one can imagine, the skills needed to perform to the new standards were at times chasms apart from what the

job once was. This was being met with a reluctance to change or an inability to perform. Consequently, production was suffering as operational problems were not being identified early enough to prevent it effecting the process further down the line. In addition, when a problem did occur, operators often did not have the skills to fix it themselves and were resorting to calling on supervisors as they had done in the past.

Generally, the lines of accountability had been somewhat confused by the shifts in management lines. This was highlighted by the following symptoms:

- Supervisors' focus on task-oriented activities
- Health and Safety and Quality System bottlenecks
- An inability for management and/or supervisors to implement decisions
- Mixed messages across the Company about training and position requirements
- Production down time/ grades/ loss of product with the introduction of new equipment
- An inability to maintain and integrate systems which could aid performance eg Quality, Training, OSH, Health and Safety
- High levels of stress reported by Production Managers due to high work loads and lack of control over resourcing and capital expenditure within their departments
- Expressions of dissatisfaction by Supervisors due to lack of control over work organisation and their own training

(For an example of a full departmental analysis see Appendix 1.)

Consequently, there was an obvious need to redefine areas of responsibilities and provide the training and resources to allow individuals to fulfil their new roles. In the past, development efforts had been seen in rather static terms and training was directed toward maximising some presently perceived functional need. However, the organisation needed to become more long-term and strategic in its outlook, by matching training efforts of today to the strategic needs of tomorrow. As well,



Managers needed to spend more time planning what their Human Resource needs would be three to five years from now, instead of being concerned only with maintaining a full staff on a day to day basis.

The impact of changing technology on skill requirements and the way these demands are met is of central interest here. Training is required when the job functions and performance standards for a job change. As new functions are added to a job, employees must be thoroughly trained to perform them. Also, as jobs become more automated, employees need to be made aware of the new standards.

The process of identifying actual training needs across the company could be relatively mechanical once positions are clearly defined. However, the problem here was to ensure all parties were in agreement with the fundamental job analysis. For example, it was my impression that there were substantial discrepancies between the SMT, Production Management and the Job Incumbent as to what exactly the new responsibilities entailed.

The first step was to find a point of agreement as to what processes were involved in each position and to ascertain any significant differences between perceptions at different levels (ie SMT, Production Management/Supervisors and Job Incumbent). From here we would be able to identify (and rectify) discrepancies between what people were currently doing and what the position prescribed in relation to the process. We could then identify training needs according to technical and behavioural competencies in line with the processes involved in the job (see Fig 3.3). As well, we could ascertain whether an individual needed to complete the task themselves and/or have an understanding of the processes involved to enable effective supervision so that others could complete the task according to performance criteria.





Fig 3.3 Aligning Training Recommendations with Positions

In summation, production was reflecting the reactive nature of its management. Problems were tending to snowball before they are sorted, which was ultimately costing the company in either lost production, maintenance or product quality. Consequently, the foundations of the Training Needs Analysis needed to be based on the analysis of job functions within and between departments.

### **3.7 Moving from the “Current Reality” towards the “Vision”**

In this section the system we developed will be described in detail in order to try to rectify the discrepancy between the Vision and the Current Reality. Firstly, I will outline the KAIZEN Philosophy and describe how this was incorporated to develop departmental structures; Secondly, explain the use of the Dairy Skills Matrix in the creation of a system of Job Analysis to produce Job Models for individual positions; Thirdly, I will assess the ‘usefulness’ of such a system in terms of strategic planning and monitoring organisational performance; And finally, I will discuss existing organisational constraints which ultimately prevented the full utilization of the system.

#### **3.7.1 Departmental Structures and the KAIZEN Philosophy**

Often in a rigid hierarchy, communication becomes a problem. The extra levels create barriers for both upward and downward exchanges which potentially inhibits the organisation’s ability to respond quickly to market and operational needs. As a result, the emphasis becomes the maintenance of the status quo and a reactive approach to production ie reacting when things go wrong, rather than continual improvement which would prevent things going wrong in the first place. This describes the fundamental difference between a results-oriented and a process-oriented approach to management. The KAIZEN Philosophy incorporates this logic in a structural model of organisations, which focuses on process rather than position and improvements within the process rather than maintenance and repair.

The following is a summary of the key features of the philosophy. It is not intended to represent a full analysis of the model, rather it is to provide a foundation from which systems of analysis were developed.

## THE KAIZEN PHILOSOPHY:

### Process-oriented Management vs Result-oriented Management

(from KAIZEN by Masaaki Imai)

The process-oriented way of thinking bridges the gap between process and result. The process is considered just as important as the obviously intended results, in that processes must be improved before you get improved results.

The role of the manager in process-oriented thinking is supportive and stimulative and is directed at the improvement of the processes, while the controlling role is directed at the outcome or result (see Fig 1.1). In other words, management need to support people's efforts to improve the processes.

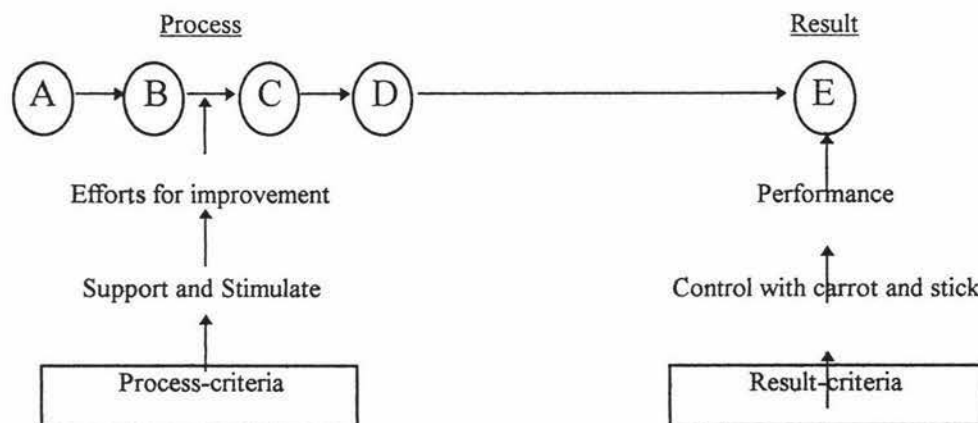


Fig 3.4 Process-oriented criteria vs Result-oriented criteria

Process-criteria call for a longer-term outlook since they are directed at people's efforts and often require a behavioural change. Reviewing performance of employees tends to emphasise attitudinal factors whereas result-criteria are more direct and short term.

## Management and the Structure of the Organisations

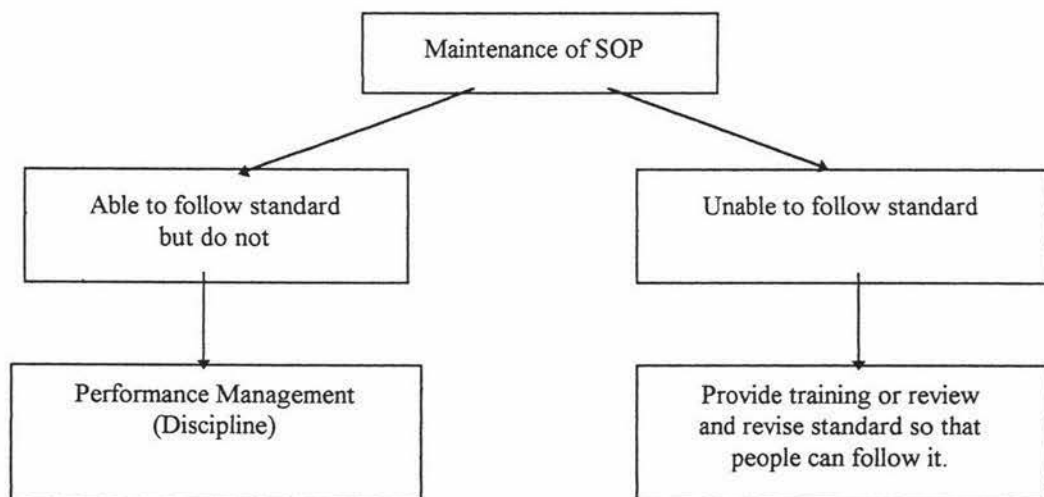
According to the KAIZEN Model, management has two major components:

- Maintenance
- Improvement

Maintenance refers to activities directed toward maintaining current technological, managerial and operating standards.

Improvement refers to those activities directed toward improving current standards.

Management must first establish policies, rules, directives and procedures for all major operations thereby seeing Standard Operating Procedures (SOP) and giving employees a gauge by which to measure performance. Maintenance of SOP can then be assessed by two main categories.



By contrast, improvement refers to establishing higher standards. Once this is done, it becomes management's maintenance job to see that the new standards are observed (see Fig 3.5)

### Quality Control (QC) Circles

QC Circles are usually directed toward improvements in the workforce, yet support systems, such as training and resourcing, are crucial.

Result-oriented management tend to evaluate effectiveness of QC circles in terms of the money saved or profit gained as a result of their activities. However, it is difficult to quantify the level of effort within process-oriented management. In essence, management should make a conscious effort to establish a system that supports and encourages process-criteria, while giving full recognition to result-criteria. For example, process-oriented management need a suggestion system which incorporates incentives by providing rewards in proportion to the savings and/or increased output attained. Process-criteria rewards are more often recognition and honour geared to the effort made.

Both process-criteria and result-criteria need to be established at every level of management between:

- top and middle management
- middle management and supervisors
- supervisors and workers

In summary, process-oriented managers generally made decisions based on both process-criteria and result-criteria and are concerned with:

- Performance Management
- Time Management
- Skill Development
- Participation and Involvement
- Morale
- Communication

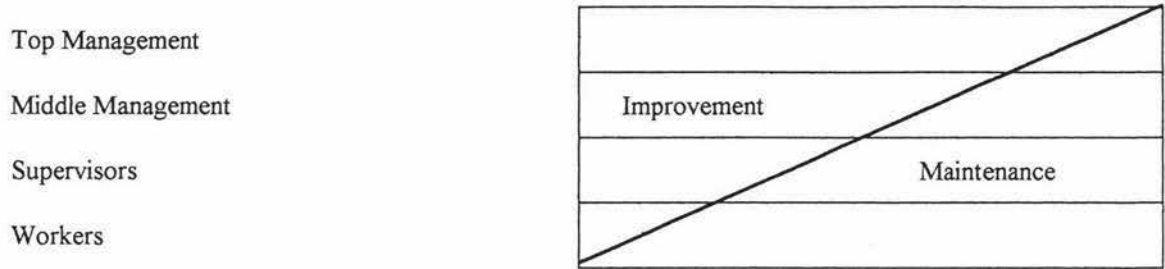


Fig 3.5 Perceptions of Job Functions - The KAIZEN Model

The model represents the proportional time commitment allocated to job functions, ie Improvement and Maintenance.

KAIZEN incorporates both gradual and incremental improvements as a result of ongoing efforts and innovation. Innovation involves a drastic improvement in the status quo as a result of a large investment in new technology and/or equipment (see Fig 1.3)

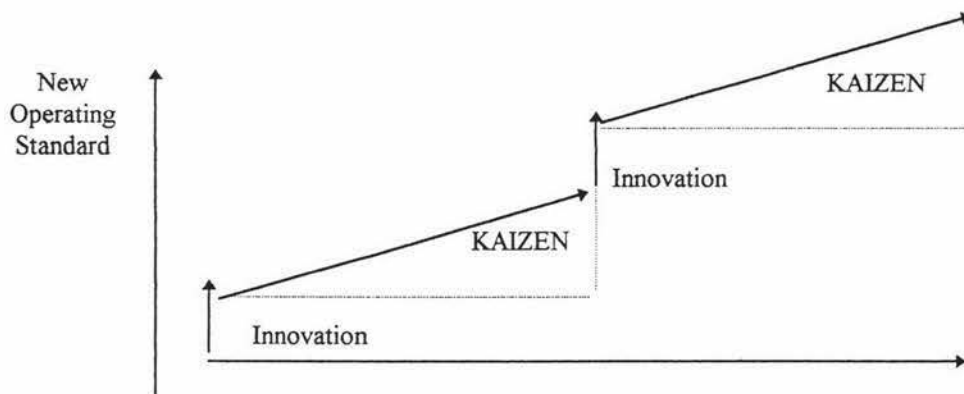


Fig 3.6 Innovation plus KAIZEN

If standards exist only in order to maintain the status quo, they will not be challenged so long as the level of performance is acceptable. KAIZEN, on the other hand, means a constant effort not only to maintain, but to constantly upgrade standards.

**The strength of this form of management lies in its successful development and implementation of a system that acknowledges the ends while emphasising the means.**

The KAIZEN philosophy impacts on all levels within the hierarchy of an organisation.

Fib 2.7 outlines the necessary commitment by each level for its success.

TOP MANAGEMENT	MIDDLE MANAGEMENT	SUPERVISORS	WORKERS
Be determined to introduce KAIZEN as a corporate strategy	Deploy and implement KAIZEN goals as directed by top management through policy deployment and cross-functional management	Use KAIZEN in function roles	Employ KAIZEN through the suggestion system and small group activities
Provide support and direction for KAIZEN by allocating resources	Use KAIZEN in functional capabilities	Improve communication with workers and sustain high morale	Practice discipline in the workshop
Establish policy for KAIZEN and cross-functional goals	Establish, maintain and upgrade standards	Support small group activities (such as quality circles) and the individual suggestion system	Engage in continuous self development to become better problem solvers
Realise KAIZEN goals through policy deployment and audits	Make employees KAIZEN conscious through intensive training programmes	Introduce discipline in the workshop	Enhance skills and job performance expertise with cross education
Build systems, procedures and structures conducive to KAIZEN	Help employees develop skills and tools for problem solving	Provide KAIZEN suggestions	

Fig 3.7 Hierarchy of KAIZEN Involvement

### 3.7.2 Incorporating the KAIZEN Philosophy into Departmental Structures

A necessary condition for organisational effectiveness is the existence of organisational communication, coordination and control mechanisms that allow the performance of individuals to come together in a synergistic manner (Galbraith, 1973). McPhee (1985), points out, that when one designs organisational structure, one is simultaneously choosing the communication practices of the organisation. Employees need to have a clear picture of what management functions they are expected to perform, as neglecting this step makes the profile of the managerial/operative mix inherently inaccurate (Grant, 1988).

Hackman (1986) identifies four different functions that must be fulfilled when work is done in an organisation:

- 1) Someone must actually execute the work.
- 2) Someone must monitor and manage the work process - collecting and interpreting data about how the work is proceeding and initiating corrective action as needed.
- 3) Someone must design the performing unit and arrange for organisational supports for the work - structuring tasks, deciding who will perform them, establish core norms of conduct in the work setting and making sure people have the resources and supports they need to carry out the work.
- 4) Someone must set direction for the organisational unit - determining the collective objectives and aspirations that produce the myriad of smaller tasks within the organisation.

Under a strict hierarchical structure, these roles were clearly defined and taken as being the sole purpose of the designated position. For example, the Manager set the direction, the Assistant Manager would design the performing unit, Supervisors would monitor and manage work processes and Operators would actually execute the work. Although, it is important that these functional areas are covered, assigning sole responsibility to individuals removes the ownership of the overall process away from those actually executing the work. In other words, how can operators be responsible for the final product if they only do as they are told and have no input as to how the job is done?

The KAIZEN Model acknowledges this by allocating planning and organising responsibility in the form of a support structure for the function of the operation. That is, the purpose of management is not to tell lower units what to do and how to do it, rather it is to coordinate resources to achieve the objective of the organisation. In essence, it is the process not the position that determines the structure of the organisation. And it is the responsibility of all members of the organisation to maximise the potential of all resources.



With this in mind, we developed a Management Team structure which would enable input from those closer to the operation, thus creating a proactive environment and clearer channels for communication.

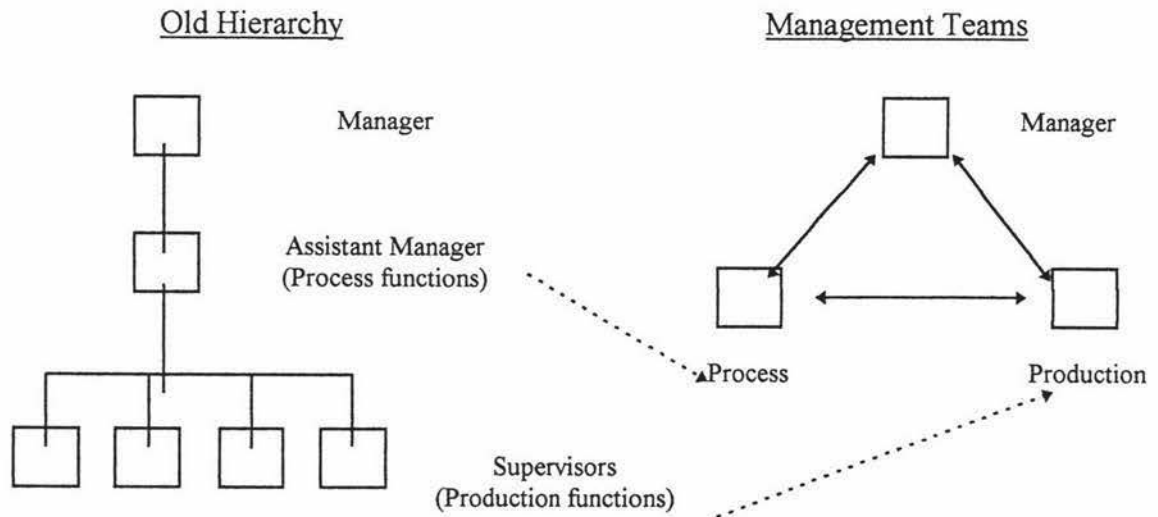


Fig 3.8 Comparing Structures on a Functional Basis

Basically, the Process Assistant role is functionally similar to the Assistant Manager. However, within a management team structure, the role is ultimately rotated around the team. This has a dual benefit of increasing the awareness and understanding of the process of all members of the team and providing a broader base for the Manager to call upon.

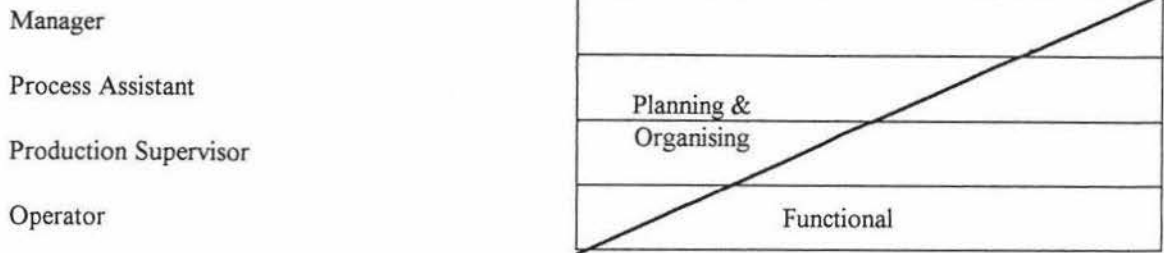


Fig 3.9 How to test structures are in line with the KAIZEN line

Fig 3.9 shows how the model can be used as a gauge to measure levels of functional and/or organisational accountabilities within organisations. According to this model, the internal structure will enable management to be proactive rather than reactive. For example, if we were in a reactive mode, the line would shift further up (see Fig 3.10).

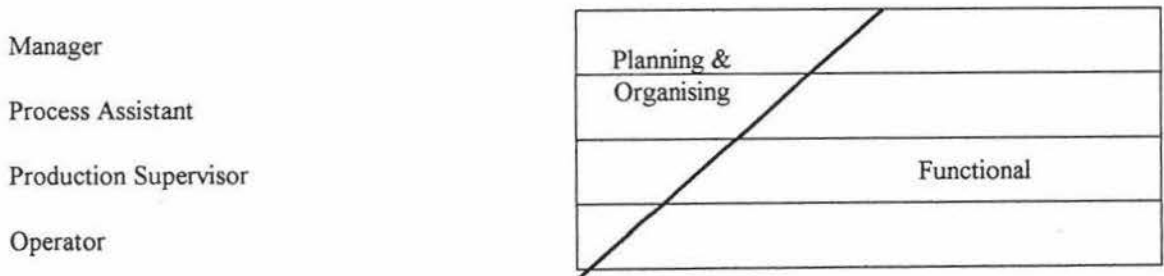


Fig 3.10 A reactive mode of organisational accountabilities

If there was too much planning and not enough “doing”, the line would shift further down (see Fig 3.11).



Fig 3.11 An overemphasis of planning and organising

### 3.7.3 Developing a scale from the KAIZEN Model

From the Model, I developed a scale from which we could depict levels of accountabilities associated with positions (see Fig 2.8). For example, Operators do and record things on an hourly basis and report daily; Production Supervisors look after the operation on a daily basis and report weekly (eg shift supervision, daily stock control, performance management, trouble-shooting etc); Process Assistants collate this information on a weekly basis and plan and report on a monthly basis (eg development and maintenance of systems - Health and Safety, Quality, OSH, HACCP etc, ensuring training is up to date, internal and external liaison, stock control, audits etc.); finally the Manager coordinates this information on a monthly basis and reports and plans on a one to three monthly basis. As well, this position is the link between the strategic direction of the organisation and the operation.

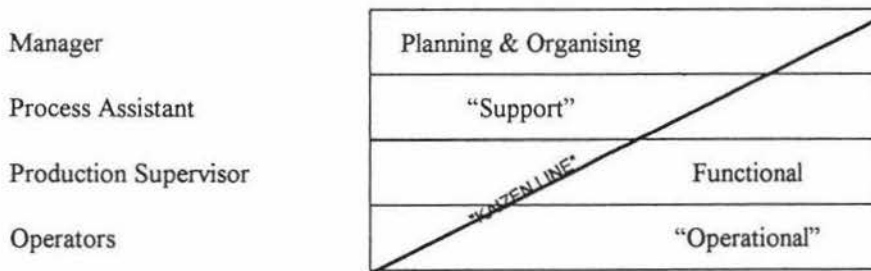


Fig 3.12 Developing a Scale from the "KAIZEN line"

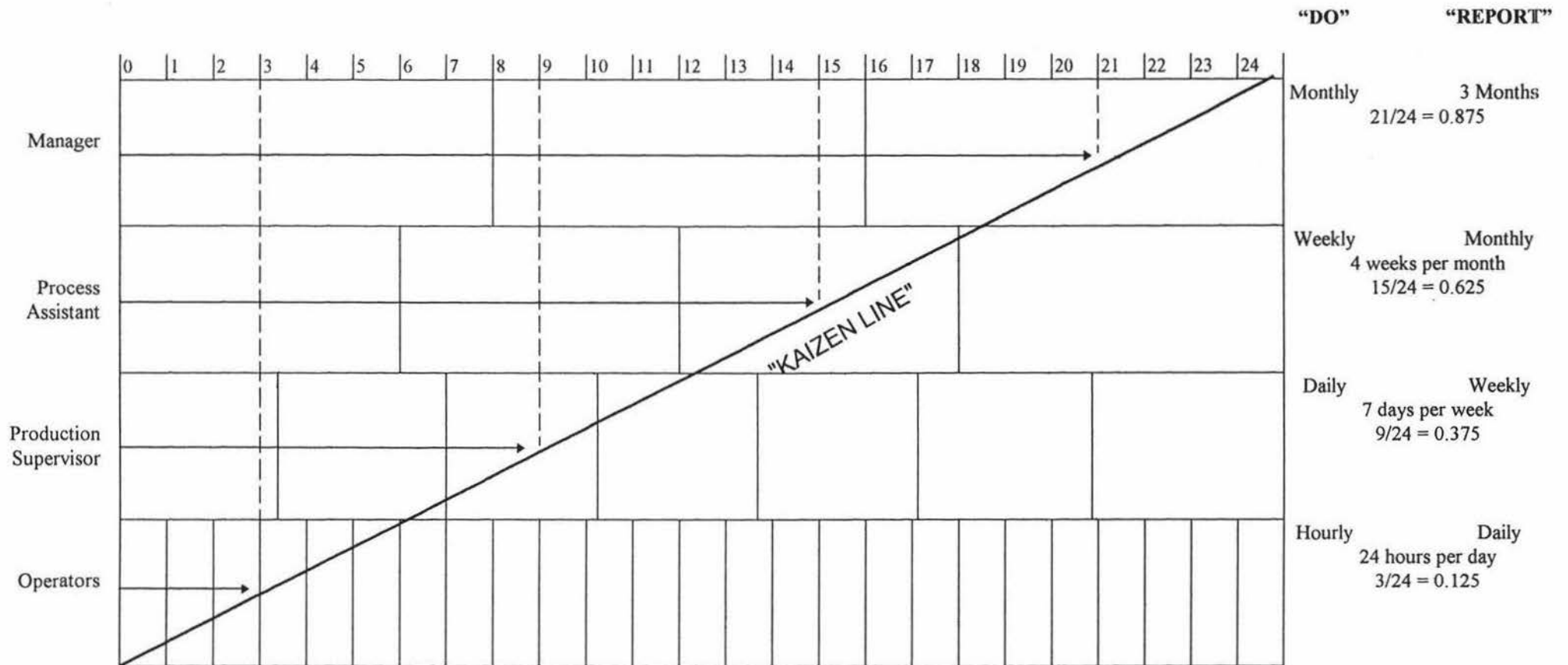
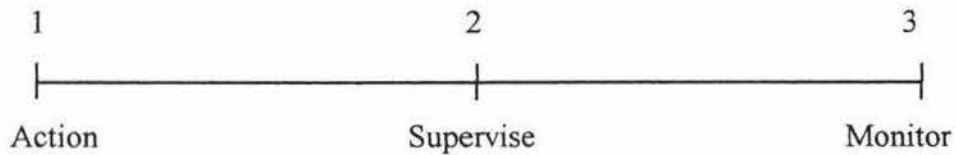


Fig 3.13 Operationalising the KAIZEN line

Positions were then divided into a "doing" and "reporting" unit from which the "KAIZEN line" could be transposed into a number on a scale. (See Fig 3.13)

These numbers were then identified on a scale of 1 to 3, so individual tasks could be assigned on a level of accountability.

For example, a score of 1 means to action (or execute) the task, 2 means to supervise the task (ie, ensure task is completed) and 3 means to monitor the task (ie, collate results and provide feedback).



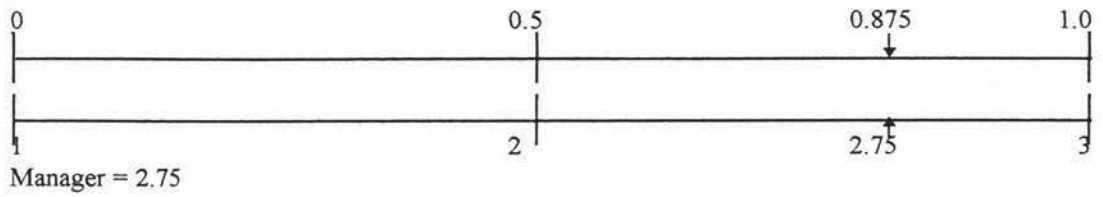
On a continuum this could be represented as:



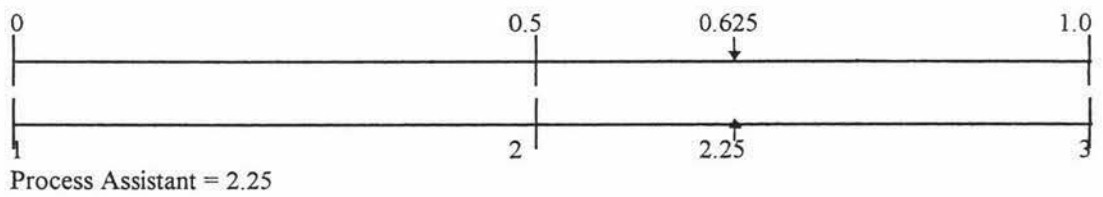
I have called this the “Human Resource Callibrator” (see Fig 3.14) because it allows you to “callibrate” accountabilities of positions to ensure all functions of the process are completed and the results monitored in order to trace performance.

Fig 3.14 Human Resource Callibrator : developed from KAIZEN Model

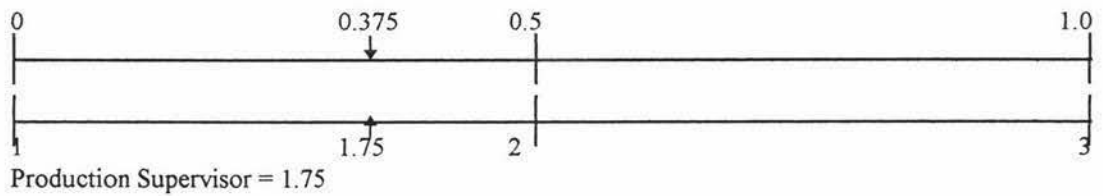
(1)



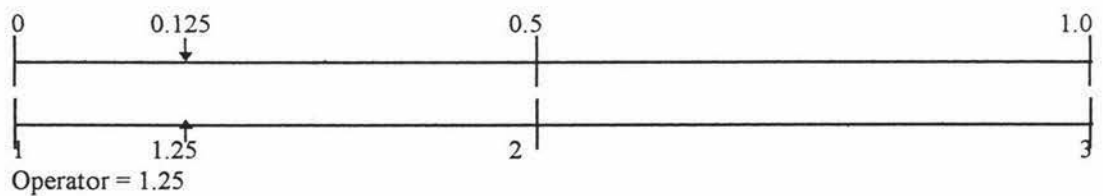
(2)



(3)



(4)



(1) Manager

(2) Process Assistant

(3) Production Assistant

(4) Operators

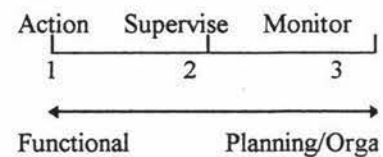
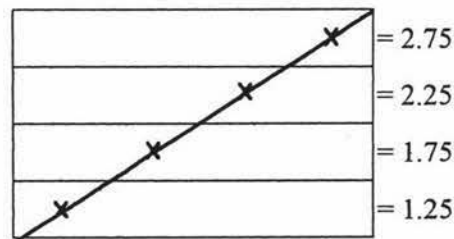


Fig 3.15 The "KAIZEN Line"

### 3.8 The Dairy Industry Skills Matrix and Job Analysis

The Dairy Industry Skills Matrix is a document put together by the New Zealand Dairy Group, which identifies all the skills associated with manufacturing processes within the Dairy Industry. It was designed through a consultative process allowing input by the majority of dairy companies throughout the country.

The skills matrix is a grouping of skill units into horizontal and vertical groupings. A skill unit, or “unit of competence”, is a grouping of one or more skill elements. The original skills matrix contains 22 main sections, each of which has several subsections which contain over 400 skill units. Although this document has been subsequently updated and simplified, the 1993 version contained detail that was necessary for the purpose of Job Analysis. In fact we needed to extend this version to incorporate managerial skills as well as operational skills. After extensive consultation with this particular company’s Production Managers and Supervisory levels we identified the skill units not covered in the original document and added them to the matrix. These were in areas such as:

PRODUCTION	Milk Allocation
	Production Planning
	Stock Control
	Organisation of CIPs
	Plant Cleaning Regimes
	Interdepartmental Liaison
	Internal Orders
REGULATORY	Maintain and Update of ISO Manuals
	Training Needs Analysis
	Audits
	Occupational Safety and Health
	Pathogen Awareness
	Customer Contractual Requirements

Non-Conformist Corrective Action  
 Resource Management  
 External Contracts

#### MARKET/CUSTOMER LIAISON

New Zealand Dairy Board  
 Visits  
 Complaints  
 Contact Points  
 Review of Customer needs and specifications

#### DOCUMENTATION

Status against plan  
 Promix  
 Functional Grading  
 Grade Note Analysis  
 Dispensations  
 Retests/isolation testing  
 PAMs

#### FINANCIAL

Departmental Budgets  
 Acceptance and review of Pas  
 Claims

#### PERSONNEL

Training Needs Analysis  
 Setting Review Objectives  
 Performance Appraisals  
 Assess team progress  
 Recruitment  
 Liaison with senior management



TECHNICAL	Trials
	CIP/Plant Improvements
	Plant Projects
	Maintenance Review and Implementation

(See Appendix 2. for a full copy of the developed Dairy Industry Skills Matrix.)

This version was then simplified to list the units and the elements only, and the Matrix was used as a reference to clarify the meaning of individual elements.

The list was then formatted into a departmental matrix, with positions running horizontally across from individual skill elements (see Appendix 3.). The reason for this was that the Skills Matrix incorporates all tasks involved within the production area of the dairy industry; the departmental matrix depicts all positions within operational areas. Therefore, combining the two would ensure that all tasks were assigned to a position.

### 3.9 Job Models

Flexible Job Models help create an atmosphere of continuous improvement. Because the focus is on the ends rather than the means, new ways of working are always possible. “For example, floor sweepers who see their jobs as ‘sweeping the floors’ are limited to innovations in ‘sweeping’ technology. On the other hand, sweepers who see their job as ‘producing a clean floor’ can draw on a far broader range of innovation” (McLagan, 1989,p.385)

A Job Model is a selection of skill units from the skills matrix which a person needs to be able to perform that job competently. However, rather than creating a series of job models independent of others within the department, this system enables a total overview of the process. As each task or skill is assessed, a level of responsibility can be assigned to each position, using the scale described in the previous section.

That is:

- 1 = Action (the element or task)
- 2 = Supervise (ie ensure the task is completed)
- 3 = Monitor (ie collate results and provide feedback)

In addition to this scale, the Skills Matrix also lists basic competencies an individual needs to be able to perform to the required level. In other words, they are not actual tasks but the behavioural or knowledge skills needed to be able to perform competently. In the creation of the Job Model, such competencies were indicated by the number zero (#0).

To make a Job Model, each element is assessed according to who does what and a level of functional responsibility is allocated accordingly (Using the scale discussed earlier). For example:

Element	Positions			
	Manager	Process Asst	Prodn Sup	Operator
1.2.1Investigating Accidents	#3	#2	#1	#0

This means that the Production Supervisor actually ‘Actions’ the investigation of any accidents, the Process Assistant ensures that it has been done, the Manager needs to ‘Monitor’ the collation and feedback to staff and the Operator needs an understanding of the processes involved. Once a departmental matrix is completed, the ACCESS program sorts the data to produce individual Job Models for positions and separates the elements into functional responsibilities (#1, #2, #3) and competencies (#1). (See Appendix 4. for example of departmental Job Models.)

This initial process was completed by the researcher in conjunction with individual Production Managers from the seven Production Halls across site. This enabled the Managers to gain a total overview of the processes within their departments and gave them an opportunity to discuss other aspects of job design while assigning functional responsibilities to positions.

However, this was not the final product. The initial printout of individual job models and departmental matrixes was then discussed in depth with the job incumbents and management teams to ensure all “user-perspectives” were considered and people were in agreement with the content and context of their jobs. This I believe is the greatest strength of the system as it provides the flexibility and content needed to gain a much broader understanding of the processes involved within departments, while appreciating the context in which the process is operating. Also, by allowing individuals to contribute to the design of their own job aided in the ownership of responsibilities depicted by the Job Model (McLagan, 1989).

### 3.10 The System as a Strategic Tool

To gauge the consistency of positions across site the functional responsibilities of individual positions needed to be compared between departments and against the KAIZEN Model. This was achieved by the following process:

- 1) Competencies (#0) were separated from Functional Responsibilities (#1, #2, #3)
- 2) The average score for Functional Responsibilities was found for all positions within all departments ie the total score for all elements divided by the number of elements assessed.
- 3) Elements that referred to less than 5 of the 7 departments were eliminated to include Functional Responsibilities representative of entire site, not department specific.
- 4) Comparisons were then made between positions in different departments, and against the “KAIZEN line”.

Table 3.1 summarises the results on a departmental and organisational basis. The bottom column represents the “KAIZEN line”. Fig 3.16 shows how the results can be represented graphically against the “KAIZEN line”.

It is important to understand that these figures relate to what managers and management teams would like to have in place for jobs, they emphasise that this is not what they were currently working with. As well, the physical makeup of individual departments has an influence over the level of delegation and coordinating roles Managers could assume.

For example, the Cheese department consists of over 50 workers and several teams of supervisory staff. In essence, this means that the Manager has got a greater support beneath him, but also dictates that his coordinating role is potentially more complex. Milk Treatment and Casein are much smaller departments in terms of staff numbers, but the volume of throughput (of product) is high. Cream Products and Powder 1 & 2 are both older departments, consequently, the role of the Manager tends to be more “hands-on” than other departments due to the older technology. Finally, both WPC and Powder 3 & 4 have had, and will continue to have extensive development to keep up with an increased demand.

**Table 3.1 Averages for functional responsibilities for positions across departments**

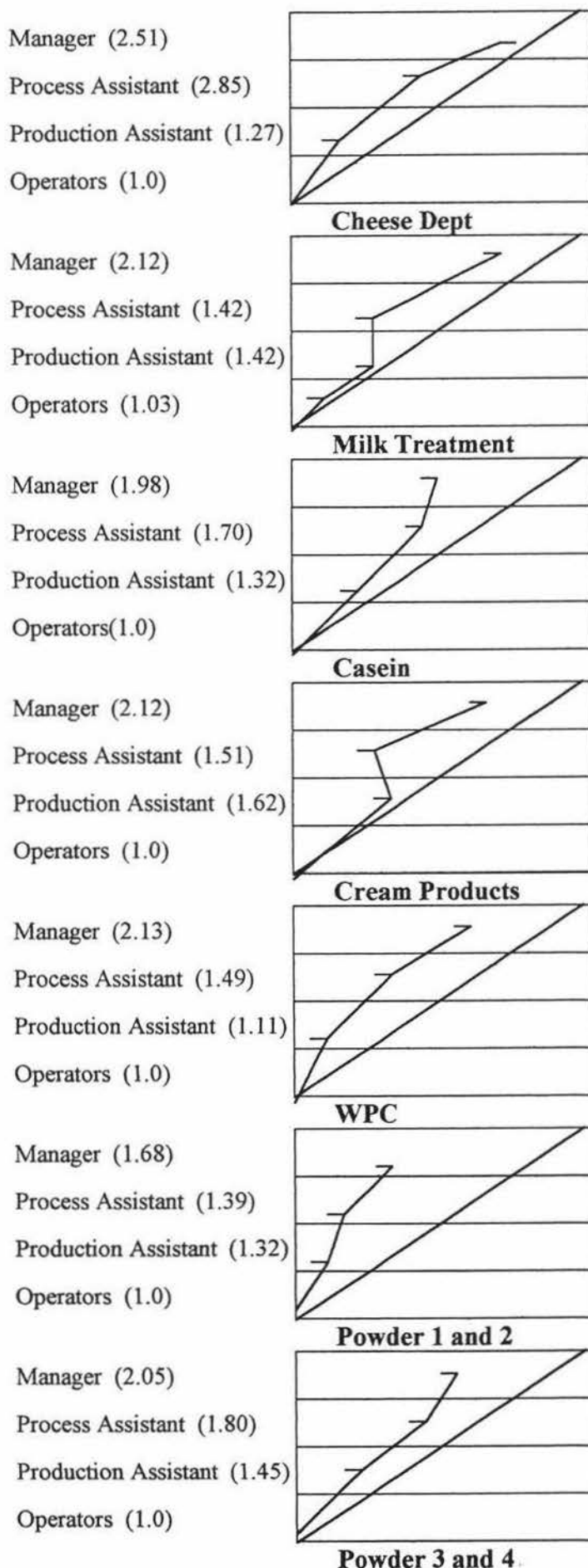


Fig 3.16 Departmental results represented on graphs

### 3.10.1 How to use the results

Although individual differences between departments must be taken into consideration, the figures can be related to compare:

1. Positions between departments to ensure consistency and potential integration across site.
2. Individual positions against the “KAIZEN line” for reference to a strategic level.

For example, the role of the Manager varies from Cheese @ 2.51 to Powder 1&2 @ 1.68, which means that the management role in Cheese is closer to a “monitoring” role while Powder 1&2 is more “supervisory”. These differences could be explained by individual differences such as the age and size of the department (see above). However, detailed differences could be traced through a comparison of departmental matrixes to identify exactly where the differences are.

Reference to the KAIZEN line provides an indication of how individual departments, and the organisation as a whole, can become more proactive (see Fig 3.16). For example, the KAIZEN line approximates the score of management at 2.75, which is close to “monitor” on the scale. This means that the role of the manager needs to be primarily coordinating, interpreting results, providing feedback and planning for the future. As can be seen from the Table of results, all departments are below this figure, which probably represents the reactive nature of the current organisation. However, it provides a yardstick to work towards and indicates to managers that maybe they could be delegating more of the “hands-on” operation so they could concentrate more on planning and organising.

### **2.11 The “Usefulness” of the System**

The ‘usefulness’ of such a system in terms of strategic planning and monitoring organisational performance is in its ability to track individual positions by the processes involved and to use the Job Model as a basis for assessing the skills needed to perform to the desired level. In other words, the Job Model is the foundation of HR systems such as Performance Evaluation, Training Needs Analysis, Recruitment and Selection, Succession Planning and Performance-Based Pay Incentives (see Fig 3.17).

The Job Model proved its usefulness at the company in its capacity to provide a basis for all the systems outlined above. While the systems design appeared to be functional, it seems that it will not be able to be utilised fully due to reasons that relate more to the process of implementation, rather than the design of the system. This will be explored further in section 4 of the thesis.



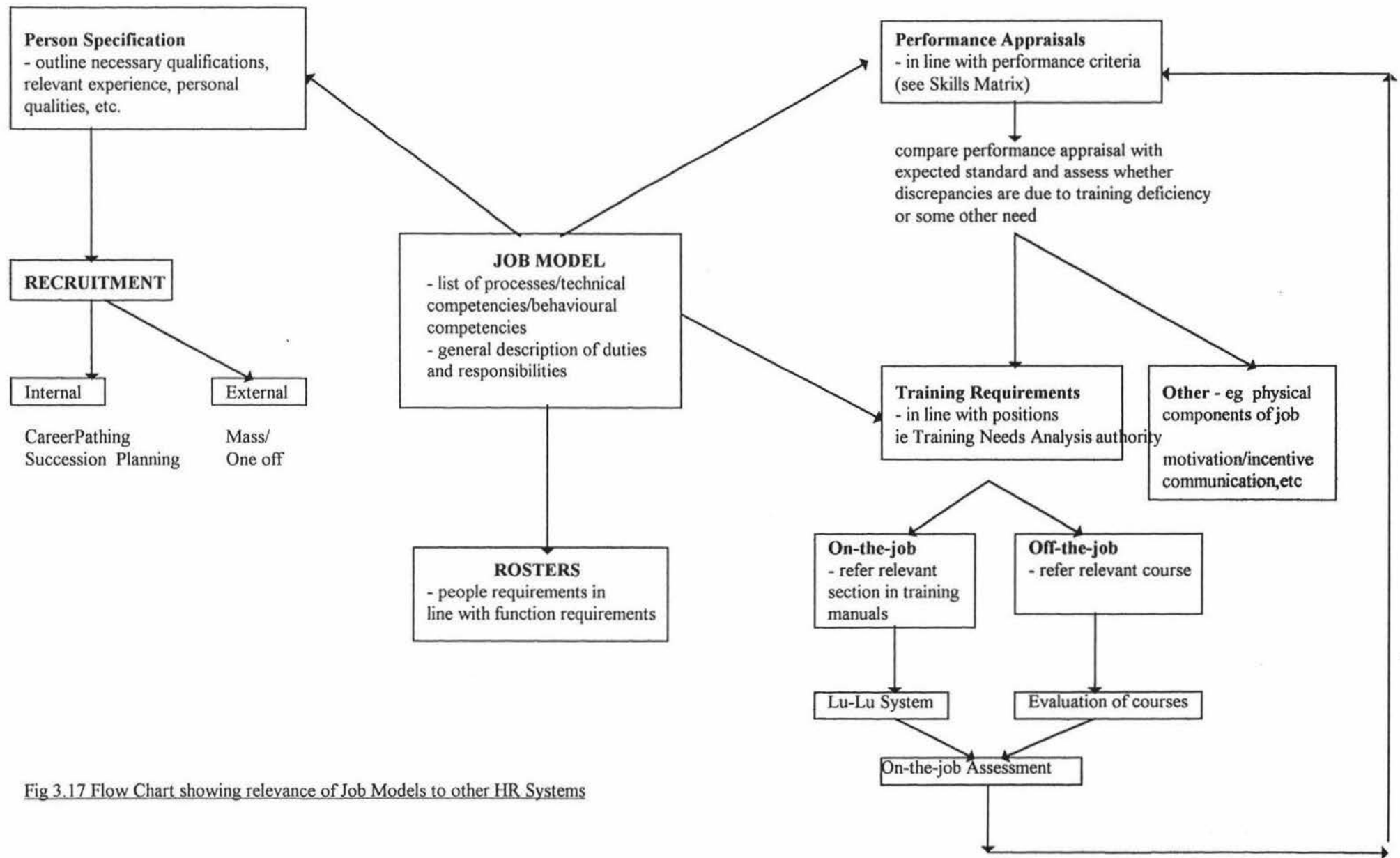


Fig 3.17 Flow Chart showing relevance of Job Models to other HR Systems

### 3.12 Summary

In this case, individual Job Models were developed by their respective Management Teams to create comprehensive Job Descriptions (see Appendix 5.) which were then used as the basis for Individual Contracts. As a result of the consultative process, individuals had a greater understanding of the expectations associated with the Management Teams and there was sitewide acceptance, in principle, of a move toward Performance-Based Individual Contracts.

The most relevant measure of the success of this exercise was the fact that there was no resistance from the union and acceptance was voluntary. This is in contrast with previous attempts to introduce major changes to HR systems such as the introduction of individual contracts and performance-based pay, where the union opposed any initiatives which might change the power of collective bargaining. However, individuals were still sceptical of the motives of the Company, which is what senior management deemed as “the culture preventing the change”.

However, if this statement were correct, it would follow that “the culture” would not have allowed a shift to management teams and individual contracts. The following section will argue that it is not “the culture” which shapes the organisation, rather there is a circular relationship between culture and the organisation. In other words, the culture within the organisation is shaped by systems and behaviours within the organisation, which in turn creates an organisational culture which reflects its environment.

## **SECTION 4.**

### **CASE STUDY: Organisational/Systems Analysis**

## 4.0 Introduction

The success of the Job Modelling and introduction of process-oriented management will be affected by organisational systems. In this section we will review key systems. Using Lewin's framework, this is the evaluating learning and specifying learning phase.

Throughout the action-taking phase of any action research, data is produced that provides opportunity for specific learning. Data took the form of opinions expressed by managers in the organisation regarding the job modelling system and its implementation.

This data emphasised that the major difficulties experienced by managers, and therefore the greatest opportunities for learning related to implementation issues. In particular, these emphasised the need for a holistic approach to process-oriented management, incorporating strategic direction, organisational systems and management philosophy. In this section major areas of specific learning are examined in relation to HR theory.

### 4.1 The Function of HR Systems

The organisation had no formalised site-wide system in place to monitor performance, determine training needs or determine future staffing requirements unless departments initiated programmes independently. The strategic direction had not been operationalised into a plan indicating specific requirements, as key decision makers believed that such an exercise was either not possible or a waste of time.

For example, when the team leader of the Organisational Development Team (ODT) was asked to clarify the strategic direction for the development process, she said: "...this Company is changing so quickly that we need to learn to manage by the seat of our pants... the changes set the Strategic Direction, we can't". Similarly, when the CEO was asked the same question, he replied "...by the time we formalise a strategic direction it's usually out of date and needs changing anyway".

Consequently developmental decisions were potentially based on criteria that changed depending on individual management beliefs and the resources available at the time. In addition to this, the ODT claimed that such a structured approach did not allow individuals enough “autonomy” over their own development.

For example, the researcher worked with each of the individual managers to determine an approximation of training needs for positions within their departments for the 1996 training period. Training files were updated and reformatted to provide individuals and management teams with an overview of skills needed for positions. Every individual within the seven departments was interviewed by either the researcher or their manager, to establish lists of training requirements for departments. However, the leader of the ODT decided this system did not allow individuals enough choice over the training they received. Subsequently she produced a form listing all the training courses available, which went out to all employees indicating that they were free to do any training they wanted.

Although Production Managers protested that such a system gave them no control over budgetary restraints and it made coordination of the winter maintenance program and holiday scheduling impossible, their requests were ignored and the “self assessment” of training needs went ahead. The training for that year was considered highly successful as the company had a record attendance, however the relevance of the training or the impact this had on departmental budgets was apparently not considered.

The training needs of an organisation need to be assessed in relation to the organisation’s strategic direction to determine a clear direction for the training itself (Cooper, 1995). Otherwise, training expenditure can easily accelerate uncontrollably or become a forgotten entity. Training needs should be assessed on an objective basis, as what an individual wants in the way of training is not necessarily what is needed organisationally. In other words, the training investment needs to be assigned within a strategic context.

Organisations have the responsibility to train in relation to:

- organisational systems, policies and procedures
- skills required for the position
- maintenance of “technical currency” of staff
- “up-skilling” for those promoted to new positions
- providing a “bank” of trained personnel to fill positions should they become vacant
- provision for individuals to initiate qualifications necessary to further their own career within the organisation.

(Cooper, 1995)

To utilise training dollars and resources most effectively, one must first determine exactly the location, scope and magnitude of the training needed (Moore and Dutton, 1978). An organisation needs to adopt a systematic, objective determination of training needs. Kinzie (1990) noted that significant questions have emerged about the capability of individuals to manage their own learning in an effective way. Liking does not necessarily imply learning.

In this case, it appeared that the ODT believed that if the organisation gave employees what they wanted, their satisfaction would increase which would lead to improved performance. The Job Modelling approach is based on the assumption that training should be used to develop workers’ competence; that this will lead to improved performance, and in turn to increased satisfaction.

Which of these models does the research support?

Organisational researchers have been investigating the relationship between job satisfaction and job performance for decades. For the most part, they have been unsuccessful in finding strong or consistent correlations between the two (Brayfield and Crockett, 1955; Vroom, 1964; cited in Fisher, 1980). Early Human Relations theorists tended to believe that more satisfied workers were more productive (cf Roetlisberger and Dickson, 1939). However, recent theoretical (Fisher, 1980), empirical and

correlational evidence (Vroom, 1964) discredits the 'satisfaction causes performance' view. In fact, the expectancy theory provided a theoretical basis for the opposite belief, that high job performance can lead to high job satisfaction under the appropriate conditions (Lawler, 1971; Locke, 1976).

Locke (1976) defined job satisfaction as an emotional response to a set of value judgements that we make about our job. In this sense an emotional response is determined by how satisfied/dissatisfied a person is based on the concept of a discrepancy between what you want from a job, what you believe your job is offering you and how important what you want from your job is to you. Petty et. al. (1984) emphasises that even though satisfaction does not necessarily lead to higher performance, dissatisfaction could result in lower performance. It is usually hypothesised that dissatisfied workers are most likely to leave an organisation, as a way of reducing their dissatisfaction (Locke, 1975, 1976).

Fisher (1980) attempts to explain why expecting job satisfaction to correlate with performance is somewhat dubious. He says that although general attitudes do seem to have some predictive power, they can only be counted on when the criterion is 'general behaviour' rather than specific, single-act criterion like a measure of job performance. "To predict job performance, one should have greater success using a more specific measure of attitude, such as satisfaction with job facets that seem to be relevant in a particular situation, or better yet, attitude toward the act of performing well on the job" (p.611).

Work is a central human activity not only in terms of the total amount of time spent in it, but also in its relation to social and personal identity (Deetz, 1990). Deci and Ryan (1985; cited in Locke and Latham, 1990) argued that intrinsic motivation is based on a need for self determination (choice) and competence. Accordingly, intrinsic motivation is maximised when an individual is free from external constraints and from internal doubts and compulsions, feels a strong internal locus of causality, undertakes challenging tasks, and receives positive but non-controlling feedback regarding performance. From a motivational standpoint, Ryan (1970) believes that an

individual's actions in a specific situation needs to be evaluated in the context of what that person is trying to do in that situation, as people differ greatly in their ability, their knowledge and the strategies they use to perform tasks. Consequently, one of the main reasons people perform differently is because they have different goals (Locke and Latham, 1990). Smith (1992) describes a Training Needs Analysis as the process by which the instructional needs of the organisation are identified and interpreted prior to the preparation of a training plan. Training is regarded as the "fuel to sustain competitive advantage" (Bogan and English, 1984; cited in Gray, 1996).

What appeared to happen in this scenario was that, in an attempt to "empower" individuals, the company effectively "disempowered" its management. This resulted in demotivation managers and sent a message to management teams that they did not have full control over their performance as someone above them was making up the rules.

## **4.2 Motivation**

In an attempt to motivate employees the company introduced a performance-based bonus system for its salaried staff. The system was such that at the beginning of the season, performance objectives were set by the individual and signed off by senior management. The individual was then expected to forfeit 10 per cent of the total salary, which would be reimbursed at the end of the season if all performance objectives were met. As a performance incentive, an additional 10 per cent bonus was achievable if performance exceeded the original performance objectives.

At the end of the first season, senior management realised that bonus payments were likely to be greater than anticipated and decided that original objectives had been set too low. Senior managers decided unilaterally to reduce bonus payments. It was assumed that to change objectives retrospectively would be acceptable.

Production manager's stated that they felt senior management had reneged on the original agreement and that they had been effectively demotivated in terms of achieving at that level again. As well, their dissatisfaction was communicated to lower levels



within their own departments. Supervisors stated the belief that the system was a sham and that the company could not be trusted, indicating that production managers had passed on their opinion. One manager left the organisation soon after this, citing the Performance-Bonus system as one of his main reasons for leaving. Ironically, a system designed to be a primary motivator to improve performance, ended being a main source of contention and dissatisfaction for the people it was supposed to work for.

Contributing to the systems failure was the subjective way the original objectives were set, based on manager's "best guesses". A better outcome could have been achieved by having performance measured objectively within a framework of a formalised strategic direction. Alternatively, original objectives could have been honoured and adjusted the following season. A third option would have been to take a partnership-based approach, with production managers and senior managers working together to find a solution suitable to both parties.

Motivation, capability and communication, in turn, are not produced by a single design feature, rather, it is through a complex set of interrelated conditions and systems which allow for the development and monitoring of performance for the present and future operation. Increasingly, management commentators are advocating more partnership approaches which emphasise systems interrelated with all aspects of the organisation, rather than specifying individual features (Block, 1993).

*"The challenge of new organisational arrangements centres on the successful management of change from a system based on a detailed division of labour, where employees are closely observed and directed by supervisors and an adversarial and combative system of employee relations is the norm, to one where individual tasks are being replaced by group activities and where employees are taking on control responsibility previously carried out by higher ranking personnel and a more harmonious system of employee relations is being encouraged through participative management" (Dawson, 1995, p. 48).*

### 4.3 The Introduction of new technology

The Company has had to expand at an extraordinary rate in order to maximise its advantage of economies of scale. The last two decades has been comprised of a series of mergers with smaller companies throughout the region. The company has developed as the volume of throughput has increased and the technology which can handle the volumes has changed. Consequently, in order to keep up with the changes, decisions about internal development have been based on speed of delivery and implementation, as lost time equals lost production and lost production equals lost profit.

As a result, the company has adopted a “consultant” approach to development, whereby “experts” are brought in to recommend what equipment is best to handle the required production. Installation is commissioned out and often it is not until that stage that workers are given the opportunity to see how the equipment operates. Consequently, workers had been allowed no input prior to actual operation which meant that equipment development decisions have been made independently, rather than an integrated approach to consider other equipment and systems already in operation.

In addition to this, training time was often not allocated due to budgetary constraints imposed from outside departments, or training time only concentrated within the “off season”. For example, a Supervisor was asked “what is the standard procedure for the introduction of new equipment in the plant?”. He replied “...sometimes we’re not even given the service manuals... what we do is wait til the off season, then we pull it apart and try and work out how it operates... we just hope nothing goes wrong until then!”.

This reflects a reactive approach to management and a lack of a planned and integrated strategic direction. Development decisions need to be made in relation to existing systems and technology. It is unfair to assume workers will be responsible for the operation if they have been given no guidance, training or opportunity for input during the development phase.

The introduction of new technology tends to disrupt functional and hierarchical organisational structure, change the nature of specific jobs, and dislocate people from prior jobs to enable advantages in production flexibility and quality control. The installation of these technologies constitutes a major technical and social innovation. Hazlehurst et. al. (1969) concluded that future operators will have less need to manipulate the work, exhibit motor dexterity, or work fast, while at the same time they will be asked to exhibit considerable cognitive skill and judgement "...in order to effectively perform monitoring tasks, the worker will have to have an extensively expanded knowledge of underlying principles and processes" (p. 79).

From a socio-technical perspective, an organisation consists of structural and process characteristics, as well as social and personal characteristics "...inextricably bound to form a system" (Landy, 1989). *"Sociotechnical organisational theory emphasises the relationship between individuals and technology, rather than individuals independent of those technologies or individuals with respect to tasks or machines. From a contingency perspective the sociotechnical approach implies an attempt to find the best match between social systems and technical systems rather than exaggerate the importance of one at the expense of the other"* (p. 569.).

#### **4.4 The Need for Participative Management.**

Production Managers regularly expressed feelings of inadequacy over controlling their own performance levels. They believed that restrictions such as not having charge of training within their departments, staffing numbers and control over capital expenditure for maintenance and improvement projects was inhibiting their ability to achieve, and this lack of autonomy was causing them great stress.

For example, Production Managers were not "allowed" to approve capital expenditure over \$500. Rather, company policy dictated that for any amount needed over \$500 a quote be attained by the department, this was then sent to the sit manufacturing team (SMT) for their approval, who then sent it to senior management for their approval. If all approval was gained, the Manager could then complete the purchase. However,

approval was not automatic. Often the quote and proposal was sent back to the department for changes to the original proposal or to seek cheaper quotes. Apparently, it was not uncommon for the proposal to be returned 3 or 4 times, by which time the problem had often become worse and/or the motivation to make the improvement had been lost.

One Supervisor was asked how this process affected his job. He replied "I'll give you an example, see this packing line...on the first stage the bag has to go through a guider to take it to the next phase to get filled, then it gets weighed...eventually the bag is sealed and loaded on trays... Well, that guider never used to be there. What was happening was the bag was often missing the slot and bags of powder were falling off the line. It got so bad that we had to employ someone fulltime just to make sure the bag went into the slot. I knew what was needed, but do you think I could get that damn guider made?...Honestly, I wanted to nail one of those Senior Managers against the wall just so they could see for themselves... God we were losing on lost product, at least one job just watching to stop it happening, and me...I was stressed out...I couldn't get to meetings and I was always getting in trouble for missing bloody meetings!...It took them over 3 months before someone come down and had a look".

Decision-making within the organisation was centralised at the point of senior management. This was preventing individuals within departments to make maintenance decisions as they were needed and to maximise the gains from improvement opportunities as they arose. The lack of autonomy over capital expenditure decisions was creating stress, as potential productivity gains were being restricted by decisions made outside the department which inadvertently inhibited the individual or team's performance. According to Jac Fitz-enz (1995) a manager's performance is measured by the results of the department. The results are a reflection of the manager's ability to direct human, financial and technological resources to achieve departmental objectives.

Pojidaeff (1995) highlights the need for adopting participative approaches to change and warns that there is a need for more control over decision-making if the change is to be perceived as real rather than cosmetic.

*"Many organisations recognise the need for change, but are reluctant and afraid to implement the core principles and provide a truly participative work environment. As a result, they do not engage the whole organisation in the change process - the process is still being managed and controlled at the top. Only when everyone is deeply engaged in and responsible for change is it going to be successful. Pretence of total participation throughout the organisation only results in cynicism, poor motivation and decreased productivity" (Pojidaeff, 1995, p. 46).*

Benefits of employee involvement include: increased job satisfaction for employees and increased commitment to the organisation; greater success in managing change; more effective use of tacit knowledge; lower turnover and absenteeism and in some cases, significantly improved productivity (Anonymous, 1995). The basic concept is that people who are closest to the work are more likely to know the most about solving problems in their area (Broadwell, 1995). An additional benefit is that people become more motivated when they have control over their own performance. The group process may also be important in gaining commitment to and acceptance of decisions among individuals who ultimately will be responsible for implementing such decisions (Mason and Mirtroff, 1981). Lewin (1951) argued that when there are reasons to suspect that goal commitment may not be high, a goal is more likely to be accepted when people have a voice in setting it rather than having it assigned to them. According to Sashkin (1984), non-participation may be psychologically and physiologically damaging, and because participation may increase productivity, or at a minimum, not decrease it, therefore participation should be an ethical imperative.

Mitchell (1982) summarise the positive and negative aspects of group decision making. They describe the assets of participation to include a greater accumulation of knowledge, an ability to gain a broader perspective of the issues, a higher degree of satisfaction with the decision and it can be used as an important communication and

political device. However, the downside or liabilities associated with group decision making include the speed of the process is reduced, the decision often results in compromises and it can limit the management's ability to act quickly and decisively if necessary.

Wall and Lischeron (1977) describe participation as consisting of three interrelated elements: (1) the types and levels of interaction that take place between the people participating (2) the flows of information that take place between parties and (3) the nature and extent of the influence of one party on another over the decisions being taken. Gowler and Legge (1978, cited in Hornby and Clegg, 1992) emphasise that organisational design can have a powerful influence on the way in which key actors perceive and interpret their own and others' roles in the participative process. In other words, the form in which participation takes place is strongly influenced by the organisational context within which it is undertaken.

Vertical conflicts in an organisation (ie conflicts among parties to an authority relation) usually arise because superiors attempt to control the behaviour of subordinates, and subordinates resist such control (Pondy, 1967). A typical bureaucratic reaction to subordinate resistance is the substitution of impersonal rules for personal control. Many factors influence goals and values along the vertical dimension of an organisation, therefore, because subordinates feel they cannot rely on superiors to identify with their goals, autonomy becomes important. In essence, an individual's mistrust of the organisation creates a culture which requires more autonomy (ie participation) while on an organisational level, the need to implement "strategy" leads to a more autocratic style of management which is perceived as a reduction of autonomy (Pondy, 1967). Hence the dissonance creates conflict.

Power plays a major part in the interactions occurring in organisational life (Pfeiffer, 1981). The key role of today's "leaders" differs from traditional roles in that the main functions are in monitoring and facilitating the team in performing its own regulation. However, although Tannenbaum (1968) found that power in organisations is not finite but can expand, there remains a widespread belief that to empower others is to lose



power oneself. Part of management's claim to authority has been linked historically to its ability to monopolise access to information (Harrison, 1992). This has been described by Hollander and Offerman (1990) as one of the main causes for resistance by management in using more participative techniques when initiating a change.

The desired restoration of 'mental sets' and the associated reshaping of behavioural patterns is indicative of a major cultural change (Storey and Sisson, 1993). Such a change has its foundation in concepts of 'vision', 'mission', 'values', 'customer orientation', and quality. This presents a cohesive philosophy and a sense of direction, by expressing core values and provides a yardstick against which to measure behaviour and performance (Connock, 1991). However, a 'market orientation' forced on an inflexible organisation and an uncommitted or fearful workforce is unlikely to produce the intended cultural and behavioural changes (Storey and Sisson, 1993). The production of mission, vision and value statements can subsequently be viewed cynically as yet another way to control.

Authority is undergoing a challenge. As society, technology and organisational structures adapt to the changes needed to maintain competitive advantage, changing patterns of management are often described as a "loss" or "erosion of authority" (Heller, 1985). Viewing loss of authority from a perspective of cultural change, however, provides an alternative and possibly less threatening view. It sets the change required within a longer term focus, "into the context of a revitalization process characterised by successive stages of loss and substitution" (Heller, 1985, p. 491).

A company is not a machine, but a living organism (Nonaka, 1991). "Much like an individual, it can have a collective sense of identity and fundamental purpose" (p.72). People are resources that need to be developed and trusted; they are not just variable costs that need to be controlled. When employees care and have the resources/skills they need to get their jobs done a large part of the fixed overhead allocated to supervision is no longer required and the functions of management shift (Sherwood, 1988). This in itself could lead to a source of competitive advantage, as the number of levels required in the hierarchy may be less, but it could also create a sense of insecurity

throughout management who in turn could react defensively to the change process in an effort to protect their own positions, thus the potential for senior management to sabotage their own change initiatives exists.

*"The dispersal of power and the spread of participation could set off amplifying feedback loops in which declining central power leads to greater rivalry throughout the organisation, or to passive loyalty, both of which will block the creativity that the Organisational Development programme is supposed to unleash" (Stacey, 1993, p. 191)*

Wallace (1961) asserts that what leads a revitalisation movement is a vision of a 'goal culture', an ideal that is compared with unsatisfactory features of the existing culture. However, the main problem for organisations is the "ownership" of the vision.

*"Ownership resides with those who craft and create a vision. A statement created for a team to endorse is not owned by the team (or the rest of the organisation). Notice too that the vision here is used to define a culture or a set of values to be lived. A vision created for others to live out is patriarchy in action. There is no ownership in endorsement or enrollment.*

*The belief that crafting the vision is primarily a leadership-at-the-top function defeats, right at the beginning, the intent of driving ownership and responsibility toward those close to the work... as soon as top management creates a vision statement for the rest of the organisation to embrace, the parenting relationship has begun again, only this time cloaked in the robe of partnership" (Block, 1993, p.191).*



## **SECTION 5.**

### **CONCLUSIONS AND FUTURE RESEARCH**

## 5.0 Conclusion

The organisation within the Case Study insisted that they truly desired a more participative workplace and had supposedly adopted such a strategy. However, by leaving the same structures and systems in place continued to support extrinsic control. For a truly participative workplace to survive, strategy, structure and all systems must be supportive of intrinsic motivation (Pojidaeff, 1995).

To empower employees, is more than just formally subscribing authority and control; an organisation needs to manage the new autonomy. Human Resource Management is not purely about making up the rules for everyone to follow, it is about enabling people to take on additional responsibility, to set performance goals and to monitor their own performance.

*"Just as the engineering department is concerned with the design of equipment, the maintenance department is concerned with the running of the equipment and the manufacturing people are concerned with turning out quality products, at the least, the Human Resource department should be concerned with job behavioural analysis. That is, the Human Resource department should be concerned with what it is that the people in the engineering, maintenance and manufacturing departments must do (behaviours) to be proficient in their respective functions" (Latham, 1984, p. 100)*

Organisations today face multiple environmental forces affecting their survival, growth and success (Lippitt, 1982). We need to see an organisation as a social, technological, economic and human system within which organisational development processes can direct organisational renewal through purposeful and planned change. Organisations do not need to simply react to their environments as a ship might to waves (Trompenaars, 1994). They can actively select, interpret, choose and create their environments much like sailors on a ship might choose the destination, set the sails and use the forces of its environment to aid its journey.

Organisational culture appears to be central to the success of actions taken in the company studied in this research. Throughout the period of the research, when

difficulties arose in implementation of the Job Modelling process or work processes related to it, senior managers would often explain the difficulty as the organisation's "culture" being resistant to change.

What is culture?

Culture has been described as "a pattern of basic assumptions used by a group in resolving problems and taught to new members as the correct way to think, feel and perceive in relation to those problems" (Schein, 1990, cited in Ramsey and Ramsey, 1996, p.1).

Fombrun, Tichy and Devanna (1984) define organisational culture as the "emergent pattern of beliefs, behaviours and interaction that uniquely characterize the organisation as it operates within an industrial and social context" (p. 203). The nature of an organisation's culture can be analysed by studying the stories people in the organisation tell (Stacey, 1993).

*"Culture comes in layers, like an onion. To understand it you have to peel it layer by layer. On the outer layer are the products of culture... expressions of deeper values and norms are deeper within the onion and are more difficult to identify... What is taken for granted, unquestioned reality is the core of the onion" (Trompenaars, 1994, p. 8).*

Culture has been perceived to offer the key to competitive advantage by unlocking consensus, flexibility and commitment (Storey and Sisson, 1993). However, organisational culture reflects the belief systems within the organisation itself, it doesn't just happen. Edgar Shein (1984) describes culture as the "pattern of basic assumptions that a given group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration" (p. 180). For example, if people are told that their input is valued, but their requests for change of procedures or policies are met with ridicule, or worse, changes to their working conditions, people will be forced to decline future input and review their belief system of the organisation itself. "Loose, dispersed organisations depend on people liking and trusting each other.

A culture of excitement, of question and experiment, of exploration and adventure cannot survive under a reign of fear” (Strange, 1993, p. 151).

Comments by managers that the existing culture created problems indicated that they perceived a need for new patterns of belief, behaviours, interactions and assumptions. The comments, though, also give rise to a problem.

The problem with using culture as a reason for things going wrong, lies in the level of abstraction involved. Chris Argyris (1990) cites use of high level abstraction as a defensive routine that enables people to avoid embarrassment and threat. Saying “the culture is to blame” is a broad enough abstraction or generalisation to make it difficult for others to disagree with the diagnosis. It is also non-specific, so that no individuals can be held accountable for their part in any failure. In this way, diagnosing a failure as a “culture problem” gives people a sense of having identified something of significance, while not increasing the organisation’s capacity to achieve better results.

Rather than speaking at this high level of abstraction, there is great value in specifying the patterns of decision making that need to be changed. In the previous section we identified a number of these cultural patterns. They were:

Taking actions on different systems within the HR function without these being coordinated through reference to the organisation’s strategic direction.

Making unilateral decisions on HR systems, such as the performance-bonus system, while assuming that people’s responses will not affect the quality of the decision.

Introducing new technologies without making corresponding adjustments to social or HR systems, such as training.

Restricting manager’s autonomy while holding them responsible for achieving challenging goals.

From this study we can conclude that changes to the way organisations manage the work of people within them require managers involved to examine and sometimes modify the way in which they make decisions. The need for modification of patterns of decision making is typically signalled by difficulties experienced by people within the organisation, and these difficulties frequently occur between levels in the organisation.

### **5.1 Implications for Future Research**

Implications from the present study fall into two main categories; operationalising the KAIZEN Model to create Job Models for process management and the need for a holistic approach for the implementation of change.

The use of action research methods provided a framework linking diagnosis with action. The main advantage of this technique was its ability to generate learning opportunities for the organisation as a whole. Combining qualitative analysis with Job Models provided a method of “quantifying a philosophy”. Continual improvement through KAIZEN is described by Masaaki Imai as the secret to Japan’s economic success. Operationalising the KAIZEN concept provided a model to gauge levels of accountabilities throughout the process.

The present study revealed a number of further opportunities for research:

1. The present study focused primarily on one company. Research to test generalizability within the Dairy Industry is needed.
2. Developing contracts of accountabilities suggests Job Modelling has application to other Industrial processes. Future research adopting other processes would help validate the system.
3. Implementation gives the opportunity to develop ideas of partnership.
4. The action research technique was a effective tool in the management of change. Practice in this form of methodology would highlight further application of theoretical concepts.

5. A scale of 1-3 was used in the present study to operationalise the KAIZEN Model. Future research needs to incorporate test reliability using the same, and different scales to determine levels of functional responsibilities.
6. The Job Model has been described as the basis of other HR systems due to a systematic approach to Job Analysis. Further development is needed to formalise the link between Job Models and training needs analysis, recruitment and selection and performance incentive systems.

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## **APPENDIX 1.**

### **Example of Departmental Analysis.**

## **Department: WPC**

This report describes: Current Organisation of Work  
Work-stations within the department  
Nature of work in stations

## **Organisation of Work**

- The Control Room consists of 7 Work Stations, including a General Hand. The Whey room is separate with 1 operator. One Supervisor per shift, co-ordinates the operation.
- The organisation of work centres on the operation of the plant. Each work station monitors, maintains and coordinates several plants, silos and lines (see following sections for details).
- The centralised control room ensures continual operation through planning and communication between operators of different plants (Lactic UF, Low Fat, Alamin Plant, Evaporator and Drier)
- Current bottlenecks have been identified as:
  - Managerial Functions such as:
    - Training
    - Budgeting
    - Capital work
    - Health and Safety
    - Future Planning
    - Production Overview ie monitoring quality and yields
    - Completion of non- conformances from audits and HACCPs
    - Evaluating KPIs
    - Monitoring PA tonnages and spec changes
    - Review and process testing results
    - WPNZ liason
    - etc.

Packing Line Supervisory Functions as detailed in following section

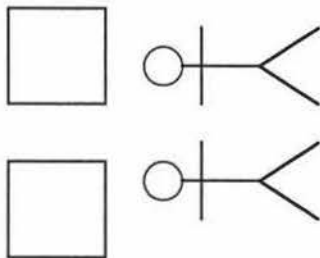
- Current Staff Levels
  - 4 X 8 Operators (including General Hand)
  - 4 X L8 Supervisor
  - 1 X L7 Operator Packing Room
  - 5 X Packing Staff
  - 1X Manager



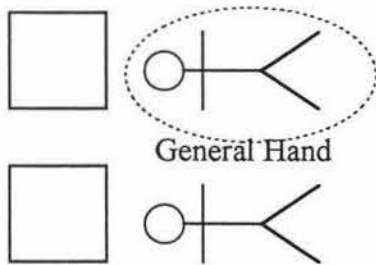
# WORK STATIONS

|

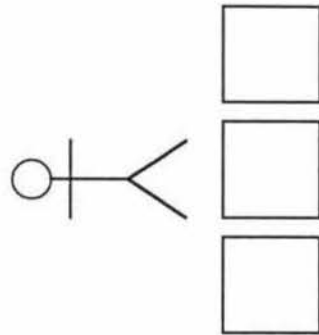
EVAPORATOR & DRIER  
& BLENDER



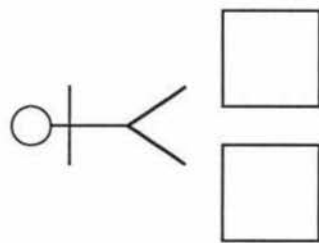
ALAMIN PLANT (Wet and Dry)



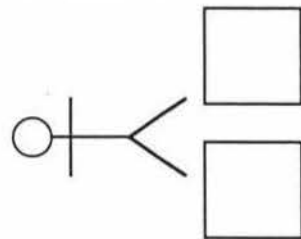
CHEESE UF & RO



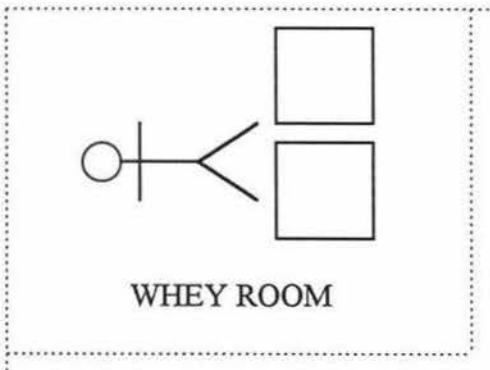
LOW FAT



LACTIC UF



SUPERVISOR



WHEY ROOM

**NATURE OF WORK . General description of duties operating plants - Lactic UF, Low Fat, Alamin, Evaporator & Drier)**

Hands-on at screen	Monitoring & Recording	Outside Control Room
<u>Start-up</u> - startup - sanitiser UF silos - prestart checks on screen - selection of silos  45min - 1 hour	<u>Records</u> - total solids - operational parameters solids, pressures, temps - run numbers - batch numbers - start times - sign-off checks - set up samples - whey time	<u>Pre-start checks</u> (approx 20 min) - shut silos - check seals for leaks <u>Samples</u> (approx 30 min) - sanitiser solution - pH - staggered (every 10 min, take samples)
<u>Operation</u> - CIP of silos every 6 hrs - CIP of whey lines, mid run.  16 - 18 hrs	<u>Log sheets</u> - every hour - log micro samples (beginning, mid and end) * Process Control Charts	<u>Micro samples</u> (beginning, mid, end) - every 6 hrs (approx 5 min) <u>Samples</u> - sanitiser solution - pH - staggered (every 10 min take samples)
<u>Shut Down</u> - select up whey lines - automatic  (approx 45 min each time)	<u>Record</u> - total volumes - stop time - total run time - total permeate & retentate <u>Log</u> - samples	<u>Turn off Peroxide Pumps</u>
<u>CIP</u> - make selections - decide level of CIP short/long - select lines  (approx 2 - 3 hrs each time)	<u>Monitor CIP</u> - temperature - chemical strength	<u>Manually dose all chemicals</u> - caustic - ultra clean - hypo - acid Sample all chemical doses - titrate - check pH Micro samples of lines
<u>Other</u> - Flux - Promix (job numbers and assist where necessary)	<u>Monitor and log</u> - flux - check flow rate	<u>Misc</u> - check filters - hose down plant floor - flux - organise appropriate people to fix faults

## General Hand

While on Production

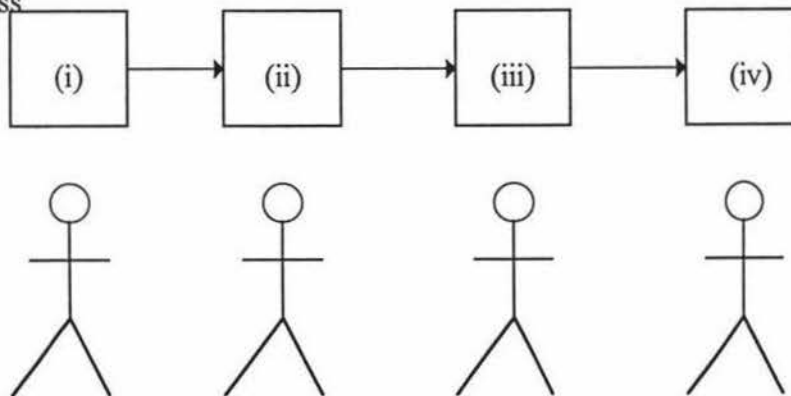
- take pH readings every hour
- empty presses
- check hopper
- get samples from drier
- hose down spilt product
- ensure silos closed properly
- keep eye on clarifiers

While not on Production

- foaming
- general cleaning up

## Packing Staff

Process



(I) Watching

- bulkfill
- bagfill
- bag presenter
- top up scales

(ii) Check

- weight scales
- printer
- sampling
- writing weights
- troubleshooting

(iii) & (iv)

- Handstacking
- Labelling Bags
- Forklift to wrapper - manually
- Barcoding
- Stacking palletiser

### Problems identified by Supervisor

Position is hands on operator as well as supervisor

- no time to train
- no flexibility
- introduced technology eg barcoding, no time to train
- can't attend meetings
- communication of change of spec often confused

### Staffing Issues

- high turnover due to
  - job repetition
  - no appreciation of entire job
  - no scope for training
  - low levels of job satisfaction
- refusal to come back on call

### Suggested Improvements

- Automate process (I) and (ii) to free up supervisor
- Replace handstacking with pelletiser
- Automate label process
- Train staff in barcoding procedures

## POINTS FOR DISCUSSION

Description of duties for operators include operation of one plant at a time - Operators are coordinating up to 5 plants at a time

Possible misperception of Operators doing nothing as plant stand-by means basically responsible for plant for the whole shift and breaks are taken in Control Room.

Operators are currently monitoring process

- need to check how much time logging results
- appear not to “trust” plant reliability
- could be training issue
  - process control
  - interaction with PRTs
- could be other ways to reorganise work

Two points of flexibility

- General Hand could be incorporated in Operators Team
- Lead Operator take over from Supervisor
- Supervisor freed to do managerial duties and still be available on call if needed.

## **APPENDIX 2.**

### **Developed Dairy Industry Skills Matrix.**

# DAIRY INDUSTRY SKILLS MATRIX

FOR THE PURPOSE OF DEVELOPING JOB MODELS  
THIS VERSION DOES NOT INCLUDE  
PERFORMANCE CRITERIA

## DEFINITION OF TERMS (IN TERMS OF THEIR USE IN THIS MATRIX)

### **Skill**

A skill is the ability to do, to make, or to perform competently in a given setting. In the skills matrix, skills are expressed in terms of elements. An example from the matrix is "Comply with critical hygiene requirements".

It should be noted that skill is more than knowledge. Skill is the application of knowledge and personal, physical and mental characteristics for competent performance.

### **Skills Matrix**

A skills matrix is a grouping of skill units into horizontal and vertical groupings. For example, the dairy industry skills matrix has 22 main sections, each of which has several subsections, and several levels of difficulty.

### **Level of Difficulty**

Each section and subsection has one or more levels of difficulty. Each level is numbered in ascending order of difficulty.

### **Skill Unit**

Can also be called a "unit of competence". A skill unit is a grouping of one or more skill elements, that are of a similar level of difficulty. These elements are also grouped in such a way that if a person performs any one of them, they are likely to perform other elements in the unit. There are over 400 skill units in the skills matrix.

### **Skill Element**

A skill element is a key skill. Each skill unit comprises one or more skill elements.

### **Range statement**

A range statement is an explanatory statement which provides meaning and context. In the skills matrix, there are three types of range statements: The matrix range statement, unit range statements, and element range statements. Element range statements often provide examples of the types of activities covered by the element. Sometimes example conditions, situations, or other expressions are provided, depending on what is appropriate to the element.

### **Job Models**

A Job Model is a selection of skill units from the skills matrix which a person needs to be competent in to be able to perform that job competently. Skill units can be selected from anywhere in the skills matrix.



Finding your way around the matrix

<b>1</b>	<b>Generic Competencies</b>	<i>Section Number</i>
<b>1.1</b>	<b>Working Together</b>	<i>Subsection Name</i>
<b>Unit 1.1.1</b>	<b>Basic Competencies</b>	<i>Level</i>

This unit covers basic competencies gained prior to or during etc...

*Range Statement*

**Element 1 Work with others**

This element covers activities such as: recording numbers/words on log sheets, log books, forms, etc...

**Element 2 Record Information**

This element covers etc...

<b>Unit 1.1.2</b>	<b>Seeking &amp; providing information</b>	
	This unit covers exercises of initiative etc.	<i>Level..</i>

## 1.1 Working Together

### Unit 1.1.1 Basic Competencies

*This unit covers basic competencies gained prior to or during induction to a processing and/or packaging site in the dairy industry. Legislation, codes of practice, company standards and specifications relevant to this unit are those specified in relevant company, site, and departmental procedures, manuals, notices, and signs.*

#### Element 1 Work with others

*This element covers activities such as: working in a team; explaining what, or how to do something; questioning someone to find out facts; planning when you should do things; responding to an inquiry for information; finding out information by speaking to other people; exchanging information (liaise) with other people.*

#### Element 2 Record information

*This element covers activities such as: recording numbers/words on log sheets, log books, forms etc ; writing sentences on log sheets, log books, forms etc*

#### Element 3 Comply with critical hygiene requirements

*This element covers activities such as: personal hygiene, moving through red line areas, footbaths, changing into inside footwear/clothing, ensuring hair covered and overalls kept off the ground*

#### Element 4 Count, add and subtract numbers

#### Element 5 Follow safety and emergency procedures

*This element covers activities such as: following safety procedures (eg protective clothing, safety lockout procedures); following emergency procedures (eg fire & evacuation procedures); using emergency equipment (such as fire extinguishers); identifying obvious workplace hazards (eg slippery floors, loose safety guards, sharp edges on moving parts)*

### Unit 1.1.2 Seeking & providing information

*This unit covers exercise of initiative in the seeking and provision of written and verbal information for effective group and team work.*

#### Element 1 Seek & provide information

*This element covers activities such as: finding out the needs of customers, clients, colleagues; providing information to customers, clients, colleagues; presenting information at team meetings (eg shift change-overs, shift meetings, work-section meetings); questioning someone to find out the facts when someone is with-holding or is having difficulty expressing information*

#### Element 2 Write memos, letters or brief reports

*This covers written communications which involve more than simple recording of data or information. It does not cover the writing of a full formal report. Examples of such communications include requisition orders, work orders, speedimemos, job cards, breakdown reports, taking notes or minutes at a meeting*

### Unit 1.1.3 Facilitating & representing workgroups

*This unit covers facilitation of group and team work, and presentation and representation of information to work groups.*

#### Element 1 Facilitate a small group discussion

*This element covers activities such as: getting someone to agree to do something; resolving an issue with a difficult or complaining person; helping a group of people reach an agreed outcome; getting a group of people outside your work team to agree to do something*

#### Element 2 Present and represent information

*This element covers activities such as: representing your site/department/work group at a meeting; presenting feedback to site/department/work group*

### Unit 1.1.4 Formal meetings, reports & negotiation

*This unit covers formal aspects of group and team work.*

#### Element 1 Write formal reports

*This covers the writing of formal reports that require issues to be clearly identified and discussed; and conclusions which are supported with logic and reason*

#### Element 2 Negotiate with others

*This covers formal negotiation of work activities and objectives with others as part of group and team work*

#### Element 3 Chair meetings

*This covers routine and non-routine meetings held to deal with specific items (eg consultative committee meeting, health & safety committee meeting, production/service planning meeting)*

### Unit 1.1.5 Formal presentations

*This covers lectures or formal presentations which require advanced planning and in-depth preparation.*

#### Element 1 Conduct lectures and formal presentations

## 1.2 Safety

### Unit 1.2.1 First aid

*This unit covers provision of first aid to the level of St John Ambulance Association First Aid Certificate or equivalent. First aid is the first assistance or treatment given to a casualty before the arrival of a qualified expert or ambulance. First aid is administered to preserve life; prevent the injury or condition becoming worse; and to promote recovery.*

#### Element 1 Administer first aid

*This element covers activities such as: CPR, mouth-to-mouth resuscitation, chemicals, burns and scolds, shock, fractures, joint & muscle injuries, wounds and bleeding, unconsciousness, poisoning, frostbite & heat exhaustion*

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**Unit 1.2.2 Accident investigation and prevention**

*This unit covers investigation and prevention of accidents in the workplace. It also covers health and safety hazard identification and auditing in compliance with OH&S legislation and codes of practice, and company policies and procedures.*

**Element 1 Investigate accidents**

*This element covers activities such as: investigate accident & file report; recommend accident prevention measures*

**Element 2 Conduct safety audits and identify workplace health and safety hazards**

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**1.3 Maths and Statistics**

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**Unit 1.3.1 Basic maths**

*This unit covers basic calculations including volumes, areas, square roots, logs, averages and standard deviations.*

**Element 1 Perform basic calculations**

*This element covers activities such as: multiplication; division; calculation and interpretation of percentages*

**Element 2 Calculate volumes, areas, square roots & logs**

*This element covers activities such as: calculate and interpret square root; calculate area; calculate volume; calculate and interpret logarithms/exponents*

**Element 3 Calculate averages & standard deviations**

*This element covers activities such as: calculate and interpret average; calculate and interpret standard deviation*

**Element 4 Prepare graphs and charts**

*This element covers activities such as: prepare charts and graphs (eg run charts, histogram, pareto, pie charts)*

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**Unit 1.3.2 Simultaneous equations**

*This unit covers simultaneous equations, condensing calculations, significance testing and regression testing.*

**Element 1 Solve simple simultaneous equations**

*This element covers activities such as: solving simple simultaneous equations (eg mass balances with less than 3 streams, working out chemical amounts required to produce a specific chemical solution/reagent)*

**Element 2 Condense calculations**

*This element covers activities such as: condensing a series of calculations into one mathematical expression*

**Element 3 Calculate significance, normality, and probability**

*This element covers activities such as: calculate and interpret tests of significance (eg student t, chi square); calculate and interpret tests of normality; calculate and interpret probability*

**Element 4 Perform statistical regressions**

*This element covers activities such as: perform a regression to identify causal factors*

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**Unit 1.3.3 Complex simultaneous equations and Analysis of Variance****Element 1 Complex simultaneous equations**

*This element covers activities such as: solving complex simultaneous equations (eg mass balances with more than 3 streams)*

**Element 2 Analyse variance**

*This element covers activities such as: calculate and interpret one-way and two-way analysis of variance*

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**1.4 Planning and Organising**

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**Unit 1.4.1 Minor tasks and scheduling**

*This unit covers planning and/or scheduling of minor events (examples are: determining optimum daily running times (start/stop) in a multiple plant operation, determining daily milk/product quota intakes/despatches to/from a site or factory, determining daily materials requirements, determining daily work schedule for one or more people).*

*This unit also includes the monitoring of these events to ensure they happen as planned/scheduled.*

**Element 1 Plan and/or schedule minor activities**

*This element covers activities such as: arrange for a number of things to happen; plan who does what when; arrange for materials/resources as required; communicate with participants*

**Element 2 Implement and monitor progress of plan or schedule of minor activities**

*This element covers activities such as: implement plan/schedule; monitor progress against a plan; communicate with participants*

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**Unit 1.4.2 Medium projects and scheduling**

*This unit covers projects that involve two or more people and last for two or more weeks. It also covers the planning and/or scheduling of medium events (eg: establish and implement a work/shift roster covering a period of one or more weeks, establish and implement a holiday roster covering one or more weeks, establish and implement a plant/production schedule covering one or more weeks, establish and implement plant hygiene cleaning schedule covering one or more weeks, establish and implement a materials requirements schedule covering one or more weeks, determine milk/product quota intakes/despatches to/from a site or factory covering one or more weeks, establish and implement a maintenance schedule lasting one or more weeks, establish and implement a lab sampling and testing schedule lasting one or more weeks)*

*This unit also includes the monitoring of these events to ensure they happen as planned/scheduled.*

**Element 1 Plan and/or schedule medium projects/activities**

*This element covers activities such as: prepare a timetable for a project; prepare a schedule; estimate the time and resources required to complete a project; communicate with participants*

**Element 2 Implement and monitor progress of plan or schedule of medium activities**

*This element covers activities such as: implement plan/schedule; monitor progress against plan; communicate with participants*

**Unit 1.4.3 Major projects and scheduling**

*This unit covers planning of major events (eg: a plant refit) or scheduling a series of major activities over a period of one or more months (eg a factory production schedule of daily requirements of raw product, non-dairy ingredients, packaging materials, daily production tonnages, stores and despatches).*

*This unit also includes the monitoring of these events to ensure they happen as planned/scheduled.*

**Element 1 Plan and/or schedule major projects/activities**

*This element covers activities such as: conduct feasibility study; obtain/evaluate price tenders; prepare a project/activity budget; prepare schedule/critical path*

**Element 2 Implement and monitor progress of plan or schedule of major activities**

*This element covers activities such as: implement plan/schedule; monitor progress against plan; communicate with participants*

**Unit 1.4.4 Production Co-ordination**

*Production Co-ordination involves the planning, implementation and monitoring of production schedules that will meet customer and company expectations with regard to quality, quantity and efficiency of operation.*

**Element 1 External Liaison**

*Act as the first line of contact with all companies etc that have direct influence on the running of the process. This may include NZDB, WPNZ, NZDRI, MAF, TELARC etc.*

**Element 2 Internal Liaison**

*Act as the first line of contact with other departments within the company. This will cover issues such as lab grading, production scheduling, policy changes, SMT liaison etc.]*

**Element 3 Production Planning**

*Set up production plans to ensure that product manufacture will meet the requirements of existing and up coming PA's.*

**Element 4 Process Control**

*Monitor process variables to ensure that yields are being maximised and that production specifications are being met.*

**Element 5 Specification Control**

*Be involved in the setting and acceptance of the specifications for all product manufactured within the process.*

**Element 6 Performance Monitoring**

*Set departmental objectives that can be periodically assessed to determine the efficiency being achieved within the department.*

**Element 7 Quality Control**

*Take responsibility for instigating and monitoring systems that will ensure the quality/integrity of all product. This may include, but not be limited to HACCP systems, internal and external audits, lab reporting, non conformance issues and followup, tracebacks, etc.*

**Element 8 Other**

*Act as the first point of contact for all other issues that may affect production within the department. This may involve dealing with supply firms, arranging trials, etc.*

**1.5 Quality**

**Unit 1.5.1 Documenting procedures**

*This unit covers documentation of existing procedures. The unit does not cover the development of new procedures nor the improvement of existing procedures. However it does include handling of data and information associated with quality assurance systems such as QA documents, customer complaint forms, NCR reports, quality manuals, document audits and quality improvement data collection techniques.*

**Element 1 Document an existing procedure**

*This element covers activities such as: find out what actually goes on; prepare flow charts; describe procedure in steps; review with those who perform procedure; submit for approval*

**Element 2 Control information quality data**

*This element covers activities such as: Receiving, issuing and recording distribution of controlled documents (eg product specifications); Assemble/issue/retrieve production QA documents (eg log sheets); Receive and report customer complaints; collating, checking and filing Non Conformance Reports*

**Element 3 Audit single procedure or document**

*This element covers activities such as: verify a critical production operation; check that a production document is filled in correctly*

**Element 4 Identify opportunities to apply quality improvement techniques**

*This element covers activities such as: general observation of production operations and activities; reviewing production process performance; reviewing product/service quality results; consulting with others;*

**Element 5 Use quality improvement data collection techniques**

*Examples of quality improvement data collection techniques are: measles charts, check sheets, flow charts, distribution graphs, pareto charts, fishbone charts, run charts (control charts), CUSUM charts, mean and range charts, scatter charts, CEDAC).*

**Unit 1.5.2 Operating procedures**

*This unit covers development, implementation, standardisation of new or improved operating procedures, data analysis and review compliance auditing and quality improvement techniques.*

**Element 1 Develop operating procedures**

*Examples of operating procedures include procedures for starting up a plant, procedures for keeping track of product movement, procedures for attending a breakdown callout, procedures for ordering spare parts.*

**Element 2 Implement and standardise new or improved procedures****Element 3 Analyse/review quality data**

*This element covers activities such as: Collect and analyse customer complaints; Collect and analyse Non Conformance Reports; Collect and analyse production run data;*

*Analyse product/raw materials specifications; Conduct product quality failure traceback*

**Element 4 Conduct a compliance audit**

*Examples of compliance audits are audits of operational procedures, production/QA documents, and verification of corrective action implementation.*

**Element 5 Select quality improvement data collection methods**

*Examples of quality improvement data collection techniques are: measles charts, check sheets, flow charts, distribution graphs, pareto charts, fishbone charts, run charts (control charts), CUSUM charts, mean and range charts, scatter charts, CEDAC).*

**Element 6 Use quality improvement tools to determine problem cause and generate possible solutions****Unit 1.5.3 Quality Management Systems**

*This unit covers the selection of an appropriate quality system standard, and the implementation and maintenance of a quality management system to that standard. Examples of quality management standards are ISO series 9000, NZCP5, NZCLMP.*

**Element 1 Develop/maintain quality management system**

*This element covers activities such as: selecting standards; co-ordinating people setting up sub-system procedures; ensuring that systems are being implemented and audited; ensuring corrective action is being taken; reviewing quality system operation*

**Element 2 Assess, interpret, report and recommend action following a production run analysis or product failure traceback****Element 3 Prepare product/material specification**

*This element covers activities such as: Review customer requirements; Review plant/process capability; Draft specification; Review and finalise specification*

**Element 4 Conduct system audits**

*Examples of a system audit include: audit a quality management system against a quality management system standard eg ISO 9002; audit a product safety programme against an approved product safety programme standard*

**Element 5 Select and test possible solutions that have been generated using QIP techniques****Element 6 Implement successful problem solution**

*Utilises statistics for problem solving and process control.*



**Unit 1.5.4 Regulatory**

*This unit covers all procedures and programs that must be established and maintained in accordance to Company standards.*

**Element 1 Product Safety Program**

*Establish and maintain a product safety program in line with Product Safety Manuals eg HACCP, NCCA, Pest Control etc.*

**Element 2 Customer Audits**

*Define the responsibility for customer audits and liaison.*

**Element 3 Company Policies**

*Establish and maintain Company policies, eg ISO 9002, Health and Safety, Building Codes, etc.*

**Element 4 Contractor/Visitor Control**

*Establish and maintain procedures to control contractors and visitors (refer to Control of Contractors Manual).*

**1.6 Supervision****Unit 1.6.1 Coaching & guiding**

*This unit covers coaching and guiding people in the carrying out of their duties. While those who do this will often be supervisors, the unit is not restricted to supervisors. Although the giving of verbal instructions and demonstration of procedures is included as an example of some of the activities involved in coaching and guiding, the unit goes much further than this. (Conducting on-job-training is covered by unit 1.7.a.1.).*

**Element 1 Coach and guide people in their work**

*This element covers activities such as: provide coaching and guidance to people; set goals & objectives with people; check that people are performing tasks correctly; allocate work to people; give verbal instructions or demonstrate procedures; ensure that resources (materials, supplies, etc) are available when needed*

**Unit 1.6.2 Staff development**

*This unit covers assessment of staff performance, and the provision of feedback, counselling and discipline in order to develop and improve staff performance. It also covers facilitation of difficult work group situations.*

**Element 1 Assess staff performance, and provide feedback & counselling to people**

*This element covers activities such as: assess staff performance and give feedback; counsel staff with personal problems; discipline staff for breaches of work rules*

**Element 2 Facilitate and arbitrate difficult work group situations**

*This element covers activities such as: facilitate a group of disruptive and negative people; arbitrate between staff who have a dispute*

**1.7 Training****Unit 1.7.1 Conducting on job training**

*This unit covers conducting of on-job training. The on-job trainer will be competent and experienced in the job in which the trainee will be trained, but may not necessarily be a supervisor.*

**Element 1 Conduct on-job training**

*This covers on job training such as training how to drive a forklift, how to operate packaging or production plant, how to perform a chemical/microbiological analysis, how to repair plant and equipment, how to operate a wordprocessor*

**Unit 1.7.2 Managing training**

*This unit covers determination of staff training needs, the arrangement of on-job and/or off-job training, and followup to ensure that training objectives have been achieved. Scope refers to the training needs of a designated group of staff.*

**Element 1 Manage staff training**

*This element covers activities such as: determine staff training needs; arrange on-job or off-job training; develop and maintain staff training records/capability chart*

**1.8 Workforce Planning****Unit 1.8.1 Workforce Planning**

*Workforce planning involves determining future staff requirements to ensure the rationale for staffing decisions maximises potential and creates outcomes in line with the strategic direction of the organisation.*

**Element 1 Job Models**

*Establish list of skill units that make up Job Model*

**Element 2 Training Needs Analysis**

*Determine training in line with skills needed for the Job Model*

**Element 3 Selection and Development**

*Identify best "person/job" fit for the Job Model eg Selection Criteria, Career Pathing, Succession Planning, Performance Evaluation etc.*

**Element 4 Rosters and Shifts**

*This includes: ensuring sufficient cover for production, timetabling of holidays, allocation of staff for induction and training, coordinating temporary and permanent staff and determining call backs.*

**1.9 Personnel****Unit 1.9.1 Performance Management****Element 1 Performance Management**

*This involves monitoring staff performance and providing feedback, and developing staff through appropriate delegation of responsibility and authority.*

**Unit 1.9.2 Employee Relations****Element 1 Employee Relations**

*This element covers counselling and coaching and providing support through the EAP scheme for staff in difficult situations as well as communicating staff development requirements on a one to one basis.*

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**Unit 1.9.3 Industrial Relations****Element 1 Industrial Relations**

*This element involves negotiating industrial relations issues with affected parties and avoiding potential industrial relations difficulties in the workplace.*

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**1.10 Team Leading****Unit 1.10.1 Leadership****Element 1 People Skills - Leadership**

*This element involves providing effective leadership to a team, group, or cross functional team; Motivating staff for best performance; Encouraging the generation of new ideas; providing clear meaningful direction; Giving feedback on performance to staff and colleagues and communicating the company's vision and strategic plan.*

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**2.1 Office Equipment****Unit 2.1.1 General office equipment**

*This unit covers operation of general office equipment. General office equipment includes any general office equipment relevant to the person's position such as photocopier, fax machine, computer printer, and binder. It should be noted that operate in terms of this unit means the ability to use the full range of features applicable to the relevant equipment. At this level, the person will operate the equipment in accordance with supplier or company site operating procedures.*

**Element 1 Operate general office equipment**

*This element covers activities such as: use full features of general office equipment (eg enlarge/reduce, collating, single to double sided on photocopier; speed dialling, short codes on fax); conduct basic maintenance on general office equipment (eg clear paper jams, replace toner cartridges on photo-copiers); arrange for servicing of general office equipment as necessary*

**Unit 2.1.2 Evaluation of office equipment**

*This unit covers evaluation of office equipment. Evaluation means the assessment of the relative attributes of equipment and the making of a recommendation according to the assessment. It does not include the making of a decision of which equipment to purchase or use.*

**Element 1 Evaluate costs and specifications of office equipment**

*This element covers activities such as: evaluation of suitability for use of new or used office equipment; evaluation of cost/benefit of office equipment; determination of specifications for office equipment*

**2.2 Filing, Money, and Clerical Systems****Unit 2.2.1 Filing/Petty Cash/Imprest cheque account/Receiving Money.**

*This unit covers filing of data and information. Filing may be electronic or hard copy, and includes any filing relevant to the person's position. At this level, the person uses filing systems and procedures as determined by a senior clerical person, supervisor, or by management.*

**Element 1 File records/information**

*This element covers activities such as: file and retrieve records, update file records, cross reference files where appropriate (eg cross reference index for alpha and numerical files)*

**Element 2 Operate petty cash system**

*This element covers activities such as: check approvals; issue cash; check receipts and change add up; reconcile and reimburse petty cash*

**Element 3 Operate imprest cheque account**

*This element covers activities such as: check authorisation; obtain signatures; issue cheques; update cheque register*

**Element 4 Receive payment by cash or cheque**

*This element covers activities such as: receive payments; issue receipts; code receipts; balance receipt book to banking*

**Unit 2.2.2 Developing & implementing filing and record systems**

*This unit covers development and implementation of new filing and record systems. At this level the person has the skill to assess need, develop the most appropriate system, and implement the system.*

**Element 1 Develop new filing and record systems**

*This covers the development of new filing and record systems; the improvement of existing filing/record systems*

**Element 2 Implement new filing and record systems**

*This element covers activities such as: the implementation of new filing and record systems; the implementation of improvements to existing filing and record systems*

**2.3 Invoices, Reconciliations, and Reports****Unit 2.3.1 Debtors/Creditors invoices**

*This unit covers processing of debtors and creditors invoices in accordance with company or site policies and procedures. Debtors invoices include any debtors invoices relevant to the person's position.*

**Element 1 Process debtors invoices**

*This element covers activities such as: obtain relevant information; prepare invoices and credit notes; despatch invoices and credit notes; print debtors statements; generate and run debtors reports; age debtors; process payments*

**Element 2 Process creditors invoices**

*This element covers activities such as: receive invoices and maintain register; check invoices to order and goods receipts; obtain authorisation for payment; enter invoices into computer system/draw cheques; follow up queries; process credit notes and request credits; liaise with creditors*

**Unit 2.3.2 Reconciliations**

*This unit covers reconciliation (matching) of two or more different sets of data and checking for variances. Examples of reconciliations include reconciling bank statement against general ledger, debtors statements against general ledger, stock takes against stock records, production records against Dairy Board records.*

**Element 1 Reconcile two different sets of data**

*This element covers activities such as: obtain two sets of data; check for variances; write up reconciliation*

**Element 2 Action reconciliation variances**

*This element covers activities such as: make adjustments as appropriate (eg journal entries, request for credit, write-offs)*

**Unit 2.3.3 Management information reports**

*This unit covers preparation of management information reports such as production tonnages and grade results, payment reports, factory performance reports, maintenance reports, wages and overtime reports.*

**Element 1 Prepare management information reports**

*This element covers activities such as: prepare report manually or from computer; check report; despatch report*



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**2.4 Payroll**

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**Unit 2.4.1 Wage/salary payments**

*This unit covers collection of timesheets or time cards, checking of timesheets or time cards, distribution of wage and salary payments to employees, and responding to queries regarding payments and payslips. Scope covers these activities in respect to a shift, department, operating unit, or site.*

**Element 1 Collect timesheets, distribute wages and salaries, and resolve pay queries**

*This element covers activities such as: collect timesheets or time cards; check timesheets or time cards; distribute wage/salary payments; respond to pay queries*

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**Unit 2.4.2 Process wage/salary payments**

*This unit covers processing of wage and salary payments. Scope covers the processing of wage and salary payments for a company or site.*

**Element 1 Process wage/salary payments**

*This element covers activities such as: calculate wage/salary payments manually or by entering timesheets or timecards into a computer system; ensure payments are correctly authorised*

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**Unit 2.4.3 Payroll administration**

*This unit covers maintenance of a payroll system for a company or site.*

**Element 1 Administer payroll system**

*This element covers activities such as: maintain staff payroll records; staff engagements and transfers; staff terminations; employee allowances; employee deductions; prepare earnings certificates; ACC documentation and preparation; providing information and processing documentation for employee benefits (eg medical insurance, superannuation, staff cards, etc); safety documentation; reconciliation of wage system to general ledger*

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**2.5 Public/Customers**

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**Unit 2.5.1 Telephone switchboard PABX/Mail and couriers/Reception and site visitors.**

*This unit covers operation of a telephone PABX switchboard for a site, mail and couriers, reception and site visitors.*

**Element 1 Operate telephone PABX switchboard**

*This element covers activities such as: Operate telephone switchboard/PABX; Take messages and follow up queries; Answer standard queries (eg job vacancies)*

**Element 2 Distribute/despatch mail and parcels**

*This element covers activities such as: receive/distribute incoming mail/parcels; despatch mail/parcels*

**Element 3 Welcome visitors and deal with visitor queries**

*This element covers activities such as: welcome visitors; follow visitor record procedure; respond to visitor queries; keep reception area tidy. Visitors includes all visitors as well as customers, clients, suppliers, and staff.*

**Element 4 Arrange and co-ordinate visits to site**

*This element covers activities such as: arrange and coordinate visits to site; organise catering, accommodation, meetings; talk with customers or clients to establish a relationship; answer questions from customers and members of the public*

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**3.1 External Cleaning****Unit 3.1.1 External cleaning**

*This unit covers external cleaning of building, equipment and surrounds in accordance with company/site hygiene requirements, procedures, and codes of practice.*

**Element 1 Clean external building, equipment, and surrounds**

*This element covers activities such as: clean external building areas eg walls, roofs, guttering, paving, surrounds; identify problem cleaning areas/troublespots; free obstructions from pipes and valves; clean external equipment; dispose of rubbish; clean air filters & air filtration systems; clean/test strength of chemicals in footbaths; clean insect screens and air filters; clean out cooling towers*

**3.2 Internal Cleaning****Unit 3.2.1 Internal cleaning/Vinyl cleaning and polishing.**

*This unit covers cleaning of external surfaces of plant and equipment, and cleaning of internal building areas, floors, walls, ceilings, stairwells, cupboards, etc to company/site hygiene requirements, procedures, and codes of practices.*

**Element 1 Clean internal building areas and surfaces, and external plant & equipment surfaces**

*This element covers activities such as: clean internal work areas and surfaces (eg plant & equipment surfaces, walls, floors, ceilings); clean/test strength of chemicals in footbaths*

**Element 2 Clean, strip and polish vinyl surfaces**

*This element covers activities such as: strip and prepare vinyl surface; polish vinyl surface*

**3.3 Grounds Maintenance****Unit 3.3.1 Grounds, lawns and gardens**

*This unit covers maintenance of grounds, lawns and gardens on dairy company sites and properties. It covers the use of lawn mowers, tractors, weed-eaters, chemical sprayers, gardening tools and equipment.*

**Element 1 Maintain grounds, lawns, and gardens**

*This element covers activities such as: mow lawns; operate weed-eater and/or weed-sprayer; prune trees/shrubs*

**3.4 Laundry****Unit 3.4.1 Issue laundry; collect and despatch soiled laundry**

*This unit covers receipt and issue of laundry, and the collection and despatch of soiled laundry.*

**Element 1 Sort, fold and issue laundry**

*This element covers activities such as: fold, sort and issue overalls; deliver to lockers*

**Element 2 Collect and despatch dirty laundry****Unit 3.4.2 Launder overalls**

*This unit covers laundry of clothing, mats, towels, cloths, etc. It also covers the repair, or arrangement of repairs, to clothing.*

**Element 1 Launder overalls etc**

*This element covers activities such as: launder overalls, mats, towels, cloths, etc; repair clothing (eg zips, tears); fix labels (eg to clothing)*

**3.5 Cleaning Equipment****Unit 3.5.1 Cleaning equipment**

*This unit covers use of cleaning equipment such as washing machines, dishwashers, wet/dry scrubbers, floor polishers, motorised sweepers, and portawashers (low or high pressure cleaners/water blasters).*

**Element 1 Use cleaning equipment****3.6 Pest Control****Unit 3.6.1 Pest control**

*This unit covers development and maintenance of a pest control programme. Pests include rodents, birds, insects, spiders, cats.*

**Element 1 Develop and maintain pest control program****3.7 Lifting Equipment****Unit 3.7.1 Operate lift hoist**

*This unit covers operation of manual and mechanical lifting equipment such as endless chain hoists and power winches.*

**Element 1 Operate lift hoist**

*This element covers activities such as: determine correct load weight; secure and lift load; place and release load*

**4.1 Cafeteria**

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**Unit 4.1.1 Food preparation & sales**

*This unit covers preparation and sale of food and beverages in a site or departmental cafeteria.*

**Element 1 Prepare food/beverages**

*This element covers activities such as: preparation of meals, sandwiches, cakes, small goods, tea, coffee.*

**Element 2 Sell and serve food and beverages**

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**Unit 4.1.2 Special food preparation**

*This unit covers the preparation of food to special customer requirements which are outside of normal duties such as preparation of additional food and beverages for parties of visitors, preparation of food and beverages using limited or unfamiliar facilities, and preparation of food for people with special dietary needs.*

**Element 1 Prepare food and beverages for special customer requirements**

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**5.1 Liquid Product Storage and Handling**

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**Unit 5.1.1 Liquid product transfer**

*This unit covers transfer of liquid products. Liquid products covers any liquid product relevant to the site such as milk, cream, buttermilk, skimmilk, whey, vegetable oils, and water. (Note that this unit does not apply to the normal loading or unloading of tankers as carried out by tanker drivers. Loading and unloading of tankers as carried out by tanker drivers has different performance criteria, and is covered in unit 17.2.a.1).*

**Element 1 Transfer liquid product**

*This element covers activities such as: unload/load product from/to tanker; transfer product from one department to another department; fill/empty product silos or tanks*

**Element 2 CIP tanks, silos and lines**

*CIP means to clean plant with in-place cleaning regime*

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**Unit 5.1.2 Silo management**

*This unit covers management of liquid product in silos or tanks to optimise silo volume utilisation and product quality.*

**Element 1 Manage silo filling and emptying to optimise silo space and product quality**

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**Unit 5.1.3 Abnormal milk or product**

*This unit covers acceptance or rejection of abnormal milk or product and determination of action required following such a decision. Milk or product includes any product relevant to the site such as milk, cream, buttermilk, skimmilk, whey, and vegetable oils.*

**Element 1 Accept/Reject abnormal product**

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**5.2 Separation/Clarification**

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**Unit 5.2.1 Separation/clarification I**

*This unit covers operation of a separator(s) or clarifier(s) to separate or clarify product. Product includes any product relevant to the site such as milk, cream, buttermilk, skimmilk, whey, and vegetable oils. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate separator or clarifier to separate or clarify product**

*Operate plant means: start separator/clarifier and place on product; monitor and adjust separator/clarifier; take separator/clarifier off/on product during temporary production delay; take separator/clarifier off product at end of production run; shutdown (stop) separator/clarifier*

**Element 2 CIP separator/clarifier**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Strip, clean, and reassemble solid bowl separator**

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**Unit 5.2.2 Separation/clarification II**

*This unit covers operation of a separator(s) or clarifier(s) while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Clear and restart separator/clarifier**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipeline blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: separator/clarifier seal failure; separator/clarifier bowl not closing correctly; abnormal noise or vibration in separator/clarifier; incorrect separator/clarifier discharge; separator/clarifier not coming up to speed; incorrect back-pressures on separator/clarifier*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: cause of separated product out of spec on fat %; incorrect back-pressures on separator/clarifier*

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**Unit 5.2.3 Separation/clarification III**

*This unit covers operation of a separator(s) or clarifier(s) while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Strip and reassemble a separator or clarifier**

*This covers stripping and assembly of bowl and disks of self-desludging separator/clarifier*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: abnormal noise or vibration in separator/clarifier; separator/clarifier seal failure; separator/clarifier bowl not closing correctly*

**Element 3 Determine cause of abnormal operating conditions**

*This covers determination of whether the cause of the condition arises from a process, mechanical, or electrical nature. This element covers activities such as: separator/clarifier out on overload; separator/clarifier not coming up to speed; incorrect separator/clarifier discharge*

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**Unit 5.2.4 Separation/clarification IV**

*This unit covers determination and setting of separation/clarification plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1** Determine separation/clarification plant operating parameters and specifications to achieve product specification

**Element 2** Rectify abnormal operating conditions

*This covers conditions such as: cause of separated/clarified product out of spec on micro*

**5.3 Heating and Cooling plant****Unit 5.3.1 Heating/cooling I (direct & indirect heaters & coolers)**

*This unit covers operation of heating and cooling plant to heat and cool product (eg pre-heating, thermalising, pasteurising, cooling). Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, vegetable oils and water. Plant includes any direct or indirect heating and cooling plant used for heating and cooling product. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1** Operate heating and cooling plant & equipment

*Operate plant means: start heater/cooler and place on product to heat/cool product; monitor and adjust heater/cooler; operate divert system when product temperature outside set parameters (if applicable); take heater/cooler off/on product for temporary hold of production; take heater/cooler off product at end of production run; shut down heater/cooler, clear and restart after power surge/failure; shut down (stop) heater/cooler*

**Element 2** CIP heating/cooling plant

*CIP means to clean plant with in-place cleaning regime*

**Element 3** Detect abnormal operating conditions

*This covers conditions such as: blown seals in heater/cooler, blocked heater/cooler*

**Unit 5.3.2 Heating/cooling II (direct & indirect heaters & coolers)**

*This unit covers operation of heating and cooling plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1** Strip and reassemble heating/cooling plant/equipment

**Element 2** Detect abnormal operating conditions

*This covers conditions such as: incorrect temperature/pressure differentials; product contamination (eg micro, heating/cooling medium) in heater/cooler*

**Element 3** Rectify abnormal operating conditions

*This covers conditions such as: blocked heater/cooler, blown seals in heater/cooler, cause of product contamination (eg micro, heating/cooling medium) in heater/cooler; incorrect temperature/pressure differentials; incorrectly assembled heater/cooler*

**Unit 5.3.3 Heating/cooling III (direct & indirect heaters & coolers)**

*This unit covers determination and setting of heating/cooling plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1** Determine heating/cooling plant operating parameters and specifications to achieve product specification

**5.4 Standardising/Batching/Mixing****Unit 5.4.1 Standardising/batching/mixing I**

*This unit covers operation of standardising/batching/mixing plant to mix up to two products to a specified composition. Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, vegetable oils, or their derivatives. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1** Operate standardising/batching/mixing plant

*Operate plant means: start standardising/batching/mixing plant and place on product; monitor and adjust plant to mix 2 streams (eg skim/cream); take standardising/batching/mixing plant off/on product during production; take standardising/batching/mixing plant off product at end of run; shut down (stop) standardising/batching/mixing plant*

**Element 2** CIP standardising/batching/mixing plant

*CIP means to clean plant with in-place cleaning regime*

**Element 3** Clear and restart standardising/batching/mixing plant

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipeline blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*



**Unit 5.4.2 Standardising/batching/mixing IIa**

*This unit covers operation of a standardising/batching/mixing plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: incorrect mixing of product; incorrect quality, quantity, type of raw product; malfunction of mixing plant/equipment*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect quality, quantity, type of raw product*

**Element 3 Operate standardising/batching/mixing plant to mix 3 or more streams**

*Operate plant means to start, monitor and adjust, take plant on/off product during production, take plant off product at end of run, shutdown plant*

**Element 4 Isolate and reprocess product****Unit 5.4.3 Standardising/batching/mixing III**

*This unit covers determination and setting of standardising/batching/mixing plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine standardising/batching/mixing plant operating parameters and specifications to achieve product specification****Element 2 Determine cause of abnormal operating conditions**

*This covers determination of whether the cause of the condition arises from a process, mechanical, or electrical nature. This covers conditions such as: malfunction of mixing plant/equipment*

**5.5 Dosing/application of Product or Ingredients****Unit 5.5.1 Dosing/application of product or ingredients I**

*This unit covers operation of dosing/application plant to dose or apply product or ingredients to a specified composition, or at a specified application rate. Examples of products or ingredients are vitamins, minerals, lecithin, salt, mineral acids, alkali, starter and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate dosing/application plant to dose or apply product or ingredients**

*Operate plant means: start dosing/application system to dose/add to product; monitor and adjust dosing/application system; take dosing/application plant off/on product during production; take dosing/application plant off product at end of run; shut down (stop) dosing/application plant*

**Element 2 CIP dosing/application plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Clear and restart dosing/application plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 4 Detect abnormal operating conditions**

*This covers conditions such as: air locking in dose/application mix; dose/application system faults (eg pump blockage, fluctuations, failure); dosing/application mix temperature too high/low; incorrect agitation/mixing of dose/application mix; incorrect concentration of dose/application mix; incorrect injection/application of dose/application mix; incorrect type of dose/application ingredient (eg wrong type of salt, vitamin); insufficient dose/application mix*

**Element 5 Rectify abnormal operating conditions**

*This covers conditions such as: air lock in dose/application mix; dosing/application mix temperature too high/low; incorrect agitation/mixing of dose/application mix; incorrect concentration of dose/application mix; insufficient dose/application mix*

**Unit 5.5.2 Dosing/application of product or ingredients II**

*This unit covers operation of dosing/application plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Rectify abnormal operating conditions**

*This covers conditions such as: dose/application system faults (eg pump blockage, fluctuations, failure); incorrect injection/application of dose/application mix; incorrect type of dose/application ingredient (eg wrong type of salt, vitamin)*

**Unit 5.5.3 Dosing/application of product or ingredients III**

*This unit covers determination and setting of dosing/application plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine dosing/application operating parameters and specifications to achieve product specification****5.6 Process Systems (Pumps, Pipes, Valves)**

**Unit 5.6.1 Process systems I**

*This unit covers detection and resolution of plant and service conditions such as those identified in this unit. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: motors/pumps/fans out on overload; abnormal temperature, noise, vibration of motors, pumps, fans, etc; blocked product filters; loose/broken air-line to valve; caustic dosing lines blocked; incorrect level in balance tank; leaking pump seal; leaking unions, flanges, pipes; loose belts to pumps, fans, etc; manual valves in incorrect position; product not recirculating (eg valve fault); pump air-locking; loss of air/water/steam pressure*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: leaking unions/ flanges; manual valves to correct position*

**Unit 5.6.2 Process systems II**

*This unit covers detection and resolution of plant and service conditions such as those identified in this unit. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: faulty photo-cells, limit switches, proximities; controller staying in manual (i.e. will not change to automatic); faulty non-return valve; incorrect position of remote-actuated valve; pump starving/cavitation; pumps/fans failure to start through "lock-out" sequence or incorrect feedback; steam condensate trap leaking or blocked*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: blocked pipes or lines*

**Unit 5.6.3 Process systems III**

*This unit covers detection and resolution of plant and service conditions such as those identified in this unit. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: abnormal high pressure pump or booster pump noise; faulty temperature/pH probes; pump impeller running in wrong direction; valve actuator malfunction (eg through oil in air line); variable-speed drive fault*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of pump air-locking; faulty non-return valve; pump starving/cavitation*

**Unit 5.6.4 Process systems IV**

*This unit covers determination of whether the cause of conditions such as those identified in this unit arise from a process, mechanical, or electrical nature. This skill enables time and cost savings through quicker resolution of the condition. For example, an electrician can be called if the cause is an electrical fault, or the process can be adjusted if the cause is a processing condition.*

**Element 1 Determine cause of abnormal process system condition**

*This covers conditions such as: incorrect level in balance tank (eg level transmitter, high inflow, etc); motors/pumps/fans out on overload; product not recirculating (eg valve fault); abnormal high pressure pump or booster pump noise; abnormal temperature, noise, vibration of motors, pumps, fans, etc; incorrect position of remote-actuated valve; pumps/fans failure to start through "lock-out sequence"; valve actuator malfunction*

**5.7 CIP - General Operation****Unit 5.7.1 CIP - general I**

*This unit covers detection and resolution of CIP conditions such as those identified in this unit. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal CIP conditions**

*This covers conditions such as: loss of CIP solution; product residues caused by incorrect cleaning or rinsing from previous cleaning; blocked CIP nozzles or spray-balls; CIP solution contaminated by product; CIP supply/return pump tripped, air-locking; incorrect CIP cleaning/sanitising solution strength; incorrect CIP routing (eg valve; flow-plate in incorrect position); incorrect temperatures or flow set-points; insufficient pressure to washers/spray-balls; leak in CIP line to nozzles, spray-balls, washers; product storage tanks/silos not drained*

**Element 2 Rectify abnormal CIP conditions**

*This covers conditions such as: blocked CIP nozzles or spray-balls; incorrect CIP cleaning/sanitising solution strength; incorrect CIP routing (eg valve; flow-plate in incorrect position); leak in CIP line to nozzles, spray-balls, washers; loss of CIP solution; product storage tanks/silos not drained*

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**Unit 5.7.2 CIP - general II**

*This unit covers detection and resolution of CIP conditions such as those identified in this unit. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal CIP conditions**

*This covers conditions such as: damage to plant & equipment caused by cleaning chemical; incorrect CIP sequence; incorrect cleaning (eg high bug count; product deposits); product contaminated by CIP*

**Element 2 Determine cause of abnormal CIP conditions**

*This covers determination of whether the cause of CIP conditions such as in the examples arise from a process, mechanical, or electrical nature. This covers conditions such as: cause of product contamination of CIP solution; cause of contamination of product by CIP chemical;*

**Element 3 Rectify abnormal CIP conditions**

*This covers conditions such as: adjust CIP process to remove and prevent product residues; CIP supply/return pump tripped, or air-locking; incorrect CIP cleaning (eg washing, rinsing, temps, flows, chemical concentration); incorrect CIP sequence; incorrect temperatures or flow set-points; insufficient pressure to washers/spray-balls*

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**Unit 5.7.3 CIP - general III**

*This unit covers determination of CIP cleaning regime to clean plant in place. CIP cleaning regime includes activities such as determining type and concentration of chemicals, cleaning sequences, cycle times, temperatures, and flow rates.*

**Element 1 Determine CIP cleaning regime**

*CIP means to clean plant with in-place cleaning regime*

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**6.1 Ultrafiltration****Unit 6.1.1 Ultrafiltration I**

*This unit covers operation of ultrafiltration plant to filter product to specification. Product includes any product relevant to the site such as milk, cream, buttermilk, skimmilk, whey, vegetable oils and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate ultrafiltration plant**

*Operate plant means: start up UF plant and place on product; monitor and adjust UF plant; take UF line off/on product during production; shut down UF line at end of production*

**Element 2 CIP ultrafiltration plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: high UF module operating temperatures; poor quality raw product (eg pH, temp, milky); leaky membranes; low solids in retentate; product out of spec on protein; UF line not receiving feed supply*

**Element 4 Detect abnormal operating conditions**

*This covers conditions such as: lack of feed to UF line; low solids in retentate*

**Unit 6.1.2 Ultrafiltration II**

*This unit covers operation of ultrafiltration plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust ultrafiltration plant from given starting parameters**

*This means to adjust UF plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Clear and restart ultrafiltration plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: fouling of membranes; product out-of-spec through fines in raw product*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: cause of poor quality raw product; cause of product out of spec on protein; fouling of membranes; high UF module operating temperatures; leaky membranes*

**Unit 6.1.3 Ultrafiltration III**

*This unit covers determination and setting of ultrafiltration plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine UF operating parameters and specifications to achieve product specification****6.2 Electrodialysis Demineralisation****Unit 6.2.1 Electrodialysis I**

*This unit covers operation of electrodialysis plant to demineralise product to specification as well as dismantling, cleaning and reassembly of electrodialysis plant. Product includes any product relevant to the site such as milk, cream, buttermilk, skimmilk, whey, vegetable oils and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate electrodialysis plant**

*Operate plant means: Start electrodialysis (E.D.) plant and place on product; Monitor and adjust E.D. plant; Take E.D. plant off/on product during production; Take E.D. plant off product at end of production run; Shut down (stop) E.D. plant*

**Element 2 CIP electrodialysis plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: blocked filters on E.D. plant; blown manifolds and leaks on E.D. plant; frothy product*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: blocked filters on E.D. plant*

**Element 5 Dismantle, clean, and reassemble E.D. plant**

**Unit 6.2.2 Electrodialysis II**

*This unit covers operation of an electrodialysis plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Clear and restart electrodialysis plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: chemical supply failure to E.D. plant; rising stack pressures on E.D. plant; water pressure too high/low to E.D. plant*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: blown manifolds on E.D. plant; chemical leaks; chemical supply failure to E.D. plant; de-gasifier stoppage; failure of plant to start; high product conductivity; hydraulic pressure fluctuations; stack amperage too high; frothy product; high/low water pressure to E.D. plant; overflow of whey balance tank to E.D. plant; rising stack pressures on E.D. plant; unenergised gate switch*

**Unit 6.2.3 Electrodialysis III**

*This unit covers determination and setting of electrodialysis plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine E.D. plant operating parameters to achieve product specification****Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of product out of spec on micro or yeast and mould; cause of product not meeting demineralisation specification; incorrect hydraulic stack pressures*

**6.3 Ion Exchange Demineralisation****Unit 6.3.1 Ion exchange I**

*This unit covers operation of ion exchange plant to demineralise product to specification. Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, and vegetable oils. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate ion exchange plant**

*Operate plant means: Start Ion Exchange (I.E.) plant and place on product; Monitor and adjust I.E. plant; Take I.E. plant off/on product during production; Take I.E. plant off product at end of production run; Shut down (stop) I.E. plant*

**Element 2 Regenerate ion exchange plant****Element 3 Detect abnormal operating conditions**

*This covers conditions such as: chemical supply failure to I.E. plant*

**Element 4 Operate demineralisation plant to demineralise water**

*Operate plant means to check and start I.E. plant, monitor and adjust I.E. plant, shutdown I.E. plant*

**Element 5 Regen water demin plant****Element 6 Detect abnormal operating conditions**

*This covers conditions such as: incorrect quality of demineralised water*

**Element 7 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect quality of demineralised water for CIP of UF plant; high/low demin water; incorrect pH in water*

**Unit 6.3.2 Ion exchange IIa**

*This unit covers operation of ion exchange plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust ion exchange plant from given starting parameters**

*This means to adjust I.E. plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: fouling of plant; high/low water pressure to I.E. plant; chemical supply failure to I.E. plant; chemical leaks; high product conductivity; incorrect process selection; feed balance tank overflow*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: blocked filters on I.E. plant; unrecovered I.E. feed balance tank; rising stack pressures on I.E. plant; blown manifolds on I.E. plant; frothy product*

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**Unit 6.3.3 Ion exchange III**

*This unit covers determination and setting of ion exchange plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1** Determine ion exchange plant operating parameters to achieve product specification

**Element 2** Rectify abnormal operating conditions

*This covers conditions such as: cause of product not meeting demineralisation specification*

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**6.4 Reverse Osmosis**

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**Unit 6.4.1 Reverse osmosis I**

*This unit covers operation of reverse osmosis plant to filter product to specification. Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, vegetable oils and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1** Operate reverse osmosis plant

*Operate plant means: Start R.O. plant and place on product; Monitor and adjust R.O. plant; Take R.O. plant off/on product during production; Take R.O. plant off product at end of production run; Shut down (stop) R.O. plant*

**Element 2** CIP reverse osmosis plant

*CIP means to clean plant with in-place cleaning regime*

**Element 3** Detect abnormal operating conditions

*This covers conditions such as: fouling membranes; high conductivity in membranes; incorrect pH, bar pressure, temperature, total solids; fouling of filter (i.e. fines)*

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**Unit 6.4.2 Reverse osmosis II**

*This unit covers operation of reverse osmosis plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1** Adjust reverse osmosis plant from given starting parameters

*This means to adjust RO plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2** Clear and restart reverse osmosis plant

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 3** Rectify abnormal operating conditions

*This covers conditions such as: fouling of membranes; leaky membranes; high conductivity in membranes; incorrect pH, bar pressure, temperature, total solids; fouling of filter (i.e. fines)*

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**Unit 6.4.3 Reverse osmosis III**

*This unit covers determination and setting of reverse osmosis plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1** Determine reverse osmosis plant operating parameters to achieve product specification

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**6.5 Filter Press**

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**Unit 6.5.1 Filter pressing I**

*This unit covers operation of a filter press to filter product to specification. Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, vegetable oils and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1** Operate filter press

*Operate plant means: Prepare filter press for production; Monitor and adjust filter press to press batches of product; Shut down filter press at end of production*

**Element 2** Adjust filter press plant from given starting parameters

*This means to adjust filter press plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 3** Clear and restart filter press

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 4** CIP filter press

*CIP means to clean plant with in-place cleaning regime*

**Element 5** Detect & rectify abnormal operating conditions

*This covers conditions such as: incorrect slurry feed supply; leaky cloths; incorrect slurry solids*

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**Unit 6.5.2 Filter pressing II**

*This unit covers operation of a filter press while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: fouling of cloths*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of poor quality raw product; fouling of cloths; leaky cloths*

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**Unit 6.5.3 Filter pressing III**

*This unit covers determination and setting of filter pressing plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine filter press plant operating parameters to achieve product specification**

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**8.1 Evaporation**

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**Unit 8.1.1 Evaporation I**

*This unit covers operation of evaporation plant to evaporate product to specification. Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, vegetable oils and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate evaporation plant**

*Operate plant means: Check and start evaporator on water and change to product; Monitor and adjust evaporator; Take evaporator off product for temporary production delay; Take evaporator off product at end of production run; Shut down (stop) evaporator*

**Element 2 CIP evaporation plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: condensate flooding; condenser cooling water too hot; flooding of evaporator effects*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: flooding of effects; low feed level in buffer tank*

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**Unit 8.1.2 Evaporation II**

*This unit covers operation of a evaporation plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust evaporation plant from given starting parameters**

*This means to adjust evaporation plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Clear and restart evaporation plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipeline blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: insufficient coverage/flow over evaporator callandria tube; vacuum leaks*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: condensate flooding; hot condenser cooling water; inconsistent solids from evaporation*

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**Unit 8.1.3 Evaporation III**

*This unit covers operation of evaporation plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Rectify abnormal operating conditions**

*This covers conditions such as: cause of concentrate out of spec on micro; vacuum leaks; insufficient coverage/flow over evaporator callandria tube*

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**Unit 8.1.4 Evaporation IV**

*This unit covers determination and setting of evaporation plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine evaporation plant operating parameters to achieve product specification**

*This includes setting of pre-heat conditions and configuration to gain correct product viscosity, WPNI, heat stability*

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**8.2 Homogenisation**

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**Unit 8.2.1 Homogenisation I**

*This unit covers operation of homogenisation plant to homogenise product to specification. Product includes any product relevant to the site such as milk, cream, buttermilk, skim milk, whey, vegetable oils and water. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate homogenising plant**

*Operate plant means: Start homogeniser and place onto product; Monitor and adjust homogeniser; Take homogeniser off/on product during temporary production delay; Take homogeniser off product at end of production run; Shut down (stop) homogeniser*

**Element 2 CIP homogenising plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: abnormal operation (eg noise, oil pressure) of homogeniser; fluctuating homogeniser pressures; incorrect homogenisation pressure set-points; leaking homogeniser seals*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect homogenisation pressure set-point*

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**Unit 8.2.2 Homogenisation II**

*This unit covers operation of homogenisation plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Strip/assemble homogenisation plant****Element 2 Detect abnormal operating conditions**

*This covers conditions such as: incorrect calibration of homogeniser gauges*

**Element 3 Determine cause of abnormal operating conditions**

*This covers conditions such as: cause of premature wear of homogeniser seals*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: abnormal operation (eg noise) of homogeniser; cause of incorrect homogenisation; cause of micro contamination of product from homogeniser; fluctuating homogeniser pressures*

**Unit 8.2.3 Homogenisation III**

*This unit covers determination and setting of homogenisation plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine homogenising plant operating parameters to achieve product specification****8.3 Casein (wet-side) Curd Production****Unit 8.3.1 Casein (wet-side) I**

*This unit covers operation of wet-side casein plant to produce casein curd to specification. Casein curd includes any type of casein curd such as lactic acid, mineral acid, and rennet casein curd. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate wet-side casein plant**

*Operate plant means: Operate wet-side casein plant; Monitor and adjust casein plant; Take plant off/on product for temporary production delay; Shut down casein plant*

**Element 3 CIP wet-side casein plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 4 Detect abnormal operating conditions**

*This covers conditions such as: flow fluctuations; fines losses; high fines passing through system; incorrect cooling temp, pH, loading, or fine curd during dewatering; incorrect curd consistency; incorrect curd size from mincer or sizer; incorrect hot wash temperature; incorrect particle size, clarity of whey, and temperature during dewheying; incorrect wash/cooking temperature, particle size, pH of wash-water, or production rate during washing*

**Element 5 Rectify abnormal operating conditions**

*This covers conditions such as: curd buildup on screens during production; holes in wash screen; incorrect curd consistency; incorrect hot wash temperature; product surge during silo change; wash tub/tank overflow during production or shutdown; blocked decanters, tubs or presses during shutdown; plant blockages during production*

**Unit 8.3.2 Casein (wet-side) II - silo coagulation (lactic and rennet/mineral acid coagulation/caseinating.**

*This unit covers monitoring of silo(s) to produce coagulant to specification for lactic acid casein, rennet casein, or similar casein products relevant to the site. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Monitor silo to produce coagulant to specification****Element 2 Detect abnormal operating conditions**

*This covers conditions such as: layering of curd in silo*

**Element 3 Monitor temperatures, skim-flow and precipitation pH to produce coagulant to specification****Element 4 Detect abnormal operating conditions**

*This covers conditions such as: incorrect acid strength; incorrect temperature parameters for coagulation; incorrect washing temperatures through plant*

**Element 5 Rectify abnormal operating conditions**

*This covers conditions such as: no acid or heat at coagulation*

**Element 6 Operate caseinating plant**

*Operate plant means: Check & start caseinating plant; Monitor & adjust caseinating of casein curd; shut down caseinating plant*

**Element 7 CIP caseinating plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 8 Detect abnormal operating conditions**

*This covers conditions such as: high/low pH of casein curd; incorrect alkaline addition*

**Unit 8.3.3 Casein (wet-side) III**

*This unit covers operation of wet-side casein plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust wet-side casein plant from given starting parameters**

*This means to adjust wet-side casein plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Adjust wet-side casein plant when services fluctuate**

*Adjust plant to maintain product to specification when services (eg water pressure, air pressure, steam pressure) fluctuate*

**Element 3 Clear and restart wet-side casein plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns.*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: cause of fines losses; cause of contaminated rework; high fines passing through system; incorrect cooling temp, pH, loading, or fine curd during dewatering; incorrect particle size, clarity of whey, and temperature during dewheying; incorrect wash/cooking temperature, particle size, pH of wash-water, or production rate during washing*

**Element 5 Determine caseinating plant operating parameters to achieve product specification****Element 6 Rectify abnormal operating conditions**

*This covers conditions such as: alkaline addition parameters; pH control; high pump pressures due to incorrect rpm, temps, total solids; blocked product feed system; high/low pH curd size*

**Unit 8.3.4 Casein (wet-side) IV**

*This unit covers determination and setting of wet-side casein plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine wet-side casein plant operating parameters to achieve product specification****8.4 Drying - (Powders and Caseins)****Unit 8.4.1 Drying I**

*This unit covers operation of drying plant to dry product to specification. Product includes any dry products relevant to the site such as wholemilk powder, buttermilk powder, skimmilk powder, whey powder, casein, and caseinates. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate drying plant**

*Operate plant means: Check and start drier and place on product; Monitor and adjust drier; Take drier off product for temporary stop/hold of production; Take drier off product and shut down drier; Shut down, clear, and restart drier after pump, fan, power, air heater, etc failure*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: blocked fluid bed or deck; incorrect depth of powder on fluid bed or decks; jammed rotary/cycle valves or venturis; powder buildup on internal surfaces*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: blocked cyclones; cause of powder out of spec on moisture; blocked deck; situation arising from turning heat off decks or fluid beds too early*

**Element 4 CIP drying plant**

*CIP means to clean plant with in-place cleaning regime*

**Unit 8.4.2 Drying II**

*This unit covers operation of drying plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust drying plant from given starting parameters**

*This means to adjust drying plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Clear and restart drying plant after major power failure**

*This covers clearing and restarting drier system after major power failure*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: cause of powder build up on internal surfaces; cause of powder out of spec due to scorched particles; pressurising of drier; airlocking of fines system; cause of high/low air pressure to rotary valves; fluctuating temperature control in drier; splattering or wetting of drier or decks; shutting down drier too soon leaving product in drier; cause of powder out of spec on micro*

**Element 4 Clean/install nozzles**

*This covers: Remove, disassemble, clean, and reinstall nozzles*

**Element 5 Detect abnormal operating conditions**

*This covers conditions such as: incorrect lance angles and heights; incorrect nozzle pressures; incorrect spray pattern; leaking spray nozzles*

**Element 6 Rectify abnormal operating conditions**

*This covers conditions such as: spray nozzles not set up correctly; leaking spray nozzles; incorrect lance angles and heights*

**Element 7 Remove atomiser, clean and install in drier**

*This covers conditions such as: remove/install atomiser to drier; remove and clean atomiser wheels; detect low/high atomiser temperature; detect excess vibration*

**Element 8 Detect abnormal operating conditions**

*Detect & rectify flooding of atomiser wheel; detect failure of atomiser to start; detect oil pump not running; detect low or high oil pressure*

**Element 9 Rectify abnormal operating conditions**

*This covers conditions such as: adjust drier when casein curd too wet to produce casein to specification; surge of casein causing flooding of drier; blocked (casein) feed chute to drier*

**Unit 8.4.3 Drying III**

*This unit covers operation of drying plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Rectify abnormal operating conditions**

*This covers conditions such as: drier close to fire, close down and rectify cause; cause of powder out of spec on colour; cause of powder out of spec on insoluble particles; cause of powder out of spec on micro; cause of powder out of spec on particle size; situation arising from fan failure*

**Unit 8.4.4 Drying IV**

*This unit covers determination and setting of drying plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine drying plant operating parameters to achieve product specification****Element 2 Rectify abnormal operating conditions**

*This covers conditions for Functional Milk Powders such as: cause of powder out of spec on coffee; cause of powder out of spec on sludge; cause of powder out of spec on dispersibility; cause of powder out of spec on particle SDP*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions for Nutritional (Infant) Powders such as: cause of powder out of spec on tumbler test; cause of powder out of spec on solution appearance; cause of powder out of spec on dilution appearance; cause of powder out of spec on heat stability*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions for Functional Protein Products such as: cause of powder out of spec on wettability; cause of powder out of spec on hydration viscosity; cause of powder out of spec on solubility; cause of powder out of spec on dispersibility; cause of powder out of spec on particle size; cause of powder out of spec on suspension stability*

**8.5 Powder Blending****Unit 8.5.1 Powder blending I**

*This unit covers operation of powder blending plant to blend dry product to specification. Dry product includes any dry products relevant to the site such as wholemilk powder, buttermilk powder, skimmilk powder, whey powder, casein, and caseinates. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Blend powder to specification**

*This element covers activities such as: Calculate quantities, times, blending sequence, etc to achieve product specification; Start, monitor and adjust powder blending to blend product to specification*

**8.6 Powder Sifting and Conveying**



**Unit 8.6.1 Sifting and conveying I**

*This unit covers operation of sifting and conveying plant to sift and convey product. Product includes any dry products relevant to the site such as wholemilk powder, buttermilk powder, skimmilk powder, whey powder, casein, and caseinates. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate powder sifting and conveying plant**

*Operate plant means: start, monitor and adjust sifting and conveying system*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: blocked dust collector; blocked powder conveying lines; hole or leaks in sifter screen; incorrect conveying temperature or pressure; incorrect sifter screen tension; incorrect sifter vibration or motion; blocked conveyors*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: blocked dust collector; blocked powder conveying lines; blocked venturi/rotary valve; disconnected socks; blocked conveyors*

**Unit 8.6.2 Sifting and conveying II**

*This unit covers operation of sifting and conveying plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: incorrect conveying air dehumidification; incorrect conveying temperature or pressure*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect conveying air dehumidification; incorrect conveying temperature or pressure*

**Unit 8.6.3 Sifting and conveying III**

*This unit covers determination and setting of sifting and conveying plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine sifting and conveying plant operating parameters to achieve product specification****8.7 Casein Tempering and Milling****Unit 8.7.1 Tempering & milling I**

*This unit covers operation of tempering and milling plant to temper and mill casein and casein type products to specification. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate tempering and milling plant**

*Operate plant means: Start, monitor and adjust, and stop casein mill; Start, monitor and adjust, and stop casein tempering*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of product sticking in tempering/blending bins; high product temperature when milling; "wrap-on" of casein or "burn-on" of caseinate; incorrect/fluctuating feed rate to casein mill*

**Unit 8.7.2 Tempering & milling II**

*This unit covers determination and setting of tempering and milling plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine tempering and milling plant operating parameters to achieve product specification**

*This covers: tempering parameters to condition casein for milling; milling parameters to achieve product specification*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of incorrect particle size*

**9.1 Decartoning, Shiving, Melting, and Re-working****Unit 9.1.1 Decartoning**

*This unit covers operation of decartoning plant to decarton product. Product includes any product relevant to the site. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management*

**Element 1 Operate decartoning plant**

*Operate plant means: Start, monitor and adjust a decartoning machine to decarton product*

**Element 2 Operate shiving and melting plant**

*Operate plant means: Start, monitor and adjust a shiver to shive product; Start, monitor and adjust a melter to melt product*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: product too soft/hard to shive; foreign matter in melted product; shiver knives blunt; too much buttermilk in melter when melting butter; too much heat/water in butter*

**Element 4 Operate butter reworking plant**

*Operate plant means: Start, monitor and adjust a butter reworker to rework butter/cream products*

**Element 5 Detect abnormal operating conditions**

*This covers conditions such as: butter/product too hard to rework (eg too cold); product too hard/soft for packers*

**9.2 Vacreation****Unit 9.2.1 Vacreation I**

*This unit covers operation of vacreation plant (or similar heat treatment and deodorisation plant) to heat treat and deodorise product to specification. Product includes any cream products relevant to the site. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate vacreation plant**

*Operate plant means: Start vacreator and place on product; Monitor and adjust vacreator; Take vacreator on/off product during production; Take vacreator off product at end of production run; Shut down (stop) vacreator*

**Element 2 CIP vacreation plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: abnormal noises during start-up and running of vacreator; milky condenser tailwater; vacreator flooding*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: milky condenser tail water; vacreator flooding; blocked cream filters*

**Unit 9.2.2 Vacreation II**

*This unit covers operation of vacreation plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Clear and restart vacreation plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipeline blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: abnormal noises during start-up and running of vacreator; cause of vacreated cream out of spec on micro; loss of or low vacuum; incorrect plant operation (eg past. temp. low); oily melted butter*

**Unit 9.2.3 Vacreation III**

*This unit covers determination and setting of vacreation plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine vacreation plant operating parameters to achieve product specification**

*This element covers activities such as: Determine steam/cream ratio, temperatures, fat% for treating cream for butter making*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of flavour defects in vacreated cream; cause of cream in silo layering or gelling*

**9.3 Butter Making (Fritz)**

**Unit 9.3.1 Buttermaking I**

*This unit covers operation of fritz buttermaking plant to make product to specification. Product includes any butter and butter blends relevant to the site. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate fritz buttermaking plant**

*Operate plant means: Set butter plant starting parameters from crystallising and log-sheet information; Start up buttermaking plant and place on product; Monitor and adjust butter make; Take butter maker off/on product during temporary delay in production; Shut down butter maker at end of production*

**Element 2 CIP fritz buttermaking plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: crystallised salt in salt system; gelled cream; incorrect product through-put rate; incorrect temperatures of cream and water; plant running dry, causing mechanical damage; receipt of incorrect spec information eg salt/unsalted; separating screen collapse*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: cause of moisture or salt content too high or too low; cause of out-of-spec product; incorrect product through-put rate; incorrect worker rpm; incorrect spec information eg salt/unsalted; situation when product drawn from the wrong silo*

**Unit 9.3.2 Buttermaking II**

*This unit covers operation of fritz buttermaking plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate fritz buttermaking plant (advanced)**

*This element covers activities such as: Achieve "break" quickly when cream conditions vary eg temp/fat too high/too low; Adjust butter making to cope with incorrect crystallisation; Cope with cream fat changes of 36%-44% in silo or between silos*

**Element 2 Determine cause of abnormal operating conditions**

*This covers conditions such as: incorrect temperatures of cream and water; motor overloads eg pumps, churn, working section*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: high fat loss in buttermilk through incorrect churning; loss of vacuum; variance in churn rpm; separating screen collapse*

**Unit 9.3.3 Buttermaking III**

*This unit covers determination and setting of fritz buttermaking plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine fritz buttermaking plant operating parameters to achieve product specification****Element 2 Determine cause of abnormal operating conditions**

*This covers conditions such as: gelled cream; high fat loss in buttermilk; lipase attack or high free fat*

**9.4 Fat Mix Plant Operations****Unit 9.4.1 Fat mix I**

*This unit covers operation of fat mixing plant to mix and work product to specification. Product includes any cream product and vegetable blends relevant to the site. (Note that blending of products to specified composition prior to the mixing and working process is covered in the Standardising/Batching/Mixing section, i.e. 5.4). At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate fat mixing plant**

*Operate plant means: Start up fat mix plant and place on product; Monitor and adjust fat mix plant; Take fat mix plant off product, put back on product during production; Take fat mix plant off product at end of production run; Shut down (stop) fat mix plant*

**Element 2 CIP fat mixing plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: abnormal noise of motors, scraped surface coolers, pin workers; fractures or layering in product; incorrect temperature of fat mix plant for type of product; leaks in scraped surface coolers and pin workers; scraped surface coolers or pin worker motors not drawing correct amps; vibration in scraped surface coolers and pin workers; control system fault, eg computer programme lockup after power failure*

**Element 4 Determine cause of abnormal operating conditions**

*This covers conditions such as: scraped surface coolers or pin worker motors not drawing correct amps*

**Element 5 Rectify abnormal operating conditions**

*This covers conditions such as: fat mix plant freeze-up during start-up*

**Unit 9.4.2 Fat mix II**

*This unit covers operation of fat mix plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust fat mixing plant from given starting parameters**

*This means to adjust fat mixing plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Adjust fat mixing plant when services fluctuate**

*Adjust plant to maintain product to specification when services (eg water pressure, air pressure, steam pressure) fluctuate*

**Element 3 Clear and restart fat mixing plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 4 Detect abnormal operating conditions**

*This covers conditions such as: incorrect scraped surface cooler and pin worker rpm for product type*

**Element 5 Determine cause of abnormal operating conditions**

*This covers conditions such as: shafts on scraped surface coolers or pin workers not turning*

**Element 6 Rectify abnormal operating conditions**

*This covers conditions such as: cause of fat mix out of specification on moisture; cause of fat mix out of specification on salt; cause of fat mix out of specification on sediment; fractures or layering in product; incorrect scraped surface cooler and pin worker rpm for product type; incorrect temperature of fat mix plant for type of product; incorrect batch calculations*

**Unit 9.4.3 Fat mix III**

*This unit covers operation of fat mix plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Rectify abnormal operating conditions**

*This covers conditions such as: dosing water not sterilised; cause of fat mix out of specification on iodine value; cause of fat mix out of specification on peroxide value; cause of fat mix out of specification on flavours; cause of fat mix out of specification on micro; cause of fat mix out of specification on fat %*

**Unit 9.4.4 Fat mix IV**

*This unit covers determination and setting of fat mix plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine fat mixing plant operating parameters to achieve product specification**

*This element covers activities such as: Re-programme recipes to correct fat mix not meeting specification; Determine recipe and operating parameters to achieve product specification*

**9.5 Anhydrous Milk Fat****Unit 9.5.1 Anhydrous milkfat I**

*This unit covers operation of anhydrous milkfat (AMF) plant to make product to specification. Product includes any anhydrous milkfat products relevant to the site. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate AMF plant**

*Operate plant means: Start AMF plant and place on product; Monitor and adjust AMF plant; Take AMF plant off/on product during production for temporary hold/delay; Take AMF plant off product at end of run; Shut-down (stop) AMF plant*

**Element 2 CIP AMF plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: abnormal flavour or pH in raw cream; loss of "phase"*



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**Unit 9.5.2 Anhydrous milkfat II**

*This unit covers operation of AMF plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust AMF plant from given starting parameters**

*This means to adjust AMF plant (from given starting parameters) to produce product to spec when changing to another product specification*

**Element 2 Adjust AMF plant when services fluctuate**

*This element covers activities such as: Adjust plant when services or materials fluctuate/change; Produce AMF in spec when raw cream outside 38% - 42% fat (i.e. 30% - 44%)*

**Element 3 Clear and restart AMF plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 4 Detect abnormal operating conditions**

*This covers conditions such as: fat floating in balance tanks after CIP clean of AMF plant; impending loss of "phase"*

**Element 5 Rectify abnormal operating conditions**

*This covers conditions such as: cause of AMF out-of-spec on alkalinity; cause of AMF out-of-spec on dissolved oxygen; cause of AMF out-of-spec on free-fatty-acid; cause of AMF out-of-spec on moisture; cause of buttermilk out-of-spec on fat%; cause of caustic emulsion in AMF; cause of loss of "phase"; cause of low vacuum in dehydrator*

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**Unit 9.5.3 Anhydrous milkfat III**

*This unit covers determination and setting of AMF plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Determine AMF plant operating parameters to achieve product specification****Element 2 Determine cause of abnormal operating conditions**

*This covers conditions such as: abnormal flavour or pH in cream*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: cause of raw cream partially churned; cause of AMF out-of-spec on peroxide; cause of buttermilk out-of-spec on micro; cause of buttermilk out-of-spec on nitrates*

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**10.1 Starter Production****Unit 10.1.1 Bulk starter production I**

*This unit covers production of bulk starters for cheese, lactic acid casein, or other products relevant to the site that require bulk starter. Starter means any single or multiple strains of microbial and/or mould cultures relevant to the site. At this level, the operator operates the plant as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Make bulk starter**

*This element covers activities such as: sterilising starter medium; cooling starter medium to inoculation temperature, inoculation of starter medium; monitoring of starter incubation*

**Element 2 CIP bulk starter plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: inactive starter; incorrect inoculation of pot; incorrect starter incubation or storage temperatures; over-ripe starter; water sucked into pot or faulty water seal*

**Element 4 Use direct vat set starters**

*This element covers activities such as: receive and store DVS starters; monitor storage of DVS starters; inoculate silos/tanks with DVS starters*

**Unit 10.1.2 Bulk starter production II**

*This unit covers operation of bulk starter production plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Detect abnormal operating conditions**

*This covers conditions such as: high phage/micro levels; incorrect rotation of starter strains; incorrect sterilising and conditioning of air for starter pot*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of inactive starter; high phage/micro levels; incorrect starter incubation or storage temperatures; incorrect sterilising and conditioning of air for starter pot*

**Unit 10.1.3 Starter selection and control**

*This unit covers selection and control of starters for the manufacture of product. Product includes any cheese, casein, or dairy products relevant to the site that require starter. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Select starters and determine conditions for the manufacture of product to specification**

*This element covers activities such as: Select starter type and ratios appropriate for product type; Allocate starter strains and backup strains to ensure supplies of starter strains; Select bulk starter growing medium (eg milk, SMP) taking into account time of season, milk quality, total solids, etc to achieve required specifications*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect rotation of starter strains; causes (relating to starter) of incorrect acid development during cheese making*

**10.2 Cheese Curds and Whey****Unit 10.2.1 Curds and whey I**

*This unit covers production of curds and whey for cheese making using either manual or mechanised vats or tanks. Cheese refers to any cheese type relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate cheese curds and whey plant**

*This element covers activities such as: Start cheese vats/tanks plant to make cheese curds; Monitor/adjust cheese vats/tanks plant; Shut down cheese vats/tanks plant*

**Element 2 CIP cheese curds and whey plant**

*CIP means to clean plant with in-place cleaning regime. This element covers activities such as: CIP/clean cheese vats/tanks plant*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: no starter in vats/tanks; over cooked vats/tanks; over-primed vats/tanks; over/under stirred vats/tanks; slow vats/tanks; no rennet added to vats/tanks*

**Unit 10.2.2 Curds and whey II**

*This unit covers production of cheese curds and whey while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Clear and restart cheese curds and whey plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of slow vats/tanks; cause of no starter in vats/tanks; cause of over/under stirred vats/tanks; cause of no rennet added to vats/tanks*

**Unit 10.2.3 Curds and whey III**

*This unit covers determination and setting of cheese curds and whey plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine cheese curds and whey parameters and conditions to achieve product specification**

*This element covers activities such as: Determine starter, set-time, cutting speeds, cook, etc to achieve product specifications*

**10.3 Dry Salted Cheese****Unit 10.3.1 Draining, cheddaring, milling, and salting I**

*This unit covers operation of draining, cheddaring, milling, and salting plant for dry-salted cheese making. Dry-salted cheese refers to any dry-salted cheese type relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate cheese draining, cheddaring, milling, and salting plant**

*This element covers activities such as: Check, start up draining, cheddaring, milling, and salting plant; Monitor and adjust draining cheddaring, milling, and salting plant; Take draining, cheddaring, milling, and salting plant off product at end of production run; Adjust salt applicator to apply specified rate of salt; Shut down draining, cheddaring, milling, and salting plant*

**Element 2 CIP cheese draining, cheddaring, milling plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: curd depth too high/low; faults on draining belts; mill blockage or breakdown; product pH too high/low at milling; salt/moisture too high/low; salter malfunction*

**Unit 10.3.2 Draining, cheddaring, milling, and salting II**

*This unit covers operation of draining, cheddaring, milling, and salting plant for the manufacture of dry-salted cheese while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate draining, cheddaring, milling, and salting plant (advanced)**

*This covers conditions such as: Check and adjust curd "ramp", belt speed, and stirrers as appropriate for cheese type; Monitor and adjust mill to obtain correct "finger" size and through-put rate; Shut down, clear, and restart draining, cheddaring, milling, and salting plant after power, pump, mechanical, etc failure*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: salter malfunction; cause of mill blockage or breakdown; faults on draining belts; cause of curd depth too high/low*

**Unit 10.3.3 Draining, cheddaring, milling, and salting III**

*This unit covers determination and setting of draining, cheddaring, milling, and salting plant operating parameters and materials/ingredient/recipe specifications for the manufacture of dry-salted cheese to achieve product specification.*

**Element 1 Determine cheese draining, cheddaring, milling, and salting plant operating parameters to achieve product specification**

*This element covers activities such as: Determine curd "ramp", belt speed, and stirrers to achieve product specification; Determine salt application rate to achieve product specification*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of product pH too high/low at milling; cause of salt/moisture too high/low*

**10.4 Casomatic Operation****Unit 10.4.1 Casomatic or press-vat I**

*This unit covers operation of equipment such as pressing vats or casomatics for the manufacture of brine-salted cheese. Brine salted cheese includes gouda, edam, parmesan, and other brine-salted cheese varieties relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate casomatics or pressing vats**

*This element covers activities such as: Check and start up casomatic (or press-vat) and place on product; Monitor and adjust casomatic (or press vat) to produce cheese blocks; Adjust tapping times, do temp. stop, or empty out for production delays; Take casomatic (or press vat) off product at end of production run; Shut down casomatic (or press vat); Set casomatic up for CIP*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: lumps in buffer tank; faulty curd pump; cheese block too moist, dry, or crumbly; jammed knife; variation in block sizes; incorrect pressing pressures*

**Unit 10.4.2 Casomatic or press-vat II**

*This unit covers operation of casomatics or similar cheese pressing plant while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Adjust pressing for down-stream specs**

*This element covers activities such as: Adjust tapping times, and curd:whey ratio to achieve downstream pH and moisture spec; Adjust curd level in press vat to achieve downstream specs*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: lost computer sequence in casomatics; faulty curd pump; jammed knife; cause of over-moist, dry, or crumbly cheese blocks; variation in block sizes; causes of incorrect pH of cheese (relating to molding); incorrect pressing pressures*

**10.5 Brine Cheese Molding**

**Unit 10.5.1 Mold changing**

*This unit covers changing of molds used for brine salted cheese making. Brine salted cheese includes any variety of brine salted cheese relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Change cheese molds**

*This element covers activities such as: Remove, replace, inspect, and store molds; Reject damaged molds; Detect incorrect size of molded cheese; Repair, or arrange for repair of damaged molds*

**Unit 10.5.2 Brine cheese molding I**

*This unit covers operation of cheese molding equipment to mold brine-salted cheese. Cheese molding equipment includes cheese press groups, demolding equipment, and mold washing equipment. Brine salted cheese includes any brine salted cheese variety relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate cheese molding plant**

*This element covers activities such as: Determine correct mold for cheese type/spec; Determine quantity of molds required to meet production requirements; Check and start press group, demolder, and mold washer; Monitor press group, demolder, and mold washer; Shut down press group, demolder, and mold washer at end of production run*

**Element 2 CIP cheese molding plant**

*CIP means to clean plant with in-place cleaning regime.*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: incorrect pH of cheese*

**Unit 10.5.3 Brine cheese molding II**

*This unit covers determination and setting of cheese molding parameters (eg pressures and pressing times) to achieve product specification. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Determine cheese molding parameters to achieve product specifications**

*This element covers activities such as: Determine pressure and pressing times appropriate to cheese type/spec*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: cause of incorrect size of molded cheese*

**10.6 Cheese Brining****Unit 10.6.1 Cheese brining I**

*This unit covers brining of cheese. Brine salted cheese includes any brine salted cheese variety relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Brine cheese**

*This element covers activities such as: Check strength and quality of brine solution; Place cheese in brine as specified for cheese type; Remove cheese from brine after specified brine time*

**Unit 10.6.2 Cheese brining II**

*This unit covers determination and setting of brining parameters and conditions to achieve product specification. Brine salted cheese includes any brine salted cheese variety relevant to the site. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Determine brining parameters to achieve product specifications**

*This element covers activities such as: Determine brine conditions, position of cheese in brine, and time in brine to achieve cheese specification; Adjust temp, salt, pH, sediment, micro level of brine to spec*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: causes of incorrect (brine) salting of cheese; cause of incorrect salt levels in cheese; cause of temp too high/low in brine solution; cause of pH too high/low in brine solution; cause of product buoyancy problems; causes of high micro in brine solution*

**10.7 Parmesan****Unit 10.7.1 Parmesan re-conditioning**

*This unit covers re-conditioning of parmesan cheese. Parmesan cheese includes any parmesan variety relevant to the site. At this level, the operator operates as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Recondition parmesan cheese**

*This element covers activities such as: Determine if parmesan suitable for packing or reject; Inspect, clean, and sanitise parmesan cheese; Recondition (clean, wash, and dry) parmesan cheese for packing*

**Element 2 Turn green parmesan**

*This element covers activities such as: turn cheese over; turn board over Green parmesan curing refers to the first stage of curing of parmesan prior to the main curing stage.*

**Element 3 Turn parmesan cheese**

*This element covers activities such as: turn each cheese 1/8 - 1/4 turn; check fans at the completion of turning.*



**Unit 10.7.2 Green parmesan curing**

*This unit covers curing of "green" parmesan to specification. Green parmesan curing refers to the first stage of curing of parmesan prior to the main curing stage. At this level, the operator cures the green parmesan as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Cure green parmesan to specification****Element 2 Detect abnormal operating conditions**

*This covers conditions such as: parmesan not (green) curing correctly; causes of mould growth on boards*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: causes of mould growth on boards; causes of parmesan not (green) curing correctly*

**Element 4 Cure parmesan cheese**

*This element covers activities such as: Monitor and adjust curing process to cure parmesan to specification; Rectify causes of parmesan not curing correctly*

**Element 5 Operate parmesan grating and drying plant**

*Operate plant means: Check and start grating, drying, and blending plant; Monitor and adjust grating, drying, and blending plant to produce grated parmesan; Shut down grating, drying, and blending plant; Clean grating, drying, and blending plant*

**Element 6 Detect abnormal operating conditions**

*This covers conditions such as: comitrol, pre-breaker, and blender faults; product not meeting specification*

**Unit 10.7.3 Parmesan curing II/grating and drying**

*This unit covers determination and setting of parmesan curing parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredient/recipe specifications to achieve product specification. As well the determination and setting of grating and drying plant operating parameters (eg temperatures, pressures, process volumes per hour) and materials/ingredients/recipe specifications to achieve product specification.*

**Element 1 Determine parmesan curing parameters to achieve product specification**

*This covers: Determine curing parameters to achieve product specification; Determine green curing parameters to achieve product specification*

**Element 2 Determine parmesan grating and drying plant operating parameters to achieve product specification**

*This element covers activities such as: Determine blending recipe and set process parameters to achieve product specification*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: fluidisation problems during drying; incorrect environmental conditions*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: causes of product not meeting specification; fluidisation problems during drying; incorrect environmental conditions*

**10.8 Speciality Cheese****Unit 10.8.1 Molding, salting, and ripening I**

*This unit covers molding, salting, and ripening of specialty cheese. Specialty cheese includes any specialty cheese types such as blue mould, white mould, and smear cheese relevant to the site. It covers the use of mechanical or manual molding, salting and ripening equipment as relevant to the site. At this level, the operator molds, salts, and ripens cheese as per parameters, guidelines, and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Mold specialty cheese**

*This element covers activities such as: Sanitise and assemble cheese hoops; Fill hoops, turn, de-hoop and trim cheese; Prepare right number of frames and shelves for day's make*

**Element 2 Dry salt and ripen specialty cheese**

*This element covers activities such as: Apply salt to surface of cheese (if applicable) appropriate to cheese type; Clean and sanitise racks, molds, plastic mats, frames, shelves; Make up mould solution; Spray cheese with mould solution; Turn cheese in chiller to obtain correct mould/smear growth, shape; Pierce cheese by machine or hand (if applicable) appropriate to cheese type; Move cheese (when dry-salting) along shelves according to age; Check and record temperature in ripening room; Record pH, number cheeses, type, date of manufacture; Rectify warped trays and racks; Test pH of cheese*

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**Unit 10.8.2 Molding, salting, ripening II and smear cheese**

*This unit covers molding, salting, and ripening of specialty cheese while dealing with operating conditions of the nature identified and application of smear solution for the production of smear cheese. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Monitor and adjust molding, salting, and ripening of specialty cheese**

*This element covers activities such as: Manually adjust curd levels to ensure correct weights when milk solids and curd vary; Calculate number of hoops required per vat; Determine labelling and coding details appropriate to cheese type and spec; Take lab samples (eg moisture, salt, micro)*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: incorrect weight of cheese*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: causes of incorrect weight of cheese*

**Element 4 Make up smear solution**

*This element covers activities such as: Make up solution of pimaricin; Make up paint solution appropriate for cheese type; Make smear (white, orange) solution*

**Element 5 Apply smear**

*This element covers activities such as: Apply smear appropriate to type of cheese*

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**Unit 10.8.3 Molding, salting, and ripening III**

*This unit covers determination and setting of specialty cheese making parameters, conditions and materials/ingredient/recipe specifications to achieve product specification.*

**Element 1 Determine specialty cheese making parameters to achieve product specification**

*This element covers activities such as: Determine recipes, starters, moulds, make procedures, curing, etc to achieve specialty cheese specifications; Adjust make to produce cheese to spec when milk solids vary (eg 1.5%); Determine turning times of cheese hoops to achieve cheese specifications; Determine readiness of cheese for wrapping; Regrade incorrect export samples; Monitor and adjust temperature and humidity in curing/ripening rooms; Monitor and adjust cheese ripening conditions to achieve cheese ripening specification*

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**12.1 Continuous Dry-Salted Cheese Pressing**

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**Unit 12.1.1 Dry-salted cheese block-forming I**

*This unit covers operation of continuous pressing plant for the continuous pressing of dry-salted cheese curds, the cutting out of cheese into blocks, and the placing of blocks of cheese into bags. This covers the use of any such equipment relevant to the site. An example of such equipment is a wincanton tower. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate continuous dry-salted cheese pressing plant**

*This element covers activities such as: Start-up plant (eg towers) for blocking out cheese; Monitor and adjust plant (eg towers), block out, and bag cheese to specification; Shut down/clear out plant (eg towers) at end of production run*

**Element 2 CIP continuous cheese pressing plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: incorrect finish/shape of cheese block; incorrect weights; tower stop; incorrect operation (eg valves, pumps, limit switches, sequence)*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: cause of incorrect finish/shape of cheese block; incorrect weights*

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**Unit 12.1.2 Dry-salted cheese block-forming II**

*This unit covers operation of continuous cheese pressing plant while dealing with operating conditions of the nature identified. It also covers the determination and setting of operating parameters (eg temperatures, pressures, vacuums, times, process volumes per hour) to achieve product specification.*

**Element 1 Determine pressing, vacuum, and holding times**

*This element covers activities such as: Determine pressing, vacuum, and holding times to achieve required density of cheese*

**Element 2 Clear and restart continuous cheese pressing plant**

*This covers situations such as services, plant & equipment failures eg electricity supply, steam supply, air supply, pump failures, plant/pipe blockages, fire and following from emergency shutdowns. This skill covers the ability to clear and restart the plant after such situations. It does not necessarily include being able to rectify the cause of the plant/services failure.*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: cause of tower stoppage*

*Note: We need to include examples of the type of causes of tower stoppage an operator at this level could be expected to rectify?*

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**12.2 Rapid Cooling of Packed Product**

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**Unit 12.2.1 Rapid cooling of packed product**

*This unit covers rapid cooling of product. Product includes any product such as cheese and butter relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate rapid cooling plant**

*This element covers activities such as: Set-up rapid cooler for change of batch, pack or product type; Start and monitor rapid cooler to cool packed product to specification; Manually operate rapid cooler during system failure*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: faulty operation (mechanical, electrical, sequence) of rapid cooler*

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**12.3 Consumer Cheese**

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**Unit 12.3.1 Debinning, deboning and stripping/cutting cheese blocks, cheese shredding and packing**

*This unit covers debinning or depalletising, deboning, and stripping of cheese for consumer packing or further processing. Cheese includes any type of cheese relevant to the site. At this level the person performs duties as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Debin, debox and strip cheese**

*This element covers activities such as: Debin and de-box cheese; Visually check each block for foreign matter, mould; Remove bags, place cheese on line to cutter*

**Element 2 Cut blocks of cheese to specified size and shape**

*This element covers activities such as: Set-up cheese cutter to cut cheese; Cut cheese to size; Detect broken wires; Detect soft and/or crumbly cheese; Rectify cause of cheese cutter not cutting to correct size/weights*

**Element 3 Operate cheese shredding plant**

*This element covers activities such as: Set up shredder parameters to achieve customer specification; Set up, start and monitor shredder to shred cheese to specification; Disassemble and clean shredder*

**Element 4 Detect abnormal operating conditions**

*This covers conditions such as: incorrect shredding of cheese; product contamination from shredder or syloid*

**Element 5 Rectify abnormal operating conditions**

*This covers conditions such as: product contamination from shredder or syloid*

**Element 6 Detect abnormal operating conditions**

*This covers conditions such as: blunt knives; broken wires; cheese units coming through too fast; crumbly cheese; jamming caused by soft cheese; machine jams*

**Element 7 Rectify abnormal operating conditions**

*This covers conditions such as: broken wires; cheese units coming through too fast; jamming caused by soft cheese; machine jams*

**Element 8 Manually pack specialty cheese**

*This element covers activities such as: Record shelf life and/or original cheese type; Paint/wax/manually wrap cheese according to cheese type; Make up carton, prepare labels and codes; Prepare, clean cheeses for packing; Clean work area, floors, tables, etc*

**Unit 12.3.2 Consumer cheese packing II**

*This unit covers setting up, monitoring, and adjustment of consumer cheese packing machines. Consumer packing machine includes any such machine relevant to the site.*

**Element 1 Setup, monitor and adjust consumer cheese packing machine**

*This element covers activities such as: Start and monitor cheese packing machine to pack cheese to specification; Adjust stroke length, registration (eye), packing speed to achieve specification*

**Unit 12.3.3 Consumer cheese packing III**

*This unit covers selection and grading of cheese for consumer packing to meet customer specifications.*

**Element 1 Grade cheese for consumer cheese packing****12.4 Liquid/Semi Liquid Packing (Consumer/Bulk)****Unit 12.4.1 Liquid/semi liquid pack filling I**

*This unit covers operation of filling plant for filling bulk or consumer packs with liquid or semi-liquid products. Products include any liquid and semi-liquid products relevant to the site such as milk, yoghurt, cream, fat-mix, and butter. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate liquid/semi liquid pack filling plant**

*Operate plant means: Start/monitor/adjust filling plant to fill packs; Set-up filling machine for change of pack size and/or product type; Shut down filling plant; Clear out and reset filler (eg after computer fault or power failure)*

**Element 2 CIP liquid/semi liquid pack filling plant**

*CIP means to clean plant with in-place cleaning regime*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: filling machine incorrectly assembled; incorrect alignment or faulty photo cells, proximities, limit switches; incorrect operation (eg rams, valves, pumps, sequence) of machine*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: blockage of filling plant; cause of incorrect finish of pack; cause of incorrect weights; cause of product contamination from filling equipment; incorrect assembly of filling machine*

**Unit 12.4.2 Liquid/semi liquid pack filling II**

*This unit covers setting up and adjustment of liquid and semi-liquid packing plant to the level indicated in the unit.*

**Element 1 Setup/adjust liquid/semi liquid pack filling plant**

*This element covers activities such as: Set basic/operational mechanical alignments; Set pack height space; Set/adjust for correct operation (eg rams, valves, pumps, sequence) of machine; Set infeed and outfeed timing; Set air/vacuum pressures; Lubricate filler*

**Element 2 Setup/adjust liquid/semi liquid pack filler for different product characteristics and environmental conditions**

*This element covers activities such as: Setup/adjust for different product characteristics and environmental conditions (eg density, viscosity, temperature)*



**Unit 12.4.3 Liquid/semi liquid pack filling III**

*This unit covers overhauling and rebuilding of liquid/semi liquid filling plant, and design/modification of such plant.*

**Element 1** Overhaul liquid/semi liquid pack filler

**Element 2** Design/modify liquid/semi liquid pack filler

**12.5 Dry Products Packing (Consumer/Bulk)****Unit 12.5.1 Dry product pack filling I**

*This unit covers filling of consumer or bulk packs with dry products. Dry products includes any dry product relevant to the site such as milk powders, caseins, caseinates, whey protein concentrates, whey powders, cheese powders, and cocoa prep. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1** Operate dry products pack filling plant

*Operate plant means: Start-up and monitor/adjust filling plant to fill packs to specification; Set-up filling machine for change of pack size and/or product type; Shut down filling plant*

**Element 2** Detect abnormal operating conditions

*This covers conditions such as: incorrect operation (eg valves, pumps, limit switches, sequence)*

**Element 3** Rectify abnormal operating conditions

*This covers conditions such as: blockage of filling plant; cause of incorrect finish of pack; cause of incorrect weights*

**Element 4** Operate bag folding or presenting equipment

*Operate means: Manually fold or present bags to sealer; Start and monitor bag folder/presenter to present bags to sealer; Adjust folder/presenter for correct folding of bags*

**Unit 12.5.2 Dry product pack filling II**

*This unit covers setting up and adjustment of dry product pack filling plant to the level indicated in this unit.*

**Element 1** Setup and adjust dry products pack filling plant

*This element covers activities such as: Set basic/operational mechanical alignments; Adjust augers (eg heights, speed,); Visual check of auger clearances; Set pack height space; Set infeed and outfeed timing; Set air/vacuum pressures; Lubricate filler*

**Element 2** Set up and adjust dry product pack filler for different product characteristics and environmental conditions

*This element covers activities such as: Setup/adjust for different product characteristics and environmental conditions (eg density, flowability, humidity)*

**Unit 12.5.3 Dry product pack filling III**

*This unit covers overhaul, rebuilding, and design/modification of dry product pack filling plant.*

**Element 1** Overhaul dry products pack filler

**Element 2** Design/modify dry products pack filler

**12.6 Consumer/Bulk Bag, Sachet, Sealing****Unit 12.6.1 Sealing of bags, liners and sachets I**

*This unit covers sealing of bags, sachets and liners. This includes any such sealing plant relevant to the site used for sealing or sewing of bags, sachets, or liners. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1** Operate pack sealing equipment

*This element covers activities such as: Start and monitor sealing equipment to seal pack to specification; Shut down and clean sealer equipment;*

**Element 2** Detect abnormal operating conditions

*This covers conditions such as: incorrect mechanical operation (eg valves, pumps, sequence); incorrect alignment or faulty photo cells, proximities, limit switches; incorrect sealing equipment operation (eg lid seals, seal-bars, heat elements, seamers); Detect incorrect sealing*

**Unit 12.6.2 Sealing of bags, liners and sachets II**

*This unit covers operation of sealing or sewing equipment while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1** Rectify abnormal operating conditions

*This covers conditions such as: incorrect mechanical operation (eg valves, pumps, sequence); incorrect alignment or faulty photo cells, proximities, limit switches; incorrect sealing equipment operation (eg lid seals, seal-bars, heat elements, seamers); cause of incorrect sealing*

**Unit 12.6.3 Sealing of bags, liners and sachets III**

*This unit covers determination and setting of operating parameters such as temperatures, pressures, vacuums, times, pack-type (eg size, film, liners, sachet) to meet packing specifications.*

**Element 1** Determine sealing parameters

**Unit 12.7.1 Gas flushing I**

*This unit covers gas flushing of packed product, with the exception of gassing of powder in specialised gas chambers. Product includes any gas-flushed product relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate gas flushing plant to gas flush product**

*This element covers activities such as: check and start gas flushing plant; monitor and adjust gas flushing plant; shut down gas flushing plant*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect gas flushing*

*Note: we need more examples of the type of causes of incorrect gas flushing that a person at this level could be expected to rectify*

**12.8 Product Cartoning****Unit 12.8.1 Mechanised and Manual cartoning I**

*This unit covers mechanised and manual cartoning of product. This includes the operation of any such equipment relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate mechanised cartoning plant**

*Operate plant means: Start and monitor cartoning equipment to carton product to specification; Shut down and clean cartoning equipment*

**Element 2 Manually carton product**

*This element covers activities such as: Manually carton product or consumer packs as specified*

**Unit 12.8.2 Mechanised cartoning II**

*This unit covers setting and adjustment of mechanised cartoning plant, and the rectification of conditions such as those indicated in the unit. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Setup and adjust mechanised cartoning plant**

*This element covers activities such as: Setup/adjust alignments and check sequencing*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect glue temperature; incorrect glue distribution; faulty carton forming; damaged components*

**Unit 12.8.3 Mechanised cartoning III**

*This unit covers overhauling and design of modifications to mechanised cartoning equipment.*

**Element 1 Overhaul mechanised cartoning machine****Element 2 Design/modify mechanised cartoning machine****12.9 Product/Pack Weighing****Unit 12.9.1 Weighing (automatic and manual).**

*This unit covers operation of automated and manual weighing equipment. This includes any such equipment relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate automated weighing equipment**

*Operate means: Set-up weighing equipment for new pack or product type; Start and monitor weighing equipment to weigh product/packages to specification; Check tare weight of weighing equipment*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: faulty operation of weighing equipment and reject mechanism*

**Element 3 Manually weigh product or pack**

*This element covers activities such as: Tare scales; Weigh product or pack; Record correct weight on product or pack; Record weight on weight sheet*

**12.10 Coding****Unit 12.10.1 Mechanised coding, printing, and embossing I**

*This unit covers coding, printing or embossing of packs. Packs include any type of product packaging relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Code, print or emboss product pack**

*This element covers activities such as: Start and monitor coding/printing/embossing equipment to code pack to specification; Detect faulty coding or printing*

**Unit 12.10.1 Manual coding or stamping**

*This unit covers manual coding or stamping of product or packages. It includes any such manual coding or stamping relevant to the site. At this level the person codes or stamps as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Manually code product or package**

*This element covers activities such as: Hand stamp packs for code as specified; Detect faulty coding or printing; Rectify faulty coding or printing*

**Unit 12.10.2 Mechanised coding, printing, and embossing II**

*This unit covers operation of mechanised coding, printing, or embossing equipment while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Set up coding or printing of product or package**

*This element covers activities such as: Set-up coding equipment for new batch, pack or product type*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: faulty coding or printing*

**12.11 Metal Detection****Unit 12.11.1 Metal Detection I**

*This unit covers operation of metal detection equipment. It includes any such equipment relevant to the site. At this level the operator operates the equipment as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate metal detector**

*Operate means: Check metal detector for product type and detection specifications; Start and monitor metal detector to detect specified type/size metal in product*

**Unit 12.11.2 Metal Detection II**

*This unit covers calibration of metal detectors.*

**Element 1 Calibrate metal detector****12.12 Palletising/Binning and Conveying****Unit 12.12.1 Palletising/Binning (manual)**

*This unit covers manual palletising, and or manual binning of product, and or the assembly of bulk bins. Product includes any product relevant to the site. At this level the person works to parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Manually palletise or bin product, and/or assemble bins**

*This element covers activities such as: Manually stack product on pallets; Manually bin product; Select bin parts and assemble bulk bins; Strap pallets or bins; label pallets or bins*

**Unit 12.12.2 Palletising/Binning (mechanised)**

*This unit covers palletising or binning of product using a palletiser or robot. This includes any palletisers or robots relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate palletiser or robot to palletise or bin product**

*This element covers activities such as: Start and monitor palletiser or robot to palletise or bin product as specified; Set-up palletiser or robot for new batch, pack or product type*

**12.13 De - Palletising/Binning****Unit 12.13.1 De - Palletising/Bin tipping I**

*This unit covers operation of de-palletisation and/or bin-tipping plant. It includes any de-palletising or bin tipping plant relevant to the site. At this level the operator de-palletises or tips bins as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate de-palletising or bin tipping plant**

*This element covers activities such as: Start, monitor/adjust depalletiser/bin tipper*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: faulty operation of depalletiser/bin tipper*

**12.14 Pallet Shrouding****Unit 12.14.1 Pallet shrouding/stretch-wrapping**

*This unit covers shrouding or stretchwrapping of packaged product. It includes any shrouding or stretchwrapping relevant to the site. At this level the operator shrouds or stretchwraps as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Shroud or stretchwrap pallets or bins****12.15 Cleaning Packing Equipment****Unit 12.15.1 Cleaning packing equipment**

*This unit covers cleaning of packing equipment. It includes any packing equipment relevant to the site. At this level the operator cleans as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Clean packing equipment**

*This element covers activities such as: Strip packing plant and equipment; clean packing plant and equipment; reassemble packing plant and equipment*

**12.16 Can Clinching**



**Unit 12.16.1 Clinching I**

*This unit covers operation of can clinching plant. It includes any such plant relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate can clincher**

*Operate means: Check and start clincher; Monitor clincher; Stop clincher; Clean clincher*

**Unit 12.16.2 Clinching II**

*This unit covers setting up and adjustment of can clinching plant.*

**Element 1 Setup and adjust can clincher**

*This element covers activities such as: Complete initial clincher setup; Adjust clincher for can heights and diameter; Adjust timing and alignment of clincher; Check for and repair damaged components*

**Unit 12.16.3 Clinching III**

*This unit covers advanced adjustment of can clinching plant, the overhaul of such plant, and the design of modifications to such plant.*

**Element 1 Adjust, and overhaul can clincher**

*This element covers activities such as: Adjust clincher rolls, clearance, and height; Adjust clincher for changes in product or component characteristics (eg density, flowability; end diameter, flange width, amount of compound, seaming stock thickness); Select roll profile to suit plate thickness, size and type dimpler, base plate pre-load; Overhaul and rebuild clincher*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: powder in seals; imploding or exploding cans*

**Element 3 Design/modify can clincher****12.17 Powder gassing chamber****Unit 12.17.1 Powder gassing chamber I**

*This unit covers operation of a powder gassing chamber. It includes any such plant relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate gassing chamber**

*Operate means: Check and start gassing chamber; Monitor gassing chamber; Stop gassing chamber; Clean gassing chamber*

**Unit 12.17.2 Powder gassing chamber II**

*This unit covers setting, adjusting and servicing of powder gassing chamber(s) to the level indicated.*

**Element 1 Setup, adjust and service powder gassing chamber**

*This element covers activities such as: Complete initial setup of chamber; Change oven doors; Adjust pusher strokes; Changer pusher rails; Set guide rails; Adjust sensor position; Lubricate chamber; Replace door seals; Adjust bridges and dead plates for smooth can transfer*

**Unit 12.17.3 Powder gassing chamber III**

*This unit covers tuning of powder gassing chamber(s) to optimise performance, and the determination of the cause of operation conditions such as those indicated in the unit.*

**Element 1 Optimise powder gassing chamber, and determine cause of abnormal operating conditions**

*This element covers activities such as: Tune chamber to optimise for different powder and conditions; Determine cause of high residual oxygen; Determine cause of inadequate vacuum and rectify; Determine cause of inadequate gas in can and rectify*

**12.18 Can Seaming****Unit 12.18.1 Can seaming I**

*This unit covers operation of can seaming plant. It includes any such plant relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate seamer**

*Operate seamer means: Check and start seamer; Monitor seamer; Stop seamer; Clean seamer*

**Unit 12.18.2 Can seaming II**

*This unit covers setting up and adjustment of can seaming plant to the level indicated in the unit.*

**Element 1 Setup and adjust can seamer**

*This element covers activities such as: Complete initial setup of seamer; Adjust seamer to suit can height and diameter; Adjust timing and alignment; Check and repair damaged components*

**Unit 12.18.3 Can seaming III**

*This unit covers advanced setting and adjustment of can seaming plant to the level indicated in the unit.*

**Element 1 Setup and adjust can seamer**

*This element covers activities such as: Adjust seamer to produce seam to specification; Adjust seam roll clearance and heights; Select correct seam roll profile; Set baseplate pre-load pressure*

**12.19 Conveying****Unit 12.19.1 Conveying I**

*This unit covers operation of conveying equipment. It covers any conveying equipment relevant to the site. At this level the operator operates the equipment as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate conveyors**

*This element covers activities such as: Start and monitor conveyors, etc to convey product without damage; Adjust conveyors (minor, eg guide rails)*

**Unit 12.19.2 Conveying II**

*This unit covers setting, adjusting, and servicing of conveying equipment to the level indicated in the unit.*

**Element 1 Setup, adjust and service conveyors**

*This element covers activities such as: Setup/adjust heights, levels, speeds, alignments, sensor positions; Lubricate conveyors*

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**Unit 12.19.3 Conveying III**

*This unit covers overhaul, design, and selection of conveying equipment.*

**Element 1 Overhaul/rebuild conveyor****Element 2 Design/modify/select conveyors**

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**12.20 Component Handling machines**

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**Unit 12.20.1 Component handling I**

*This unit covers operation of component handling machines such as spoon droppers, reclosure applicators, label applicators, leaflet inserters etc. This unit covers any such machines relevant to the site. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate component handling machine**

*Operate component machine includes: Check and start machine; Monitor machine; Shut down machine; Clear minor jams; Stop machine; Clean machine*

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**Unit 12.20.2 Component handling II**

*This unit covers setting up and adjusting component handling equipment to the level indicated in the unit.*

**Element 1 Setup, adjust and service component handling machine**

*This element covers activities such as: Complete initial setup of machine; Make size changes; Conduct routine maintenance and adjustment*

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**Unit 12.20.3 Component handling III**

*This unit covers diagnosis and rectification of component handling machine faults, and the design/modification of such machines.*

**Element 1 Diagnose faults and rectify component handling machine****Element 2 Design/modify component handling machine**

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**13.1 Dry/Cool Stores****Unit 13.1.1 Dry/cool stores I**

*This unit covers receipt and storage of product and materials. Product and materials include any product and materials relevant to the site. Storage includes dry storage, cool storage, cold storage, and any other type of product and material storage relevant to the site. At this level, the person receives and stores product and materials in accordance with set procedures and systems. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Receive and store product or materials**

*This element covers activities such as: Process inwards product/materials; Detect discrepancies between product and documentation; Place/store product and materials correctly in store; Store and maintain condition of product to correct conditions*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: damaged packaging; product or packaging in poor condition; Detect shortage of product*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: damaged packaging*

**Unit 13.1.2 Dry/cool stores II**

*This unit covers retrieval and loading out of product and materials. At this level, the person retrieves and loads out product and materials in accordance with set procedures and systems.*

**Element 1 Retrieve, transfer, and despatch product or materials****Element 2 Detect abnormal operating conditions**

*This covers conditions such as: incorrect product transfer instructions; non-conforming containers/trucks*

**Unit 13.1.3 Dry/cool stores III**

*This unit covers handling of conditions relating to receipt, storage, and despatch of goods and materials at the level indicated in the unit.*

**Element 1 Rectify abnormal operating conditions**

*This covers conditions such as: incorrect product transfer instructions; non-conforming containers/transport; product delivered/received to/from incorrect site*

**13.2 Fumigation****Unit 13.2.1 Fumigation**

*This unit covers fumigation of stores and other buildings relevant to the site. Fumigation is carried out in accordance with site procedures and regulatory requirements.*

**Element 1 Fumigate stores or buildings**

*This element covers activities such as: Mix fumigation chemicals; Fumigate stores (or factory or other room); Maintain security during fumigation; Conduct basic servicing of fumigation equipment*

**13.3 Mobile Load Shifting Vehicles****Unit 13.3.1 Load shifting vehicle I**

*This unit covers operation of load shifting vehicles. Load shifting vehicles include any such load shifting vehicle relevant to the site such as forklifts, front-end loaders, Hi-ab light crane vehicles.*

**Element 1 Operate load shifting vehicle**

*This element covers activities such as: Operate load shifting vehicle to load/unload goods; Operate load shifting vehicle to transport goods/materials*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: unusual noises in load shifting vehicle; equipment overheating; leaking hydraulics*

**Unit 13.3.2 Load shifting vehicle II**

*This unit covers operation of load shifting vehicles to transport difficult goods or to transport goods under difficult situations. The essence of this unit is that operation involves a level of skill significantly higher than in unit 13.3.a.1.*

**Element 1 Operate load shifting vehicle to shift difficult goods or under difficult situations**

*This covers conditions such as: transport difficult goods (eg pipes, liquids, farm machinery, people in safety cages); load/place/retrieve goods in difficult places (eg confined space/height); difficult surfaces; load turning equipment*

**13.4 Slip-sheeting****Unit 13.4.1 Slip-sheeting**

*This unit covers use of push-pull equipment to slip-sheet goods.*

**Element 1 Use push/pull unit to slip-sheet goods****Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: ripped slipsheet*

**13.5 Swing-lifting/gantry**

**Unit 13.5.1 Swing-lifting/gantry**

*This unit covers loading and unloading of ISO containers using equipment such as swing-lifts, gantry-crane, and large forklifts.*

**Element 1 Load and unload ISO containers**

*This element covers activities such as: Operate swing lift/gantry/forklift to load/unload ISO containers; Check swing lift/gantry/forklift and notify if repairs required for safe operation*

**13.6 Shunting****Unit 13.6.1 Shunting**

*This unit covers shunting of wagons on a rail siding.*

**Element 1 Shunt wagons on rail siding****Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: Detect and rectify when Railway wagons not on time*

**13.7 Stock control****Unit 13.7.1 Receival, storage & issue of stock items**

*This unit covers receival, storage, and issue of stock items. Stock items includes any stock such as spare parts and consumable stores.*

**Element 1 Receive and check goods**

*This element covers activities such as: Receive and check goods delivered from suppliers; Identify discrepancies between goods received and goods ordered; Assign inventory number to stock items*

**Element 2 Place and store goods****Element 3 Locate and issue goods from store****Unit 13.7.2 Ordering, Stores Maintenance and Security.**

*This unit covers ordering (and followup of ordering) of stock items and maintenance of storage conditions and stores security. Ordering may be internal to the company (eg to company purchasing officer) or external to suppliers.*

**Element 1 Order stock items**

*This also covers activities such as: Deal with back orders; Rectify goods arriving without a purchase order; Rectify wrong item supplied by vendor/purchasing; Rectify incorrect requisition orders (eg no job numbers, no authorisation); Rectify carrier deliveries to wrong place; Obtain emergency orders*

**Element 2 Maintain condition and security of stores**

*This element covers activities such as: Maintain security of stores; Check store temperatures/conditions; Check repairs to stores, equipment, and machinery are carried out*

**Unit 13.7.3 Inventory levels**

*This unit covers control of inventory levels.*

**Element 1 Control inventory levels**

*This element covers activities such as: Conduct stock take; Identify and inform suppliers/purchasing of poor performing items; Maintain stock at re-order levels; Identify redundant stock items; Identify slow moving stock items; Identify non-stock requests; Rectify after hours issues incorrectly recorded*

**Unit 13.7.4 Purchasing**

*This unit covers purchasing of stock, and control of critical stock items.*

**Element 1 Purchase and control critical stock items**

*This element covers activities such as: Purchase stock items; Request quotes for parts/spares/contracted services; Purchase non-stock requests; Purchase alternative items when normal supplies no longer available; Liaise with suppliers over supply/price of goods; Rectify price on invoice not matching quoted price; Liaise with plant managers to identify new critical plant requirements and redundant plant requirements; Decide what to do with redundant stock; Work out re-order levels for stock*

**13.8 Local Market Sales****Unit 13.8.1 Local market sales**

*This unit covers sale of product within New Zealand.*

**Element 1 Sell product on the local market**

*This element covers activities such as: Receive customer inquiries and quote prices; Obtain product (eg from stock, from production, or purchase); Arrange deliveries to customers; Respond to customer complaints; Promote sales*

**13.9 Importing****Unit 13.9.1 Importing from overseas**

*This unit covers importation of goods from outside New Zealand.*

**Element 1 Import goods from overseas**



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**15.1 Sampling**

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**Unit 15.1.1 Sampling**

*This unit covers taking of representative samples for analysis or retention, in accordance with standard procedures. It covers the taking of samples where aseptic techniques are not required.*

**Element 1 Take a representative sample**

*This element covers activities such as: prepare sample containers; take a sample; store product samples; clean sampling utensils*

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**Unit 15.1.2 Aseptic sampling**

*This unit covers taking of representative aseptic samples for analysis or retention, in accordance with standard procedures. Aseptic means prevention of microbiological contamination of product and sample.*

**Element 1 Take an aseptic sample**

*This covers use of sterile sampling equipment and use of sterile sampling techniques*

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**Unit 15.1.3 Develop/modify sampling methods**

*This unit covers development of sampling methods, the modification of existing sampling methods, and the recommendation of solutions to sampling problems.*

**Element 1 Develop or modify sampling methods and recommend solutions to sampling problems**

*Examples of sampling problems include receiving incorrect samples; receiving unrepresentative samples; receiving contaminated samples; incorrect sampling schedules; incorrect sampling points; incorrect techniques*

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**15.2 Sensory/Functional Analysis**

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**Unit 15.2.1 Basic sensory analysis**

*This unit covers conducting a flavour or odour assessment of product in accordance with standard procedures. Product includes any product relevant to the site such as milk, cream, buttermilk, skimmilk, whey, vegetable oils, and products derived thereof. Flavour or odour assessment covers the ability to assess uncharacteristic, abnormal, or variances of flavour or odour.*

**Element 1 Conduct flavour or odour assessment of milk or product**

*This element covers activities such as: preparation of samples, performing the test, and recording the result*

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**Unit 15.2.2 Organoleptic analysis and Functional Testing**

*This unit covers organoleptic assessment and Functional Testing of product in accordance with standard procedures. Organoleptic assessment includes a full assessment of organoleptic features of a product such as odour, flavour, colour, texture, and body. Product includes any product relevant to the site.*

**Element 1 Conduct organoleptic assessment of product**

*This element covers activities such as: preparation of samples, performing the test, and recording the result. An example of an organoleptic assessment of product is the assessment of flavour, colour, body, texture, and free moisture of butter.*

**Element 2 Conduct functional test following standard procedures**

*This element covers activities such as: preparation of samples, performing the test, and recording the result. Examples of functional tests include sludge test, SDP, tumbler test, wettability, dispersibility, coffee, dilution appearance, suspension stability.*

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**Unit 15.2.3 Sensory/functional test performance identification**

*This unit covers the ability to identify if a sensory or functional test has performed incorrectly. At this level, the person recognises that a condition arising from the sample, testing process, testing equipment, or other condition occurring will or may have led to an incorrect result. It does not include the ability to identify the cause of the incorrect performance.*

**Element 1 Identify if a sensory or functional test has performed incorrectly**

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**Unit 15.2.4 Sensory/functional test performance and validation**

*This unit covers identification of the cause of a sensory or functional test not performing, and the validation of sensory or functional test procedures.*

**Element 1 Identify the cause of a sensory or functional test not performing****Element 2 Validate sensory or functional test procedures**

*Validation means to develop proof that a test method produces results within the nominated limits when performed under the conditions specified. This element covers activities such as: conduct reference tests compared to control method and range of conditions; collate results; determine validity and reliability results; document/present results*

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**Unit 15.2.5 Develop sensory/functional tests**

*This unit covers development of sensory or functional test methods.*

**Element 1 Develop sensory or functional test methods**

*This element covers activities such as: develop sensory/functional test procedures; modify sensory/functional test methods to ensure sensory defects are reliably detected; select the appropriate sensory/functional test for an application*

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**15.3 Chemical Analysis**

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**Unit 15.3.1 Chemical/hazardous substances, Preparation of reagents and chemical analysis.**

*This unit covers handling and or storage of chemicals or hazardous substances, the preparation of chemical reagents and conducting a chemical or analytical test in accordance with standard procedures. Chemicals or hazardous substances includes any such chemicals or hazardous substances relevant to the site.*

**Element 1** Handle or store chemicals or dangerous substances

**Element 2** Prepare chemical reagents

*This element covers activities such as: dry chemicals, weigh chemicals, mix chemicals, standardise chemicals, label, and store*

**Element 3** Conduct a chemical or analytical test following standard procedures which involves up to 3 main stages

**Element 4** Clean labware to specified cleaning standards

*This element covers activities such as: soaking, washing, rinsing, draining, drying, sterilising (where applicable)*

**Unit 15.3.2 Chemical analysis Ila**

*This unit covers conducting of a chemical or analytical test following standard procedures which involves 4 - 5 main stages such as preparation, weighing, extraction, dissolving, centrifuging, and testing. Examples of tests in this category are grav. fat, Vit. A, Kjeldahl, Kjeldahl.*

**Element 1** Conduct a chemical or analytical test following standard procedures which involves 4 - 5 main stages

**Element 2** Conduct a chemical or analytical test following standard procedures which involves 6 or more main stages

**Unit 15.3.3 Chemical analysis test performance identification**

*This unit covers the ability to identify if a chemical or analytical test has performed incorrectly. At this level, the person recognises that a condition arising from the sample, testing process, testing equipment, or other condition occurring will or may have led to an incorrect result. It does not include the ability to identify the cause of the incorrect performance.*

**Element 1** Identify if a chemical or analytical test has performed incorrectly

*This element covers activities such as: detect reference out of limits; duplicates not within limits; results uncharacteristic compared to historical data; detect procedure/conditions/equipment abnormality during test*

**Unit 15.3.4 Chemical analysis test performance and validation**

*This unit covers identification of the cause of a chemical or analytical test not performing, and the validation of chemical or analytical test procedures.*

**Element 1** Identify the cause of a chemical or analytical test not performing correctly

*This element covers activities such as: determine the cause of a chemical test not performing correctly; examine chemical test trends to identify uncharacteristic results*

**Element 2** Validate chemical or analytical test method/procedures

*Validation means to develop proof that a test method produces results within the nominated limits when performed under the conditions specified. This element covers activities such as: conduct reference tests compared to control method and range of conditions; collate results; determine validity and reliability results; document/present results*

**Unit 15.3.5 Develop/modify chemicals analysis methods**

*This unit covers development of chemical or analytical test methods.*

**Element 1** Develop chemical or analytical test methods

*This element covers activities such as: develop chemical analysis testing procedures; modify existing chemical test procedures*

**15.4 Microbiological Analysis****Unit 15.4.1 Micro analysis Ia**

*This unit covers conducting micro laboratory tests following standard procedures, which involve reconstitution and/or analysis. Examples of tests in this category are APC 30, Y&M, SPC 55, VRBA, starch, and other tests as in NZTM2.*

**Element 1** Conduct micro laboratory tests following standard procedures, which involves reconstitution and/or analysis

*This also includes: recognise contaminated controls in micro tests (such as agar blanks)*

**Element 2** Conduct micro laboratory tests following standard procedures, which involves reconstitution, analysis, and confirmation.

**Element 3** Prepare media for micro tests

**Unit 15.4.2 Micro analysis Ila**

*This unit covers conducting micro laboratory tests following standard procedures, which involve 4 or more steps such as reconstitution, analysis, resuscitation, treatment, and/or confirmation. Examples of such tests are Australian Standard Method for S. aureus; various Nutricia test methods; bacteriophage.*

**Element 1** Conduct micro laboratory tests following standard procedures, which involves 4 or more steps such as reconstitution, analysis, resuscitation, treatment, and/or confirmation

**Element 2** Conduct analytical test following microbiological assay procedure

**Element 3** Test media performance

**Element 4** Identify uncharacteristic micro test results compared to historical data

*This element covers activities such as: Recognise atypical micro colony types*

**Element 5** Handle/store stock cultures and pathogens

*This element covers activities such as: Handle/store stock cultures; handle/store pathogens*

**Element 6** Prepare bulk starter or yeast inoculum

*This element covers activities such as: Maintain mother culture; Prepare inoculum; Test viability of inoculum*

**Unit 15.4.3 Micro testing problems**

*This unit covers determination of the cause of uncharacteristic micro test results, and the recommendation of solutions to micro test problems.*

**Element 1** Determine the cause of uncharacteristic micro test results

*This also includes: Recommend solutions to micro test problems*

**Element 2** Determine the cause of uncharacteristic microassay test results

*This also includes: Recommend solutions to microassay test problems*

**Element 3** Check and grow cultures and subcultures

*This element covers activities such as: Check cultures for purity and performance; Grow sub-cultures; Reconstitute freeze dried cultures*

**Unit 15.4.4 Micro test validation**

*This unit covers validation of micro test procedures.*

**Element 1** Validate micro test procedures

*Validation means to develop proof that a test method produces results within the nominated limits when performed under the conditions specified. This element covers activities such as: conduct reference tests compared to control method and range of conditions; collate results; determine validity and reliability results; document/present results*

**Element 2** Validate microassay test procedures

*Validation means to develop proof that a test method produces results within the nominated limits when performed under the conditions specified. This element covers activities such as: conduct reference tests compared to control method and range of conditions; collate results; determine validity and reliability results; document/present results*

**Element 3** Identify unknown micro type

**Unit 15.4.5 Develop/modify micro testing methods**

*This unit covers development or modification of micro test methods.*

**Element 1** Develop micro test methods

*This element covers activities such as: Develop micro testing procedures; Modify existing micro test procedures to cover new products*

**Element 2** Develop microassay testing procedures

*This element covers activities such as: Modify existing microassay test procedures to cover new products*

**15.5 Product Grading****Unit 15.5.1 Product grading**

*This unit covers the assignment of a grade to product.*

**Element 1** Assign a product a grade

**Unit 15.5.2 Grade document release**

*This unit covers the checking and releasing of product grading documentation.*

**Element 1** Check and release product grading documentation

**Unit 15.5.3 Product disposition**

*This unit covers the recommendation of a product disposition such as regrading, reworking, or disposal.*

**Element 1** Recommend product disposition

**15.6 Lab Equipment Purchase and Maintenance**



**Unit 15.6.1 Lab equipment I**

*This unit covers operation of laboratory equipment for chemical and analytical testing using standard operating procedures.*

**Element 1 Operate chemical and analytical testing equipment**

*Operate testing equipment means: Operate laboratory equipment; Detect faults in laboratory equipment (eg lamp failure, gas leaks); Perform routine daily maintenance on laboratory equipment; Clean laboratory equipment.*

**Element 2 Calibrate laboratory equipment****Unit 15.6.2 Lab equipment II**

*This unit covers replacement of laboratory equipment components to the level indicated in the unit, and the commissioning of laboratory equipment.*

**Element 1 Replace laboratory equipment components**

*This element covers activities such as: Replace bulbs (eg UV detectors, Spectrophotometers); Replace tubing, ferrules, septums, and connectors (eg Auto titrators, Milkotester, HPLC, Protein analyser, GFAAS, Auto pipettor); Align lamps (eg FAAS, UV detector); Replace megabore column (eg GLC); Replace valve assemblies (eg Milkoscan, HPLC); Replace guard packs, analytical columns (eg HPLC); Replenish pH probes - renew crystals*

**Element 2 Commission lab equipment****Unit 15.6.3 Lab equipment III**

*This unit covers servicing and fault-finding of laboratory equipment to the level indicated in the unit.*

**Element 1 Service and fault-find lab equipment**

*This element covers activities such as: Rebuild injector/sample loading components (eg HPLC, Protein analyser); Rebuild inlet, outlet, check, switching valves - O rings, springs, needles, ruby ball, magnets (eg Milkoscan, HPLC, Protein analyser); Repair, reassemble pump units (eg Milkoscan, HPLC); Clean Lenses, cuvette assemblies, (eg Milkoscan, UV detector Milkotester); Linearity checks (eg HPLC)*

**Unit 15.6.4 Evaluation & purchase of lab equip**

*This unit covers evaluation of new or used laboratory equipment, and making of recommendations following such evaluation.*

**Element 1 Evaluate which laboratory equipment to purchase****15.7 Automated Laboratory Equipment****Unit 15.7.1 Automated laboratory equipment I**

*This unit covers operation of high throughput automated laboratory equipment using standard operation procedures and guidelines. High throughput automated laboratory equipment includes equipment such as Milkoscan 605, Fossmatic, and Bactoscan. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate high throughput automated laboratory testing equipment**

*Operate high throughput automated laboratory equipment includes: Setup instrument and check parameters; Start instrument and place on product; Monitor and adjust instrument; Set instrument to standby during temporary delays; Shut down instrument at end of testing; Perform routine daily maintenance*

**Element 2 Clean lab equipment**

*This element covers activities such as: Set/monitor internal cleaning program*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: communication errors; empty chemical containers; rack movement faults; minor internal instrument faults (eg cuvette temp high/low, prism drum)*

**Element 4 Rectify abnormal operating conditions**

*This covers conditions such as: communication errors; empty chemical containers; rack movement faults; minor internal movement faults; minor internal instrument faults*

**Unit 15.7.2 Automated laboratory equipment II**

*This unit covers operation of high throughput automated laboratory equipment while dealing with operating conditions of the nature identified. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Rectify abnormal operating conditions**

*This covers conditions such as: Achieve standby quickly when sequence error occurs; Adjust instrument to cope with sequence errors; Pressure faults; Leakage in system*

**Element 2 Determine cause of abnormal operating condition**

*This covers conditions such as: unusual results (eg high pilots, blanks, references, etc); pressure faults (eg container pressure); intake errors (eg pipette faults, empty bottle); mechanical faults (eg rack mechanism); leakage in system (eg leaking tube)*

**Unit 15.7.3 Automated laboratory equipment III**

*This unit covers operation of high throughput automated laboratory equipment while dealing with operating conditions of the nature identified.*

**Element 1 Determine cause of abnormal operating condition**

*This covers conditions such as: mechanical or electrical problem; temperature faults; calibration drift*

**16.1 Boiler Operations****Unit 16.1.1 Boiler operation I**

*This unit covers operation of steam raising plant. This includes any such plant relevant to the site. Rectify means having the knowledge and ability to deal with a condition and restore it to normal. Assistance may be sought from others, but the essence of this skill is that the person has the knowledge and experience to resolve the condition in most situations.*

**Element 1 Operate boiler**

*Operate boiler means: Monitor and adjust boiler to produce steam to specification; Stop/restart boiler for delays, interruptions, and fluctuations of steam demand; Secure/restart boiler after power/electrical failure; Shut down boiler*

**Element 2 Detect abnormal operating conditions**

*This covers conditions such as: control system malfunctions; feed pump failure; instrument failure*

**Element 3 Rectify abnormal operating conditions**

*This covers conditions such as: stopped boiler feed water supply*

**Element 4 Operate coal and ash handling plant**

*Operate plant means: Start/stop, monitor and adjust coal and ash system; Grease and lubricate coal & ash system; Stockpile coal and monitor to ensure sufficient coal on hand; Stockpile ash for disposal*

**Element 5 Detect abnormal operating conditions**

*This covers conditions such as: blocked hopper; incorrect operation of coal/ash system (eg rams, valves, ploughs, conveyors, etc); incorrect filling*

**Element 6 Rectify abnormal operating conditions**

*This covers conditions such as: blocked hopper; incorrect operation of coal/ash system (eg rams, valves, ploughs, conveyors, etc); incorrect filling*

**Element 7 Monitor and adjust boiler feed water treatment plant**

*This element covers activities such as: Monitor and adjust boiler water hardness, dissolved solids, alkalinity, etc to specification; Detect chemical pump failure*

**Unit 16.1.2 Boiler - cold start**

*This unit covers checking and starting a boiler from cold, and bringing the boiler to operating condition within an approved cold start up procedure.*

**Element 1 Start boiler from cold**

*This element covers activities such as: Start boiler from cold, bring to operation according to specified procedures*

**Element 2 Operate soot blower**

*Operate includes: Preheat, start/stop, monitor and adjust soot blower; Operate by-pass dampers on boiler*

**Element 3 Detect abnormal operating conditions**

*This covers conditions such as: jammed or damaged soot blower; incorrect operation of valves and soot blower drives; problems with overloaded ash handling gear*

**Element 4 Monitor combustion**

*This includes: Monitor CO<sub>2</sub> and O<sub>2</sub> levels to optimise combustion*

**Element 5 Operate deaerator**

*Operate deaerator means: Check and fill deaerator; monitor and adjust deaerator; shut and drain deaerator*

**Unit 16.1.3 Boiler fittings and equipment.****Element 1 Prepare boiler for annual marine survey****Element 2 Service boiler fittings and equipment**

*This element covers activities such as: detect faulty or leaky fittings/equipment; isolate fittings/equipment; dismantle, clean, inspect fittings/equipment; replace gaskets/parts; reassemble and test fittings/equipment*

**Unit 16.1.4 Combustion optimisation/Boiler Water treatment**

*This unit covers adjustment air to fuel ratios to optimise combustion efficiency, using oxygen and carbon dioxide meters and setting boiler water treatment parameter levels such as hardness, total dissolved solids and alkalinity to maintain boiler conditions.*

**Element 1 Adjust air-fuel ratio to optimise combustion efficiency****Element 2 Determine boiler water treatment****Element 3 Service boiler fittings**

*This element covers activities such as: detect faulty or leaky boiler type fittings; isolate fittings; dismantle, clean, inspect boiler type fittings; replace gaskets/parts; reassemble and test fittings*

**16.2 Ancillary Services Monitoring**

**Unit 16.2.1 Ancillary services monitoring**

*This unit covers monitoring of ancillary services. Ancillary services includes ancillary services such as chemical dosing pumps, chlorine dosing systems, compressed air systems; hot/cold water systems, flocculation tanks, jumbo wash, rapid-sand water filters, and refrigeration systems.*

**Element 1 Monitor ancillary services**

*Monitor ancillary services includes activities such as: checking that services are operating within established parameters, taking limited remedial action where appropriate, and referral of faults or abnormal conditions to appropriate person*

**Unit 16.2.2 Ancillary services operation**

*This unit covers operation of ancillary services.*

**Element 1 Operate ancillary services**

*Operate ancillary services means: Conduct pre-start check of ancillary system; Start ancillary system; monitor/adjust ancillary system; Shut-down ancillary system*

**16.3 Water Treatment****Unit 16.3.1 Water treatment I**

*This unit covers coagulation, filtration, and chlorination/pH adjustment of water to NZ Drinking Water Standards or equivalent. At this level the operator operates the plant as per parameters, guidelines and specifications set by an experienced operator, supervisor, or management.*

**Element 1 Operate water treatment plant**

*Operate plant means: Check and start water treatment plant; Monitor/adjust water treatment plant; Shut down (eg for maintenance) water treatment plant*

**Unit 16.3.2 Water treatment II**

*This unit covers determination of water treatment operating parameters for the treatment of water to NZ Drinking Water Standards or equivalent.*

**Element 1 Determine water treatment**

*This element covers activities such as: Determine chemical types/brands etc for water treatment; Determine chemical mixing procedures, strengths, and dosing rates; Determine treatment flow rates, quantities, volumes, etc; Determine adjustments to cater for changes eg raw water quality, dosage rates, back-flushing, etc*

**Unit 16.3.3 Water treatment III**

*This unit covers design and modification of water treatment plant and reticulation systems for the treatment of water to NZ Drinking Water Standards. It also includes rectifying abnormal operating conditions such as those indicated in the unit.*

**Element 1 Design/modify water treatment system**

*This covers: Design/modify water treatment & reticulation systems*

**Element 2 Rectify abnormal operating conditions**

*This covers conditions such as: organic off-flavours in treated water; mineral (eg manganese) staining; micro problems in treated water*

**16.4 Refrigeration****Unit 16.4.1 Refrigeration (CFCs or equivalent and ammonia) I**

*This unit covers basic servicing of CFC or equivalent type refrigeration systems to the level indicated in the unit.*

**Element 1 Test and repair leaks in CFC type refrigeration systems**

*This element covers activities such as: Test and repair leaks in CFC systems; Handle CFC refrigerant*

**Element 2 Test and repair leaks in ammonia refrigeration systems**

*This element covers activities such as: Test and repair leaks in Ammonia refrigeration systems; Handle Ammonia refrigerant*

**Unit 16.4.2 Refrigeration (CFCs or equivalent and ammonia) II**

*This unit covers servicing of CFC or equivalent type refrigeration systems to the level indicated in the unit.*

**Element 1 Service and fault-find CFC type refrigeration systems**

*This element covers activities such as: Replace expansion valves in CFC refrigeration systems; Diagnose and remove foreign matter in CFC refrigeration systems (ie non condensables); Detect and resolve blocked driers in CFC refrigeration systems; Fault find on CFC air conditioning systems; Evacuate CFC refrigeration systems; Collect used refrigerant for reuse; Detect expansion valve faults in CFC refrigeration systems; Diagnose and repair compressor faults in CFC refrigeration systems; Detect and resolve blocked capillary tubes in CFC refrigeration systems; Detect and resolve external blockages on condensers in CFC refrigeration systems*

**Element 2 Service and fault-find ammonia refrigeration systems**

*This element covers activities such as: Diagnose and repair compressor faults in Ammonia refrigeration systems; Fault find on Ammonia cooling systems (eg water towers, condensers, chillers, etc); Evacuate Ammonia refrigeration systems; Replace expansion valves in Ammonia refrigeration systems; Diagnose and remove foreign matter in Ammonia refrigeration systems (ie non condensables); Detect expansion valve faults in Ammonia refrigeration systems; Detect and resolve external blockages on condensers in Ammonia refrigeration systems; Repair internal blockages on condensers in Ammonia refrigeration systems*

**Unit 16.4.3 Refrigeration design**

*This unit covers design and modification of refrigeration and air conditioning systems, and the determination of specifications for new refrigeration and air conditioning systems.*

**Element 1 Design or modify refrigeration and air conditioning systems**

*This element covers activities such as: Design modifications to a refrigeration/air conditioning system; Determine the specifications of refrigeration/air conditioning systems*

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17.1 Documentation

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## Unit 17.1.1 Food Safety

*Plant management are required to submit a monthly report detailing breaches of the product safety programme eg pathogen tracebacks etc.*

Element 1 Identify non compliances

Element 2 Write an accurate concise report

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Unit 17.1.2 Audits

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*The product safety/food safety programme is audited by MAF yearly, plant management must ensure compliance with standards.*

Element 1 Identify non compliance.

Element 2 Maintain accurate records.

Element 3 Detailed knowledge of plant quality system.

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Unit 17.1.3 HACCP

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*At the beginning of each season, prior to recommissioning, a hazard analysis critical control Point (HACCP) must be carried out by trained staff.*

Element 1 Records

*Maintain accurate records of each inspection*

Element 2 Action non-compliance.

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Unit 17.1.4 Business Plan

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*Each hall manager is required to write a business plan for his/her unit within which they must outline quality and financial objectives, they must also set an overall list of seasonal goals for the unit.*

Element 1 Write an accurate and concise report.

Element 2 Objectives

*Write a clear set of objectives using the SMART system as a guide.*

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Unit 17.1.5 Cost Model Reviews

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*Information must be gathered for regular reviews of cost models that set payment schedules within the industry.*

Element 1 Write a concise and accurate report

Element 2 Interpret financial costings

Element 3 Utilize basic statistical techniques

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Unit 17.1.6 PAMS

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*This unit covers the input of raw data into PAMS system and the interpretation of the information generated.*

Element 1 Raw data

*Oversee the input of raw data into the system*

Element 2 Plant Performance

*Monitor plant performance regarding downtime, product grading, composition, losses etc using the weekly reports.*

Element 3 Feedback

*Devise a system to feed back this information to plant staff.*

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Unit 17.1.7 PROMIX

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*This unit covers the use of the company data base for stock control, engineering maintenance, bar coding and others.*

Element 1 Raw data and reports

*Be able to input raw data and run reports on the system.*

Element 2 Use of information

*Use information generated from the systems to monitor the performance of the unit against budgets.*

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**Unit 17.1.8 PAs**

*This unit covers the company system of product advice (the NZDB notify Kiwi to make a product against a specific tonnage)*

**Element 1 Understanding PAs**

*Understand the procedure set down to accept PAs*

**Element 2 Monitoring production against PAs.**

*Devise a system to monitor production against the PA*

**Element 3 Procedures**

*Understand/devise procedures to rectify problems with the PA.*

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**Unit 17.1.9 Wages and Salaries**

*This unit covers wages and salaries as they relate to individual halls*

**Element 1 Interface between payroll and staff**

*To act as an interface between the payroll office and plant staff.*

**Element 2 Procedures**

*To put into place procedures to resolve anomalies between time/attendance system and plant staff.*

**Element 3 Monitor performance against budget.****Element 4 Alterations**

*To make recommendations regarding alterations to manning levels within the plant.*

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**Unit 17.1.10 IPRA's**

*This unit covers the operation of the company system for internal product recall.*

**Element 1 Product Recall**

*Maintain and document a system for product recall*

**Element 2 NC/CA**

*Develop and monitor an effective NC/CA system for defective product*

**Element 3 Record of withdrawals**

*Maintain accurate records of all withdrawals.*

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**Unit 17.1.11 Spec Changes**

*This unit covers the effective notification of impending changes of product specification to affected departments.*

**Element 1 Notification of spec changes.**

*Maintain an effective documented system for notifying change of spec (electronically, verbally or written).*

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**Unit 17.1.12 Results**

*This unit covers the storage, retrieval and interpretation of results from the grading analysis of the product.*

**Element 1 Filing System**

*Maintain an efficient filing system for hard copy results of grading tests.*

**Element 2 Feedback**

*Provide feedback loops of results to plant staff.*

**Element 3 Traceback Procedures.**

*Carry out traceback procedures when results indicate a problem.*

**Element 4 Reviewing Data**

*Institute a proactive response to final grading results by analysing trends, spec reviews, promote company interests by regularly reviewing product specifications for inefficiencies using basic statistical techniques to review raw data.*

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**Unit 17.1.13 Maintenance and Planning**

*This unit covers the operation of the engineering/maintenance module of Promix.*

**Element 1 Maintenance**

*Identify and prioritise maintenance work to be done within the hall and liaise with plant reliability teams.*

**Element 2 Monitoring Maintenance.**

*Monitor maintenance spend against budget and take steps to rectify anomalies.*

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**Unit 17.1.14 Job Requests**

*This unit covers the function of ordering maintenance work to be done.*

**Element 1 Monitoring open jobs**

*Implement a procedure to monitor the number of open jobs.*

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**Unit 17.1.15 Capital Improvements**

*This unit covers the capital improvement to plant and process.*

**Element 1 Investigating Suggestions**

*Promote an environment where suggestions for plant improvements are investigated via PRT Teams.*

**Element 2 Accessing Information**

*Gather or have access to technical information regarding latest developments within the industry.*

**Element 3 Procedures**

*Follow company procedures detailing steps to be taken for capital expenditure.*

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**Unit 17.1.16 Budgeting**

*Plant management are required to set yearly budgets for departments covering specific areas.*

**Element 1 Performance**

*Analyse previous performances and set bench marks for performance.*

**Element 2 SMART**

*Set clear and measurable objectives using the SMART rules as a guide.*

**Element 3 Write an accurate and concise report.**

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**Unit 17.1.17 Plant Reliability Teams**

*This unit covers all areas of loss from within the hall.*

**Element 1 Maintenance Issues**

*Facilitate an environment where the PRT teams take responsibility for the maintenance issues within the plant.*

**Element 2 Monitor Progress**

*Monitor progress of PRT teams within the product halls.*

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**Unit 17.1.18 Loss Monitoring**

*This unit covers all areas of loss from within the hall.*

**Element 1 Feedback**

*Implement a procedure to feedback results from PAMs losses to plant staff.*

**Element 2 Minimising Losses.**

*Encourage an environment where losses are minimised, unexplained events are investigated and improvements to plant design to minimise losses are investigated.*

**Element 3 Interpreting Results.**

*Use basic statistical techniques to interpret results.*

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**Unit 17.1.19 Reading/Correspondence**

*This unit covers inward mail and outward correspondence.*

**Element 1 Maintain an effective filing system****Element 2 Write accurate and concise reports.**

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**18.1 Vehicle Servicing****Unit 18.1.1 Daily vehicle inspection**

*This unit covers daily inspection of vehicles in accordance with a daily vehicle inspection check list. Vehicles includes any vehicle relevant to the site such as tankers, trucks, cars, forklifts.*

**Element 1 Conduct daily vehicle inspection and identify required maintenance**

*This element covers activities such as: check oil, water and fuel levels, blinkers, headlights, brake lights, horn, wipers, oil or fuel leaks, fittings, window, screen, mirrors, tyres and wheel nuts, springs, brakes, steering, chassis cracks, etc*

**Unit 18.1.2 Vehicle servicing I**

*This unit covers regular vehicle servicing and maintenance of the nature identified in the unit. Vehicle includes any vehicle relevant to the site such as tankers, trucks, cars, forklifts.*

**Element 1 Conduct routine servicing of vehicles (eg 5 or 8 day)**

*This element covers activities such as: check instrument panel operation (lights, gauges etc); repack wheel bearings; sample oil for contaminants; adjust throttle pedal travel; clean and replace air and fuel filters; grease truck and trailer units; change oil filters*

**Unit 18.1.2 Vehicle servicing II**

*This unit covers vehicle servicing and maintenance of the nature identified in the unit. Vehicle includes any vehicle relevant to the site such as tankers, trucks, cars, forklifts.*

**Element 1 Conduct basic vehicle servicing**

*This element covers activities such as: repair or replace slack adjustors; check and set vehicle lights to Ministry of Transport regulations; reline brake shoes; check battery voltage, amperage, lead and terminal condition etc; replace brake pads*

**Unit 18.1.2 Milk meters**

*This unit covers minor servicing and calibration of milk meters in accordance with procedures set by a qualified mechanic, supervisor, or management. It does not cover a full mechanical overhaul of the meter.*

**Element 1 Strip, service, and calibrate a milk meter**

*This element covers activities such as: strip milk meter; replace faulty components; calibrate meter*

**Unit 18.1.3 Vehicle servicing III**

*This unit covers vehicle servicing and maintenance of the nature identified in the unit. Vehicle includes any vehicle relevant to the site such as tankers, trucks, cars, forklifts.*

**Element 1 Conduct intermediate vehicle servicing**

*This element covers activities such as: fault find wiring loom; rewire vehicle and trailer; repair and service instrument panel (lights, gauges etc); check and replace drive shaft universals and hanger bearings; detect cracks and damage in brake drums; leak test and repair air and hydraulic systems; recondition duo coupling systems; overhaul trailer couplings to MOT standards; repair towing pin wear and bushes on VBGs and ring feeders; remove and overhaul turn tables to manufacturers specifications; adjust suspension (eg U bolts, springs, hanger mounts); replace wheel studs, rod ends, brake shoes, disc pads, shock absorbers, etc; check and replace spring components (eg leaves, centre bolts, bushes, pins); check and replace shock absorbers, bushes, mounts etc; repair exhaust system (eg replace pipes); install additional electrical equipment in vehicle (radio telephones, relays, auxiliary lighting etc); service callipers; flush hydraulic brake systems; correct drive shaft misalignment/vibration; check and replace gearbox and differential mountings and supports; secure pinion flanges; repair air/electrical auxiliary switch faults; strip and overhaul 1, 2 & 3 stage forklift masts*

**Unit 18.1.3 WOF inspections**

*This unit covers Warrent of Fitness inspections and issuing of warrant of fitness certificates.*

**Element 1 Conduct W.O.F. inspection on vehicle****Unit 18.1.4 Vehicle servicing IV**

*This unit covers vehicle servicing and maintenance of the nature identified in the unit. Vehicle includes any vehicle relevant to the site such as tankers, trucks, cars, forklifts.*

**Element 1 Conduct advanced vehicle servicing**

*This element covers activities such as: Identify the cause of overly sensitive brakes; Overhaul foot valves, brake chambers, relay valves; Repair servo faults; Identify the cause of non-release of brakes; Set up brakes & pipes for Brake Coded vehicles & specialised valves & pressure switches; Replace kingpins and bushes; Repair steering column components (eg top bush, yoke, universal joint); Renew suspension bushes (eg drag link arm, walking beam); Diagnose bearing failure (eg abnormal wear, dirt, water, corrosion); Identify the cause of brakes pulling to one side; Diagnose steering problems (eg wheel shimmy, steering wander, noises, tyre wear); Check and adjust wheel alignment (eg toe-in, camber, castor); Modify brake systems and plumbing; Fault find and repair power steering*

**Unit 18.1.5 Gearboxes & drives I**

*This unit covers vehicle gear boxes and drives servicing and maintenance of the nature identified in the unit. Vehicle gear boxes and drives includes any vehicle gear boxes and drives relevant to the site.*

**Element 1 Service and fault-find gearboxes and drives**

*This element covers activities such as: Identify cause of final drive noise under load; Identify cause of final drive vibration; Identify cause of final drive not changing from high to low; Identify cause of gearbox jumping out of gear; Identify cause of gearbox whines; Identify cause of gearbox not changing; Identify cause of universal joint wear; Identify cause of drive shaft vibration; Maintain/repair PTO pumps and drives; Adjust clutches; Replace and adjust clutch brakes; Rebuild/renew clutch fork, shaft, and bushes; Overhaul clutch assembly; Replace front wheel drive CV joints*

**Unit 18.1.6 Gearboxes & drives II**

*This unit covers vehicle gear boxes and drives servicing and maintenance of the nature identified in the unit. Vehicle gear boxes and drives includes any vehicle gear boxes and drives relevant to the site.*

**Element 1 Overhaul transmission differentials for manual and automatic drives, drive plate, and torque converter**



**Unit 18.2.1 Engines I**

*This unit covers engine servicing and maintenance of the nature identified in the unit. Engines includes any engine relevant to the site.*

**Element 1 Service & fault-find engines I**

*This element covers activities such as: Check inter-coolers and after coolers and identify required maintenance; Check and adjust alternator voltage output, bearings, bushes, etc; Repair and maintain exhaust brakes (eg micro switches, cylinders); Identify and replace faulty water pump components; Repair and overhaul carburettors, petrol pumps, etc; Repair ignition circuit components (eg plugs, points, condenser, coil, leads); Check, repair and test distributors, including checking for cam bush and shaft wear and mechanical and vacuum advance, assembly, and testing; Manufacture exhaust systems*

**Unit 18.2.2 Engines II**

*This unit covers engine servicing and maintenance of the nature identified in the unit. Engines includes any engine relevant to the site.*

**Element 1 Service & fault-find engines II**

*This element covers activities such as: Identify faults in lubrication system (eg oil pumps, oil passages, centrifuge); Identify and replace rocker gear faults; Identify worn cam followers; Identify and replace faulty push rods; Check and adjust starter motor (current draw, relays etc); Identify the cause of hard starting (eg faulty injectors, burnt valves, faulty computer wiring); Identify the cause of engine misfires; Diagnose abnormal noise in turbo, pump coupling, etc; Diagnose power loss (eg leaks, faulty injectors, turbo, air cleaner); Repair and overhaul turbo charger; Replace cam shaft and bushes/bearings; Top tune mechanical injection systems; Fit and setup engine brakes (eg jacob brake)*

**Unit 18.2.3 Engines IIIa**

*This unit covers dismantling of engines, checking component wear, determining whether to replace or recondition components, and reassembly of engine with replaced or reconditioned components.*

**Element 1 Overhaul and rebuild engines**

*This element covers activities such as: dismantle engine; identify excessive engine component wear (eg pistons, ring grooves, cam shafts, crankshafts); identify cylinder block faults (eg warping, corrosion, wet liners etc); diagnose cause of component wear such as bearing, piston, piston ring, valve and valve seat failure (eg through dirt, overheating, overfuel, etc); replace or send components away for reconditioning; reassembly of engine; running in and testing of overhauled engine*

**Unit 18.2.3 Engines IIIb**

*This unit covers machining and repair of engine components such as identified in this unit.*

**Element 1 Machine and repair engine components**

*This element covers activities such as: cylinder boring; line boring; cylinder block or head surfacing; valve and valve seat refacing; valve guide replacement and repair; replacement of valve seat inserts; refacing valve bridges and rockers; fitting and machining small end bushes and aligning con rods; stripping and repair of injectors and pumps; complete overhaul and testing of alternators and starter motors (off the engine)*

**Unit 18.2.3 Engine fault diagnostics**

*This unit covers diagnosis of abnormal noises, irregularities, and faults in engines, without going through the process of dismantling in order to find the cause of the fault.*

**Element 1 Make diagnosis of abnormal noise, irregularity, or fault in engine**

*This element covers activities such as: abnormal noise in turbo and pump coupling; engine power loss; engine noises caused by excessive fuel; burnt valves; interpreting noises and abnormalities as reported by others (eg tanker driver reporting engine power loss under load)*

**Unit 18.2.3 Alternative fuel systems**

*This unit covers installation and servicing of alternative fuel systems.*

**Element 1 Service/install alternative fuel systems**

*This element covers activities such as: Install alternative fuel systems (eg LPG/CNG); Check operation of emission control; Repair and overhaul LPG/CNG regulators, valves, solenoids etc*

**Unit 18.2.4 Development of engine modifications**

*The unit covers development of modifications to engines to improve running efficiencies and engine life.*

**Element 1 Develop and test modifications to engine**

*This element covers activities such as: modify compressor air intake to prevent excessive oil burning; fitting single-plate clutches to twin-plate clutches to improve clutch life; modify engine air intake and exhaust system to improve engine efficiency*

**18.3 Automotive Body Work****Unit 18.3.1 Body work**

*This unit covers servicing and repair of body work of the nature identified in this unit.*

**Element 1 Service and repair body work**

*This element covers activities such as: Rebush seat bushes; Weld seat bases; Repair cab steps; Repair/replace door locks; Renew weather strips; Fit/repair guard supports; Fit mud flaps; Realign doors; Repair minor panel cracks and strengthen (eg door mirror mounts); Renew cab mount bushes; Check/renew cab shocks*

**Unit 18.3.2 Panel beating**

*This unit covers panel beating and repair of body work of the nature identified in this unit.*

**Element 1 Panel beat and repair body work**

*This element covers activities such as: Reinforce door hinge mounts; Weld floor around seats; Replace window screens; Straighten/repair/renew trailer guards; Remove/repair/refit panels; Remove rust or replate units; Repair fibre glass structures (eg cabs, doors); Reshape and finish panels*

**18.4 Painting**

**Unit 18.4.1 Preparation for painting**

*This unit covers preparation of surfaces for painting.*

**Element 1 Prepare for painting**

*This element covers activities such as: Clean surface area for painting; Remove decals, logos, etc; Scrape/sand/burn/grind paint; Mask/demask area for painting; Degrease surface area (eg premsol/thinners) prior to undercoating; Clean equipment*

**Unit 18.4.2 Spray painting - primers and undercoats**

*This unit covers application of primers and undercoating with spray painting equipment.*

**Element 1 Spray paint primers and undercoats**

*This element covers activities such as: Prepare/mix/thin paint; Apply primers/undercoats; Dismantle/reassemble spray gun; Maintain respirators; Adjust/set air regulators to correct specification; Clean equipment*

**Unit 18.4.2 Brush/roller painting**

*This unit covers application of primer and undercoats by brush or roller.*

**Element 1 Apply primer and undercoat with brush or roller**

*This element covers activities such as: Check surfaces prepared correctly for painting; Prepare/mix/thin paint; Apply paint; Clean equipment (brushes, rollers, etc)*

**Unit 18.4.3 Spray painting - finish coats**

*This unit covers spray painting of finish coats.*

**Element 1 Spray paint finish coats**

*This element covers activities such as: Determine quantity of paint required; Mix paint to correct colour; Mix paint with thinners/hardeners; Check undercoats correctly applied and sanded; Judge environmental conditions to obtain correct finish, etc; Apply finish coats; Finish off (eg pin-striping, refit logos); Diagnose/repair faulty spray painting equipment*

**Unit 18.4.3 Brush/roller painting - finish coats**

*This unit covers application of finish coats of paint by brush or roller.*

**Element 1 Apply finish coats with brush or roller**

*This element covers activities such as: Determine quantity and type of paint required; Mix paint to correct colour; Mix paint with thinners/hardeners; Check undercoats correctly applied and sanded; Judge environmental conditions to obtain correct finish, etc; Cut in final coats (eg whites to colours, ceilings to walls, window sashes, etc); Supervise erection of scaffolding*

**18.5 Vehicle breakdown/recovery****Unit 18.5.1 Vehicle breakdown/recovery**

*This unit covers recovery of immobilised or broken down vehicles.*

**Element 1 Recover immobilised vehicle**

*This element covers activities such as: Assess damage to vehicle; Recover immobilised vehicle*

**18.6 Tyre servicing****Unit 18.6.1 Tyre servicing I**

*This unit covers servicing of tyres to the level indicated in this unit.*

**Element 1 Change wheels, repair tubes and remount tyres**

*This element covers activities such as: Check condition of tyres; Change wheels, check wheel studs, rims; Strip worn tyres (tubed/tubeless); Remount new tyres (tubed/tubeless); Repair tubes; Detect broken springs*

**Unit 18.6.2 Tyre servicing II**

*This unit covers servicing of tyres to the level indicated in this unit.*

**Element 1 Conduct advanced tyre servicing**

*This element covers activities such as: Strip/remount solid tyres; Strip/remount tractor tyre without ballast; Repair tubeless tyres; Select new/replacement tyres*

**19.1 Mechanical - General****19.1.1 Mechanical - general I**

*This unit covers general mechanical servicing of plant and equipment of the nature identified in the unit.*

**Element 1 Undertake minor mechanical servicing**

*This element covers activities such as: Detect oil leaks in plant; Detect incorrect oil levels in plant; Use mechanical hand tools (eg hammer, hack-saw, spanners, screw-drivers); Measure length/diameter of materials using ruler or tape measure; Tighten nuts and bolts; Take face plates off pumps for cleaning; Detect water in compressed air; Detect noisy pumps, gearboxes, bearing, and mechanical items; Change pipe union rubbers (eg RJT rubbers)*

**19.1.2 Mechanical - general II**

*This unit covers general mechanical servicing of plant and equipment of the nature identified in the unit.*

**Element 1 Undertake general mechanical servicing**

*This element covers activities such as: Use pneumatic/powered hand tools for cutting, grinding, drilling etc; Strip and clean hand valves; Use taps and dies for cleaning/cutting threads; Measure dimensions and tolerances using instruments such as feeler gauges, combination set-square; Change lubricants, and lubricate bearings, gearboxes, shafts, and pistons; Replace fittings on air pipes (eg speed fittings, swage-locks); Cut a length of metal using mechanical or electrical tools (eg cut-off saw, power hack-saw, pipe-cutter); Strip, clean and visually inspect plant machinery; Select and rig slings, eye bolts, shackles, etc less than 500 kg;*

**19.1.3 Mechanical - general III**

*This unit covers general mechanical servicing of plant and equipment of the nature identified in the unit.*

**Element 1 Undertake advanced mechanical servicing**

*This element covers activities such as: Detect worn mechanical parts; Reassemble, recondition general plant machinery; Measure dimensions and tolerances using instruments such as verniers, micrometers, tele gauges; Select and rig slings, eye bolts, shackles, etc 500 kg or over; Select and recommend correct lubricants*

**19.1.4 Preventative maintenance**

*This unit covers development and application of a preventative maintenance programme for a complete manufacturing plant (eg a milk powder plant).*

**Element 1 Develop preventative maintenance program**

*Such a programme will cover aspects such as: lubrication, plant checks, condition monitoring, plant history record keeping, planned maintenance, documentation of modifications and updating of records, and review of plant preventative maintenance programme effectiveness*

**19.1.5 Maintenance Programming**

*This unit covers the components of maintenance programming from monitoring the plant to ordering job requests and the operations of the Plant Reliability Teams.*

**Element 1 Plant Care**

*Maintain and monitor preventative maintenance programs and understand the implications of the systems on the plant.*

**Element 2 Job Requests**

*Understand and implement procedures for maintenance Job Requests.*

**Element 3 Inspections and Testing**

*Monitor PRT checklists.*

**19.2 Machining****19.2.1 Machining I**

*This unit covers use of equipment such as mills, lathes, shapers, drills, reamers, to carry out machining of the nature indicated in this unit. At this level, the machining is predominantly to design and specification as prepared by others.*

**Element 1 Machine tools and components**

*This element covers activities such as: Cutting and broaching keyways; Use a lathe for cutting grooves in shafts (eg o-rings, circlips); Boring flanges; Facing/surfacing; Parallel turning; Lapping seals/seat; Re-machine used fittings (eg RJT fittings); Drilling and boring on radial arm drill; Parting off pipe in lathe*

**19.2.2 Machining II**

*This unit covers use of equipment such as mills, lathes, shapers, drills, reamers, to carry out machining of the nature indicated in this unit. At this level, the machining is predominantly to design and specification as prepared by others.*

**Element 1 Manufacture and machine tools and components**

*This element covers activities such as: Manufacture of replacement parts; Use a lathe for thread cutting using preformed tool; Taper turning; Surface milling; Mill key ways; Parting off bar in lathe; Use a lathe to bore holes and internal grooves (eg sprockets, pulleys, gears); Manufacture tools from high speed steel*

**19.2.3 Machining III**

*This unit covers use of equipment such as mills, lathes, shapers, drills, reamers, to carry out machining of the nature indicated in this unit. At this level, machining may be to own design, or to design and specification as prepared by others.*

**Element 1 Design and machine tools and components**

*This element covers activities such as: Use lathe to cut thread using single point tool from high speed steel; Use milling machine to bore holes and grooves; Using tool post grinder on lathe; Manufacture form tools for lathe and milling machine; Use rotary index heads; Design/modify and manufacture parts*

**19.2.4 Machining IV**

*This unit covers use of equipment such as mills, lathes, shapers, drills, reamers, to carry out specialised machining of the nature indicated in this unit. At this level, machining may be to own design, or to design and specification as prepared by others.*

**Element 1 Design and machine specialised tools and components**

*This element covers activities such as: Helical gear cutting; Spline cutting (male and female); Manufacture specialised tools; Surface and cylindrical grinding*

**19.3 Mechanical Fitting****19.3.1 Mechanical fitting I**

*This unit covers mechanical fitting to the level indicated in this unit.*

**Element 1 Fit mechanical components**

*This element covers activities such as: Fault find and repair low pressure pumps (less than 6 BAR); Align couplings using alignment equipment; Replace bearings in motors, pumps, etc; Align end-float in gearboxes using dial indicator; Change seals in motor, pumps, valves; Align pulleys, fan belts, motors, conveyors, gearboxes, etc; Fit keys on shafts and couplings; Fault find and replace mechanical seals*

**19.3.2 Mechanical fitting II**

*This unit covers servicing of gearboxes and high pressure pumps. Gearboxes and high pressure pumps includes any gearboxes and high pressure pumps relevant to the site.*

**Element 1 Fault find and repair gearboxes and high pressure pumps**

*This element covers activities such as: Dismantle, inspect, repair and fault find high pressure pumps (more than 6 BAR); Recondition gearboxes; Determine mechanical seal specifications/requirements*

**19.3.3 Mechanical fitting III**

*This unit covers servicing of high speed/variable speed transmissions such as atomisers, decanters, separators, blowers. High speed/variable speed transmissions includes any high speed/variable speed transmissions relevant to the site.*

**Element 1 Fault find and repair high speed/variable speed transmissions****19.3.4 Size and select pumps/fans etc**

*This unit covers sizing and selection of pumps, fans, and other similar equipment.*

**Element 1 Size and select pumps, fans, gear boxes and similar equipment****19.4 Hydraulics, Pneumatics, & Process Systems****19.4.1 Fluid systems and valves I**

*This unit covers servicing of hydraulic, pneumatic, and process valves and components to the level indicated in the unit. Hydraulic, pneumatic, and process valves and components includes any hydraulic, pneumatic, and process valves and components relevant to the site.*

**Element 1 Fault-find and service hydraulic, pneumatic, and process valves and components**

*This element covers activities such as: Fault-find and rekit hydraulic/pneumatic flow controls; Fault-find and rekit hydraulic/pneumatic solenoid; Fault-find and rekit hydraulic/pneumatic control valves; Fault find and repair low pressure valves; Overhaul low pressure cylinders (less than 6 BAR); Fault-find and rekit hydraulic/pneumatic rams; Fault find and repair actuators; Replace pressure gauges; Service pipe fittings; Adjust pipe hangers/tension on steam lines*

**19.4.2 Fluid systems and valves II**

*This unit covers servicing of hydraulic, pneumatic, and process valves and systems to the level indicated in the unit. Hydraulic, pneumatic, and process valves and systems includes any hydraulic, pneumatic, and process valves and systems relevant to the site.*

**Element 1 Fault-find and service hydraulic, pneumatic, process valves and systems**

*This element covers activities such as: Dismantle, inspect, repair and fault find pneumatic systems; Dismantle, inspect, repair and fault find hydraulic systems; Dismantle, inspect, repair and fault find high pressure valves (more than 6 BAR); Overhaul control valves; Hydro test valves after reassembly; Adjust pressure settings on steam and air systems*

**19.4.3 Fluid systems and valves III**

*This unit covers sizing and selection of hydraulic, pneumatic, and process valves and fittings, and the overhaul of hydraulic, pneumatic, and process systems.*

**Element 1 Size and select pneumatic, hydraulic, steam and process valves, fittings, etc****Element 2 Overhaul hydraulic, pneumatic, and process systems**

*This element covers activities such as: Overhaul pneumatic compressors; Overhaul hydraulic pumps and motors; Overhaul air driers; Adjust and set safety valves; Prepare pressure vessel for MOT survey*

**19.4.4 Fluid systems and valves IV**

*This unit covers design and sizing of hydraulic, pneumatic, and process valves and systems. This covers systems relevant to the site such as pneumatic systems, hydraulic systems, process systems, steam and condensate systems, hot or cold water pumping and piping systems.*

**Element 1 Design and size hydraulic, pneumatic, and process systems****19.5 Condition Monitoring and Balancing**



**19.5.1 Condition monitoring data collection**

*This unit covers collection of condition monitoring data and condition monitoring of motors and bearings.*

**Element 1 Condition monitor motors, bearings, and collect condition monitoring data**

*This element covers activities such as: Condition monitor motors/bearings; Collect vibration analysis data; Collect oil analysis data*

**19.5.1 Static Balancing**

*This unit covers static balancing of plant such as fans, motors, shafts.*

**Element 1 Static balance motors, fans, shafts, etc****19.5.2 Condition monitoring analysis**

*This unit covers analysis of condition monitoring data and the recommendation of action to optimise and improve plant operation.*

**Element 1 Analyse condition monitoring data (eg vibration/oil analysis) and recommend action****19.5.2 Dynamic Balancing**

*This unit covers dynamic balancing of plant such as fans, motors, shafts.*

**Element 1 Dynamic balance fans, motors, shafts, etc****19.5.3 Condition monitoring program design**

*This unit covers design and implementation of a condition monitoring programme for a dairy plant. Dairy plant includes any dairy plant relevant to the site such as a milk powder plant.*

**Element 1 Design condition monitoring program for dairy plant****19.6 Welding and Cutting****19.6.1 Welding and cutting I**

*This unit covers welding and cutting of the nature identified in this unit.*

**Element 1 Braze, weld, solder, and cut**

*This element covers activities such as: Brazing; Weld a bracket; Gas cutting; Soldering; Tack weld; Plasma gas cutting*

**19.6.2 Welding and cutting II**

*This unit covers welding and cutting of the nature identified in this unit.*

**Element 1 Weld and cut**

*This element covers activities such as: Non-ticketed stainless, aluminium and copper welding; Down hand arc welding; Fabricate a non-load bearing structure (eg hand rail, pump base); Oxy-acetylene fusion weld mild steel; Roll, form, cut, bend, and polish sheetmetal of less than 3 mm; Plastic welding; Profile gas cutting; MIG welding; TIG welding*

**19.6.3 Welding and cutting III**

*This unit covers welding and cutting of the nature identified in this unit.*

**Element 1 Weld and fabricate**

*This element covers activities such as: Design and fabricate minor structural component (eg machine base, stair-well, small balance tanks); Make transitions and vessels from plate; Metal spraying; Positional arc welding*

**19.6.4 Stainless steel welding**

*This unit covers welding to the level indicated in this unit.*

**Element 1 Weld stainless steel process line to NZ4703 standards (or equivalent)****19.6.4 Structural welding**

*This unit covers welding to the level indicated in this unit.*

**Element 1 Structural weld to NZ4711 standards or equivalent****19.6.4 Welding to ASME 9 or equivalent**

*This unit covers welding to the level indicated in this unit.*

**Element 1 Weld steam/high pressure gas or air lines/vessels to ASME 9 standards (or equivalent)****19.7 Machine adjustment****19.7.1 Machine adjustment**

*This unit covers adjustment and setting of machines to the level indicated in the unit. Machines includes any machine relevant to the site such as packing machines, bucket elevators, fluid beds, wincanton towers, roller mills, and mechanical variable speed drives.*

**Element 1 Adjust and set machine operation**

*This element covers activities such as: Machine adjustment and setting on packing machinery (eg size changes); Machine adjustment on dairy equipment (eg bucket elevators, fluid beds, wincanton towers, roller mills, etc); Adjusting and setting mechanical variable speed drives; Setting air ram cylinder speeds*

**20.1 Basic Computer/Keyboard Skills****Unit 20.1.1 Basic Computer/Keyboard**

*This unit covers basic computer and keyboard skills. Computer includes any type of computer relevant to the site.*

**Element 1 Use a computer for basic data entry and information retrieval**

*This element covers activities such as: Enter numerical data into a computer; Enter text into a computer; Locate the appropriate data entry screen within a computer application (eg use menus); Use a mouse; Use a touch screen; Use bar code scanners*

**Element 2 Enter data at high speed**

*This element covers activities such as: Enter numerical data into a computer at high speed (eg 500 characters per minute)*

**Element 3 Type documents at 60 words per minute**

*(Note: the typing speed would be assessed over a five minute period)*

**Unit 20.1.2 Advanced Typing**

*This unit covers advanced typing at 80 words plus per minute.*

**Element 1 Type documents at 80 or more words per minute**

*(Note: the typing speed would be assessed over a five minute period)*

**20.2 Using Computer Applications****Unit 20.2.1 Basic Wordprocessing**

*This unit covers basic word processing. Word processing includes any wordprocessing package relevant to the site.*

**Element 1 Use basic wordprocessing functions**

*This element covers activities such as: Backup wordprocessing documents; Type, spell check, format (eg change fonts, paper size, margins, and line spacing), print and proof read basic documents; Use a wordprocessing package to find and retrieve files; Use wordprocessing software functions to insert, delete, copy and move text; Add and modify document page numbers, date codes, headers and footers; Search and replace text in a document*

**Element 2 Use basic spreadsheet functions**

*This element covers activities such as: Change printer settings, fonts, and format of a spreadsheet; Copy and move numbers and text on a spreadsheet; Locate, save and retrieve a spreadsheet file; Set up a spreadsheet when given detailed instructions by someone else; Type values into a spreadsheet that someone else has created; Use a spreadsheet to add, subtract, multiply and divide numbers*

**Element 3 Use drawing/graphics software package**

*This element covers activities such as: Produce a diagram/drawing/chart using a graphics program; Use a graphics package to find and retrieve files; Use graphics software functions to copy and move parts of a diagram; Backup graphics files*

**Unit 20.2.2 Intermediate Wordprocessing and Spreadsheets**

*This unit covers intermediate wordprocessing and spreadsheets to the level indicated.*

**Element 1 Use intermediate wordprocessing functions**

*This element covers activities such as: Export/import data to/from another application; Personalise wordprocessing software (eg change preferences, screen colours); Produce documents that have headers, footers, or columns; Produce tables on a wordprocessing package; Split and join cells, rows, and columns in a table; Use a word processing package to merge text and graphics into one document*

**Element 2 Use intermediate spreadsheet functions**

*This element covers activities such as: Add to a spreadsheet that someone else has created; Copy or move a formula on a spreadsheet; Create, format, and modify a basic graph (two sets of data) on a spreadsheet; Develop a spreadsheet that uses functions and references; Export/import data to/from another application; Use a spreadsheet to sort information; Use relative references on a spreadsheet*

**Unit 20.2.3 Advanced Wordprocessing and Spreadsheets**

*This unit covers advanced wordprocessing and spreadsheets to the level indicated.*

**Element 1 Use advanced wordprocessing functions**

*This element covers activities such as: Create a macro to automate repeated keystrokes; Diagnose the cause of rare wordprocessing package problems; Set up a document template; Use a wordprocessing package to merge multiple graphics, tables, and text onto one page; Set up and use the mail merge function on a wordprocessor; Set up and use label format; Use line draw function; Set up and type scientific equations; Use a wordprocessing package to produce and format a table with multi columns, multi fonts, and multi spacing (eg justify/centre/decimal align cells and columns, change column/row height/width, add and delete lines, change attributes etc)*

**Element 2 Use advanced spreadsheet functions**

*This element covers activities such as: Develop a spreadsheet template; Link information on one spreadsheet to another spreadsheet; Set up a database on a spreadsheet; Use advanced spreadsheet functions (eg logical, trends); Write a spreadsheet macro that automates repeated keystrokes*

**20.3 Reporting Applications/Software Design****Unit 20.3.1 Use Reporting Application**

*This unit covers use of database and Management Information Systems (MIS) reporting applications. MIS includes any type relevant to the site such as Trident, PLDS, BOSS, MADCAP.*

**Element 1 Use database reporting application**

*This element covers activities such as: Select and produce appropriate report for a particular process requirement (eg production, energy, efficiency); Use selection criteria to query report for a particular process requirement (eg date, time, exception, summary, detail)*



**Unit 20.3.2 Build Report Functions**

*This unit covers building of database or MIS functions.*

**Element 1 Build report functions**

*This element covers activities such as: Design report layout; Develop query to generate report using a full range of boolean functions; Identify data points/periods for data capture for report; Specify the requirements for a process report*

**Unit 20.3.3 Administer MIS Applications**

*This unit covers administration of MIS applications.*

**Element 1 Administer MIS functions**

*This element covers activities such as: Commission report and data capture mechanism; Configure data capture mechanism to meet reporting requirements; Configure database/tables; Design database structure for reporting requirements; Perform or program database/table management (eg archive and delete redundant data); Write report programs*

**Unit 20.3.4 Design MIS Software**

*This unit covers design of MIS software applications.*

**Element 1 Design MIS software applications**

*This element covers activities such as: Design and document software applications to meet user specifications (such a system may include file server, networking); Determine and document user requirements; Recommend software solutions given user requirements and available hardware; Write advanced software application in a requested programming language given a program specification;*

**20.4 Operator Interfaces****Unit 20.4.1 Operator interface**

*This unit covers use of operator interfaces for PLC/computer control of process, plant or equipment. Interface includes any type of PLC/computer interface relevant to the site.*

**Element 1 Use operator interface**

*This element covers activities such as: Change data entry points (eg setpoints, outputs, targets, etc); Interpret screens and screen feedbacks (eg plant status, fault displays, alarms); Navigate through interface areas/screens; Select appropriate active points (start/stop selection, etc); Use operator interface tools (eg mouse, keyboard, trackball)*

**Unit 20.4.2 Operator interface screen design**

*This unit covers design of operator interface screens.*

**Element 1 Design operator interface screen**

*This element covers activities such as: Build dynamic screens; Build static screens; Design screen layout and content using application software; Link dynamic points with data points*

**Unit 20.4.3 Operator interface function design**

*This unit covers design of operator interface function design.*

**Element 1 Design operator interface function design**

*This element covers activities such as: Backup operator interface system; Commission navigation through screens; Commission operator interface screens (dynamic, data entry, etc); Design operator interface database/text messaging; Document database, screens, etc; Map database to PLC points; Specify parameters and navigation methods to be used in operator interface screen design; Specify the number and function of operator interface screens to be designed for a PLC system*

**20.5 Programmable Process Controllers****Unit 20.5.1 PLC installation/setup**

*This unit covers installation and setting up of programmable process controller. Programmable process controller includes any type relevant to the site.*

**Element 1 Install and setup PLC system**

*This element covers activities such as: Diagnose fault location of faults between I/O modules, wiring, field devices, software (eg I/O data table matches real input); Download PLC logic; Edit variables within existing program (eg change conductivity level for dosing system); Install/replace hard wiring to I/O Cards; Install/replace hardware (eg rack, power supply, digital I/O, Analog I/O, special functions, etc); Save PLC logic*

**Unit 20.5.2 Basic PLC Software**

*This unit covers basic PLC software design.*

**Element 1 Write and commission simple PLC program**

*This element covers activities such as: Commission/debug simple PLC program online; Determine I/O module and processor status using engineering workstation (eg check selectable timed interrupt set correctly to suit application); Import documentation created from external source (eg imported from a database application); Produce embedded documentation to make program understandable; Produce program listing; Write simple PLC logic using basic instruction set (eg XIO, XIC). For example, emulation relay logic, retrieval of core memory, download of core memory*

**Unit 20.5.3 PLC Hardware/software design**

*This unit covers configuration of PLC hardware and writing of PLC programs.*

**Element 1 Configure PLC hardware and write complex PLC program**

*This element covers activities such as: Allocate new I/O (for small project) maintaining existing format; Commission software on-line; Configure additional rack or modules to work in PLC control system; Install and configure specialist I/O cards and equipment as required (eg high speed pulse counters, message display units, dedicated operator interface units, network adaptors); Produce structure/flow charts for program; Use simulation to check logic; Write complex PLC logic using advanced instructions (eg data table manipulation, indirect addressing); Write PLC fault handling routines (eg to present current faults in common display area); Write PLC program from functional description for large PLC system, following predetermined complex ladder/file structure (eg process and CIP for a specific processing area); Write PLC program to communicate with other PLCs; Write PLC subroutines for commonly performed logic creating user defined functions*

---

**Unit 20.5.4 PLC Stand alone system design**

*This unit covers design of PLC stand alone systems.*

**Element 1 Design PLC stand alone systems**

*This element covers activities such as: Design PLC file/data table structure for a stand alone system (eg peer to peer communication; main CIP operation); Design PLC program structure for a stand alone system (eg method for ensuring sub-routines shutdown when selection cancelled); Design specialised PLC logic (eg fault logging routines); Write PLC program for data communication for different protocols (eg RS232 and PLC code); Produce structure/flow charts for program; Use simulation to check logic;*

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**Unit 20.5.5 PLC Multiple/complex system design**

*This unit covers design of multiple and complex PLC systems.*

**Element 1 Design multiple and complex PLC systems**

*This element covers activities such as: Design layout of I/O for PLC system; Design networking (eg PLC to PLC, intelligent devices such as electronic scales, variable speed drives); Design the interactions between a number of control systems; Select processor, memory size for a PLC system; Specify communication link/modules to operator interface for PLC system; Write installation specifications for PLC systems (eg racks, I/O cards, UPS, networks, air conditioning, system documentation)*

---

**20.6 Computer hardware/operating systems**

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**Unit 20.6.1 Computer hardware/operating systems I**

*This unit covers installation of a computer and single user operating system.*

**Element 1 Install computer and single use operating system**

*This element covers activities such as: Install communication cables from a specification; Install computer and configure basic peripheral devices; Install single user applications on a PC; Install single user operating system (eg DOS)*

---

**Unit 20.6.2 Computer hardware/operating systems II**

*This unit covers installation of computer hardware and operating systems.*

**Element 1 Configure, install and commission computer hardware and operation systems**

*This element covers activities such as: Commission a communications network; Configure and install specialised peripheral devices; Customise a single user operating system; Select specialised computer hardware (eg processor, coprocessor, memory, video adaptor); Setup and configure PC expansion cards (eg Ethernet, memory expansion, Comms etc)*

---

**Unit 20.6.3 Computer hardware/operating systems III**

*This unit covers configuration and installation of multi user computer applications.*

**Element 1 Configure and install a multi user computer application**

*This element covers activities such as: Configure and administer multi user applications; Install and configure networking (communications) applications; Install, configure, and administer a multi user operating system; Specify hardware to meet performance restraints; Upgrade existing software across all levels*

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**21.1 Electrical/Electronics**

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**Unit 21.1.1 Elementary electrical servicing**

*This unit covers elementary electrical servicing.*

**Element 1 Replace plugs, leads, fuses, bulbs**

*This element covers activities such as: Replace single phase electrical leads and plugs; Replace low voltage fuses; Replace florescent tubes/tight bulbs*

---

**Unit 21.1.2 Minor electrical servicing**

*This unit covers minor electrical servicing. The assembly of communication cabling plugs and running of electrical power and communication cables is to that designed by a suitably qualified person.*

**Element 1 Carry out minor electrical fault-finding, repairs and installation**

*This element covers activities such as: Fault find and repair lighting; Change and replace low voltage field devices (eg relays, microswitches, solenoids, proximities); Repair low voltage electrical connections; Assemble communication cabling plugs; Run and support electrical power and communication cables*

---

**Unit 21.1.3 Electrical fault-finding, repairs and installation**

*This unit covers electrical fault-finding, repairs and installation to the level indicated.*

**Element 1 Carry out electrical fault-finding, repairs and installation**

*This element covers activities such as: Electrical fault finding on dairy equipment (eg thermostats, solenoids, photo-cells, isolating switches etc); Install electrical equipment (eg motors, pumps, fans, lighting); Electrical fault diagnosis on motors and other similar equipment; Fault find and repair electrical motors; Fault find and repair DOL type starters; Determine if motor or generator brushes are in good condition*

---

**Unit 21.1.4 Design of simple electrical circuits**

*This unit covers design and specification of simple electrical circuits.*

**Element 1 Design simple power circuits**

*This element covers activities such as: Design motor stop/start circuits; Specify appropriate electrical cabling/routing; Design lighting circuits*

---

**Unit 21.1.4 Service electrical/electronic devices**

*This unit covers electrical/electronic fault-finding, repairs and installation to the level indicated.*

**Element 1 Service, fault-find, install electrical/electronic devices**

*This element covers activities such as: Fault find and repair field device electrics; Identify and replace faulty electronic circuit boards/cards (eg PLC cards, digital thermostats); Install switchboard circuit breakers, bus bars, power supplies etc; Assemble chassis for electronic equipment and place cards/boards in the chassis; Set/adjust user parameters on electronic equipment and boards (eg trim pots, jumpers, dip switches); Identify and test an individual electronic component (eg capacitor, transistor)*

---

**Unit 21.1.4 High voltage transformers and switch gear I**

*This unit covers operation and visual monitoring of extra high voltage transformers and switch gear.*

**Element 1 Operate and visually monitor extra high voltage transformers and switch gear**

*This element covers activities such as: visual checks of extra high voltage transformers and switchgear (more than 660 volts/11 kV); plan for and carry out isolation of extra high voltage transformers and switchgear*

---

**Unit 21.1.5 Design minor electrical systems**

*This unit covers design of minor electrical systems to the level indicated.*

**Element 1 Design minor electrical systems**

*This element covers activities such as: Select lighting; Design power circuits; Determine specifications/requirements for electrical motors/pumps/fans; Determine power factor correction requirements*

---

**Unit 21.1.5 Service complex electrical/electronic systems**

*This unit covers electrical/electronic fault-finding, repairs and installation to the level indicated.*

**Element 1 Service and fault-find complex electrical/electronic systems**

*This element covers activities such as: Fault find and repair control circuit electrics; Fault find and repair switchboard circuit breakers, bus bars, power supplies, etc; Fault find and repair variable speed drives and multi-stage starters; Identify and replace faulty electronic components on circuit boards; Fault find and repair the electrics of dairy machinery (eg packing machines, separators, stretch wrappers, driers)*

---

**Unit 21.1.5 High voltage transformers and switch gear II**

*This unit covers maintenance and repair of high voltage transformers and switch gear.*

**Element 1 Maintain and repair extra high voltage transformers and switchgear**

*This element covers activities such as: Fault find and repair extra high voltage transformers and switch gear (more than 660 volts/11 kV); Maintain high voltage transformers and switch gear (more than 660 volts/11 kV)*

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**Unit 21.1.6 Design of hard-wired electrical control systems**

*This unit covers design of hard-wired electrical control systems.*

**Element 1 Design electrical circuits with multiple pre-conditions or multiple actions/outputs**

*For example: control circuitry, switchboards*

---

**Unit 21.1.6 Electrics/electronics of dairy plant**

*This unit covers maintenance and repair of electrics/electronics of dairy plant.*

**Element 1 Fault find and repair the electrics of dairy plant**

*This covers the interaction of several machines*

**Unit 21.1.6 High voltage transformers and switch gear III**

*This unit covers determination of specifications and requirements for extra high voltage transformers and switch gear.*

**Element 1 Determine specifications/requirements for extra high voltage transformers and switchgear (more than 660 volts/11kV)**

**Unit 21.1.6 Energy management**

*This unit covers determination of effective and efficient use of electrical energy and electrical equipment.*

**Element 1 Determine cost effective electrical energy usage and electrical equipment use**

*This element covers activities such as: Determine cost effective plant running times for off peak tariff savings; Conduct power use/savings analysis; Determine application of high efficiency motors, variable speed drive applications, etc*

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**22.1 Instrumentation****Unit 22.1.1 Instrumentation - general servicing and fault-finding**

*This unit covers general servicing and fault-finding of instrumentation.*

**Element 1 Conduct general servicing of instruments, cabling, and tubing**

*This element covers activities such as: Install/terminate instrument cable and tubing; Mount and wire instrument power supply; Test insulation and wiring loop resistance on instruments (eg current signal loop or RTD wiring); Leak test pneumatic signal loop tubing and fittings; Check electrical signal wiring (eg correct polarity and destination)(include function check); Check pneumatic signal tubing (eg transmitter output connected to correct receiver input); Fit or replace a pressure gauge; Strip, clean, assemble and test pneumatic filter/regulator; Check pneumatic supplies and instruments for dust/water ingress; Remove an instrument from the process and replace it (eg DP cell - silo level)*

**Unit 22.1.2 Pneumatic servicing and fault-finding**

*This unit covers servicing and fault-finding of pneumatic instruments.*

**Element 1 Strip, clean, and repair pneumatic instruments**

*This element covers activities such as: Strip, clean, repair, reassemble pneumatic temperature transmitters, pneumatic flow transmitters, pneumatic pressure transmitters, pneumatic level transmitters, pneumatic vacuum transmitters, pneumatic density transmitters, pneumatic positioner, pneumatic gauges, pneumatic actuators, Inspect and repair process connections*

**Unit 22.1.2 Electronic servicing and fault-finding**

*This unit covers electronic servicing and fault-finding of field devices and field wiring.*

**Element 1 Service field devices and field wiring**

*This element covers activities such as: Strip, clean, repair, reassemble electronic temperature transmitters, electronic flow transmitters, electronic pressure transmitters, electronic level transmitters, reassemble electronic vacuum transmitters, electronic density transmitters, electronic positioners; Field test primary element wiring (eg magflow coriolis) polarity checks, shielding pairs, etc; Calibrate and check field wiring on T/C and RTD sensors (to ISO 9000 where required)*

**Unit 22.1.2 Control valves**

*This unit covers stripping, repair, and assembly of control valves.*

**Element 1 Service control valves and actuators**

*This element covers activities such as: Strip, clean, repair, reassemble control valves, relief valves; self regulating valves, valve actuators*

**Unit 22.1.2 Filled systems**

*This unit covers servicing and fault-finding of filled systems.*

**Element 1 Service filled instrument systems**

*This element covers activities such as: Strip, clean, repair, reassemble pressure transmitters, vacuum transmitters, level transmitters, D.P. transmitters, pressure gauges*

**Unit 22.1.3 Process measurement and control system design**

*This unit covers design of process measurement and control systems.*

**Element 1 Design and configure process measurement and control systems**

*This element covers activities such as: Configure a single loop programmable process controller, including any necessary input conditioning or logic functions (eg initial setup of Moore 352); Configure the hardware for a single loop process monitoring or control system, including alarms, interlocks, and emergency shutdowns as demanded; Determine alarm and shutdown settings and safety interlocks functions; Determine location of instrument sensors for required accuracy (eg allowance for straight pipe for flowmeter); Configure signal converter or transmitter (all classes, pneumatic, electronic, or software configurable, setting input/output ranges); Configure signal characteriser, integrator, summator or totaliser (all classes) setting input/output ranges and limits (eg square root extractors with low limits cut-off);*

**Unit 22.1.3 Process measurement and control systems commissioning**

*This unit covers configuration and commissioning of process measurement and control systems.*

**Element 1 Configure and commission process measurement and control systems**

*This element covers activities such as: Function check instrument input loop by applying suitable stimulus at measuring element (eg apply flow through flow tube or heat to RTD); Function check instrument signal loop by injection of suitable simulated input at transmitter (eg using a magnetic flow calibrator input to a magnetic flow converter and reading indicator); Function check instrument output single loop (eg manual operation of controller confirmed by noted position of final actuator); Enter designed configuration into programmable instrument (from specification sheets provided); Check that correct configuration of instrument(s) has been provided; Adjust controller tuning parameter proportional, integral, and derivative, to provide stable process of required precision*

**Unit 22.1.3 Process measurement and control systems servicing**

*This unit covers servicing and fault-finding of process measurement and control systems.*

**Element 1 Service process measurement and control systems**

*This element covers activities such as: Function check instrument input loop; Check calibration of instrument using suitable practice and specific instruction where provided; Adjust calibration of instrument to required accuracy (except "critical instruments"); Service conductivity element; Service pH probe; Service turbidity (solids meter) probe or cell; Service flue gas analyser (O2 or SO2) probe or cell; Service dissolved oxygen probe or cell; Service humidity or moisture sensor; Radioactive belt weigher*

**Unit 22.1.3 Control valves - advanced**

*This unit covers advanced servicing of control valves and actuators.*

**Element 1 Service control valves and actuators**

*This element covers activities such as: Precision machine valve parts; Manufacture valve and actuator parts; Bench set valves and actuators for process conditions; Install and commission new control valves*

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**Unit 22.1.4 Calibration of critical instruments**

*This unit covers calibration of critical instruments. A critical instrument is any instrument so designated under the site quality management system (eg ISO 9000 series).*

**Element 1 Calibrate critical instruments**

*This element covers activities such as: Calibrate critical instruments to ISO 9002; Record details of calibration to relevant persons/location; Maintain updated records of installed instruments*

**Unit 22.1.4 Complex measurement and loops - servicing**

*This unit covers servicing of complex process measurement and control loops.*

**Element 1 Design complex measurement and control loops**

*This element covers activities such as: Range change instrumentation (eg calculate orifice plate size for a new flow rate); Design configuration of complex, multivariable or interactive loop (eg cascade, ratio or multi-element control, including use of programmable logic controller and digital control systems programs)*

**Unit 22.1.4 Complex measurement and loops - design**

*This unit covers design of complex process measurement and control loops.*

**Element 1 Service complex measurement and control loops**

*This element covers activities such as: Service complex or interactive loops; Commission complex or interactive loops; Configure controller on interactive loops; Tune controller on interactive loops*

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**Unit 22.1.5 Selection of instruments**

*This unit covers selection of instruments.*

**Element 1 Determine specifications and select instruments**

*This element covers activities such as: Determine required range and limits (eg of flow, temperature, pressure, level, etc); Determine environmental design constraints (eg corrosive, high temperature, pressure, fluid contact); Select suitable materials of construction (eg wetted parts, environmental protection, pressure containment); Calculate orifice bore size and range of flow transmitters; Determine normal and maximum Cv for a control valve for given process demands; Select control valves; Select flowmeter type and size; Calculate calibration details for required flow range of selected size and type of flow meter*

**Unit 22.1.5 Advanced analog control design**

*This unit covers advanced analog control design.*

**Element 1 Design advanced analog control systems**

*This element covers activities such as: Write setup software for analog configuration; Write scaling and communication for indication in engineering units; Write analog control logic for PID control, including auto/manual transfer/tracking, programmable output selection, face plate communication; Establish data files, symbols, and documentation to match instrument database; Commission control loops*

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**23.1 Market**

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**23.1.1 Product Mix**

*This unit covers formulating programs of Product Mix in line with Company standards.*

**Element 1 Production Programming**

*This element involves adhering to programs outlined by the Dairy Board and ensuring resources and personnel are adequately allocated.*

**Element 2 Internal and External Liaison**

*Ensuring program is communicated to those involved in production. For example, internal - laboratory, Milk Treatment, Calibration Personnel; external - Dairy Board.*

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**23.1.2 Dealing with outside personnel****Element 1 Liaison and communication**

*This covers dealing with outside personnel such as customer visits eg Dairy Board, local market customers, overseas visitors etc, and technical personnel.*

---

**23.1.3 Complaints**

*This unit covers basic knowledge and understanding of handling complaints effectively.*

**Element 1 Complaint Resolution**

*This element involves operating NZDB complaints system, resolving customer complaints and avoiding unnecessary liability, maintaining a knowledge of company/industry customer complaint handling, negotiating customer complaints, interacting with relevant parties to resolve customer complaints, determining "write-off" point in difficult customer complaints and establishing a timetable and objectives for dealing with complaints.*

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**24.1 Accounting Basics**

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**24.1.1 Accounting Basics**

*This unit covers learning the basics so as to gain a basic knowledge and understanding of accounting principles, including: source data, journals, ledgers, double-entry book-keeping, profit/loss accounts, balance sheets, cash flow and budgeting.*

**Element 1 Basic Principles**

*Learn and understand the basics of each principle*

**Element 2 Links between principles**

*Know and understand the links between the main principles*

**Element 3 Generating reports**

*Generate profit/loss accounts, balance sheets, cash flows from source data etc.*

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**24.2 Budgets**

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**24.2.2 Budgets**

*This unit covers knowing what a budget is, the formulation of a departmental budget and using the budget as a control tool.*

**Element 1 Understanding what a budget is****Element 2 Formulate/set a departmental budget****Element 3 Using a budget as a control tool**

*Learn how to use the budget as a departmental cost efficiency control tool and know how to investigate any anomalies which arise.*

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**24.3 Costs**

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**24.3.3 Costs**

*This unit covers knowing what costs are, the difference between fixed and variable costs, having a basic understanding of CEU Models and learning the basics of cost control.*

**Element 1 Main Costs**

*Know what the main costs are. Understand which are fixed, variable, direct and indirect costs. For example - wages/salaries, ingredients, packaging, quality, consumables, training, CIP/cleaning, laboratory, contracts, regulatory, utilities, travel, inventory/stock.*

**Element 2 CEU Models**

*Gain a basic understanding of what CRU Models are and how they affect company returns.*

**Element 3 Investigation and Control**

*Covers investigation and control of cost over-runs.*

---

**24.4 Financial Information**

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**24.4.1 Financial Information**

*This unit covers knowing where and how to get financial information. It also covers the interpretation of the information and what to do with it.*

**Element 1 Reports**

*Learn how to inquire into and generate reports from Promix and PAMS.*

**Element 2 Interpreting Information**

*Know how to interpret the information/reports and know what corrective actions are needed.*

---

**24.5 Capital Expenditure**

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**24.5.1 Capital Expenditure**

*This unit covers knowing what Capital is, reasons for capital expenditure, capital proposals including justification and payback and capital project control*

**Element 1 Know what capital is.****Element 2 Writing up a proposal**

*Know how to write up a proposal eg drawings, descriptions, costs, justification, payback etc.*

**Element 3 Capital Project Control**

*See Unit 1.4.3 Major Projects and Scheduling.*

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**24.6 Purchasing**

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**24.6.1 Purchasing****Element 1 Aspects of purchasing**

*This element covers knowing aspects of purchasing such as how to get quotations, prices etc., spending limits, where to code purchases to and the affects of Inventory/Stock levels.*

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**24.7 Product Mix**

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24.7.1 Product Mix

Element 1 Product Mix Financials

*This element covers knowing the basics of Product Mix Financials such as product penalties, product incentives, diversion costs/incentives, product differentials and product returns.*

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## **APPENDIX 3.**

### **Departmental Matrix.**

Matrix Index		Page: 1	(SAMPLE ONLY)									Manager	Process Asst	Prod <sup>n</sup> Asst	Team leader/1	USA Operator	Gen Hand	Packing Sup	Packing Staff	Tech Office
1. Generic Competencies																				
1.1 Working Together:																				
1.1.1 Basic Competencies																				
1. Work with others																				
<input checked="" type="checkbox"/>																				
2. Record information																				
<input checked="" type="checkbox"/>																				
3. Comply with critical hygiene requirements																				
<input checked="" type="checkbox"/>																				
4. Count, add and subtract numbers																				
<input checked="" type="checkbox"/>																				
5. Follow safety and emergency procedures																				
<input checked="" type="checkbox"/>																				
1.1.2 Seeking & providing information																				
1. Seek & provide information																				
<input checked="" type="checkbox"/>																				
2. Write memos, letters or brief reports																				
<input checked="" type="checkbox"/>																				
1.1.3 Facilitating & representing workgroups																				
1. Facilitate a small group discussion																				
<input checked="" type="checkbox"/>																				
2. Present and represent information																				
<input checked="" type="checkbox"/>																				
1.1.4 Formal meetings, reports & negotiation																				
1. Write formal reports																				
<input checked="" type="checkbox"/>																				
2. Negotiate with others																				
<input checked="" type="checkbox"/>																				
3. Chair meetings																				
<input checked="" type="checkbox"/>																				
1.1.5 Formal presentations																				
1. Conduct lectures and formal presentations																				
<input checked="" type="checkbox"/>																				
1.2 Safety																				
1.2.1 First aid																				
1. Administer first aid																				
<input checked="" type="checkbox"/>																				
1.2.2 Accident investigation and prevention																				
1. Investigate accidents																				
<input checked="" type="checkbox"/>																				
2. Conduct safety audits and identify workplace health and safety hazards																				
<input checked="" type="checkbox"/>																				
1.3 Maths and Statistics																				
1.3.1 Basic maths																				
1. Perform basic calculations																				
<input checked="" type="checkbox"/>																				
2. Calculate volumes, areas, square roots & logs																				
<input checked="" type="checkbox"/>																				
3. Calculate averages & standard deviations																				
<input checked="" type="checkbox"/>																				
4. Prepare graphs and charts																				
<input checked="" type="checkbox"/>																				
1.3.2 Simultaneous equations																				
1. Solve simple simultaneous equations																				
<input checked="" type="checkbox"/>																				
2. Condense calculations																				
<input checked="" type="checkbox"/>																				
3. Calculate significance, normality, and probability																				
<input checked="" type="checkbox"/>																				
4. Perform statistical regressions																				
<input checked="" type="checkbox"/>																				
1.3.3 Complex simultaneous equations and Analysis of Variance																				
1. Complex simultaneous equations																				
<input checked="" type="checkbox"/>																				
2. Analyse variance																				
<input checked="" type="checkbox"/>																				
1.4 Planning and Organising																				
1.4.1 Minor tasks and scheduling																				
1. Plan and/or schedule minor activities																				
<input checked="" type="checkbox"/>																				
2. Implement and monitor progress of plan or schedule of minor activities																				
<input checked="" type="checkbox"/>																				
1.4.2 Medium projects and scheduling																				
1. Plan and/or schedule medium projects/activities																				
<input checked="" type="checkbox"/>																				
2. Implement and monitor progress of plan or schedule of medium activities																				
<input checked="" type="checkbox"/>																				
1.4.3 Major projects and scheduling																				
1. Plan and/or schedule major projects/activities																				
<input checked="" type="checkbox"/>																				
2. Implement and monitor progress of plan or schedule of major activities																				
<input checked="" type="checkbox"/>																				
1.4.4 Production Co-ordination																				
1. External Liaison																				
<input checked="" type="checkbox"/>																				
2. Internal Liaison																				
<input checked="" type="checkbox"/>																				
3. Production Planning																				
<input checked="" type="checkbox"/>																				
4. Process Control																				
<input checked="" type="checkbox"/>																				
5. Specification Control																				
<input checked="" type="checkbox"/>																				
6. Performance Monitoring																				
<input checked="" type="checkbox"/>																				
7. Quality Control																				
<input checked="" type="checkbox"/>																				
8. Other																				
<input checked="" type="checkbox"/>																				
1.5 Quality																				
1.5.1 Documenting procedures																				
<input checked="" type="checkbox"/>																				

[illegible]



## 5. Common Process Operations



### 5.6 Process Systems (Pumps, Pipes, Valves)

### 5.6.1 Process systems I

1. Detect abnormal operating conditions
2. Rectify abnormal operating conditions

### 5.6.2 Process systems II

1. Detect abnormal operating conditions
2. Rectify abnormal operating conditions

### 5.6.3 Process systems III

1. Detect abnormal operating conditions
2. Rectify abnormal operating conditions

#### 5.6.4 Process systems IV

1. Determine cause of abnormal process system condition

## 5.7 CIP - General Operations

### 5.7.1 CIP - general I

1. Detect abnormal CiP conditions
2. Rectify abnormal CiP conditions

### 5.7.2 CIP - general II

1. Detect abnormal CIP conditions
2. Determine cause of abnormal CIP conditions
3. Rectify abnormal CIP conditions

### 5.7.3 CIP - general III

- ### 1. Determine CIP cleaning regime

## 6. Filtration and demineralisation

### B.1 Ultrafiltration

### 6.1.1 Ultrafiltration /

1. Operate ultrafiltration plant
2. CIP ultrafiltration plant
3. Detect abnormal operating conditions
4. Detect abnormal operating conditions

### 6.1.2 Ultrafiltration II

1. Adjust ultrafiltration plant from given starting parameters
2. Clear and restart ultrafiltration plant
3. Detect abnormal operating conditions
4. Rectify abnormal operating conditions

### 8.1.3 Ultrafiltration III

1. Determine UF operating parameters and specifications to achieve product specification

## 6.2 Electrodialysis Demineralisation

### 6.2.1 Electrodialysis I

1. Operate electro dialysis plant
2. CIP electro dialysis plant
3. Detect abnormal operating conditions
4. Rectify abnormal operating conditions
5. Dismantle, clean, and reassemble E.D. plant

## 6.2.2 Electrodialysis II

1. Clear and restart electro dialysis plant
2. Detect abnormal operating conditions
3. Rectify abnormal operating conditions

### 8.2.3 Electrodialysis III

1. Determine E.D. plant operating parameters to achieve product specification
2. Rectify abnormal operating conditions

### 6.3 Ion Exchange Demineralisation

### 6.3.1 Ion exchange I

1. Operate ion exchange plant
2. Regenerate ion exchange plant
3. Detect abnormal operating conditions
4. Operate demineralisation plant to demineralise water
5. Regen water demin plant
6. Detect abnormal operating conditions
7. Rectify abnormal operating conditions

### 6.3.2 Ion exchange illa

- 1 Adjust ion exchange plant from given starting parameters

2.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.3 Ion exchange III</b>								
1.Determine ion exchange plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4 Reverse Osmosis</b>								
<b>6.4.1 Reverse osmosis I</b>								
1.Operate reverse osmosis plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.CIP reverse osmosis plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4.2 Reverse osmosis II</b>								
1.Adjust reverse osmosis plant from given starting parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Clear and restart reverse osmosis plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4.3 Reverse osmosis III</b>								
1.Determine reverse osmosis plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5 Filter Press</b>								
<b>6.5.1 Filter pressing I</b>								
1.Operate filter press	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Adjust filter press plant from given starting parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Clear and restart filter press	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.CIP filter press	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.Detect & rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.2 Filter pressing II</b>								
1.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.3 Filter pressing III</b>								
1.Determine filter press plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8. Dry Products</b>								
<b>8.1 Evaporation</b>								
<b>8.1.1 Evaporation I</b>								
1.Operate evaporation plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.CIP evaporation plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.2 Evaporation II</b>								
1.Adjust evaporation plant from given starting parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Clear and restart evaporation plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.3 Evaporation III</b>								
1.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.4 Evaporation IV</b>								
1.Determine evaporation plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.2 Homogenisation</b>								
<b>8.2.1 Homogenisation I</b>								
1.Operate homogenising plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.CIP homogenising plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.2.2 Homogenisation II</b>								
1.Strip/assemble homogenisation plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Determine cause of abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.2.3 Homogenisation III</b>								
1.Determine homogenising plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.3 Casein (wet-side) Curd Production</b>								



**8.3.1 Casein (wet-side) I**

1. Operate wet-side casein plant

3. CIP wet-side casein plant

4. Detect abnormal operating conditions

5. Rectify abnormal operating conditions

**8.3.2 Casein (wet-side) II - silo coagulation (lactic and rennet/mineral acid)**

1. Monitor silo to produce coagulant to specification

2. Detect abnormal operating conditions

3. Monitor temperatures, skim-flow and precipitation pH to produce coagulant to specification

4. Detect abnormal operating conditions

5. Rectify abnormal operating conditions

6. Operate caseinating plant

7. CIP caseinating plant

8. Detect abnormal operating conditions

**8.3.3 Casein (wet-side) III**

1. Adjust wet-side casein plant from given starting parameters

2. Adjust wet-side casein plant when services fluctuate

3. Clear and restart wet-side casein plant

4. Rectify abnormal operating conditions

5. Determine caseinating plant operating parameters to achieve product specification

6. Rectify abnormal operating conditions

**8.3.4 Casein (wet-side) IV**

1. Determine wet-side casein plant operating parameters to achieve product specification

**8.4 Drying - (Powders and Caseins)****8.4.1 Drying I**

1. Operate drying plant

2. Detect abnormal operating conditions

3. Rectify abnormal operating conditions

4. CIP drying plant

**8.4.2 Drying II**

1. Adjust drying plant from given starting parameters

2. Clear and restart drying plant after major power failure

3. Rectify abnormal operating conditions

4. Clean/install nozzles

5. Detect abnormal operating conditions

6. Rectify abnormal operating conditions

7. Remove atomiser, clean and install in drier

8. Detect abnormal operating conditions

9. Rectify abnormal operating conditions

**8.4.3 Drying III**

1. Rectify abnormal operating conditions

**8.4.4 Drying IV**

1. Determine drying plant operating parameters to achieve product specification

2. Rectify abnormal operating conditions

3. Rectify abnormal operating conditions

4. Rectify abnormal operating conditions

**8.5 Powder Blending****8.5.1 Powder blending I**

1. Blend powder to specification

**8.6 Powder Sifting and Conveying****8.6.1 Sifting and conveying I**

1. Operate powder sifting and conveying plant

2. Detect abnormal operating conditions

3. Rectify abnormal operating conditions

**8.6.2 Sifting and conveying II**

1. Detect abnormal operating conditions

2. Rectify abnormal operating conditions

**8.6.3 Sifting and conveying III**

1. Determine sifting and conveying plant operating parameters to achieve product specification





9.5.1 Anhydrous milkfat I								
1. Operate AMF plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. CIP AMF plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.5.2 Anhydrous milkfat II								
1. Adjust AMF plant from given starting parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Adjust AMF plant when services fluctuate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Clear and restart AMF plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.5.3 Anhydrous milkfat III								
1. Determine AMF plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Determine cause of abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10. Cheese Making</b>								
<b>10.1 Starter Production</b>								
10.1.1 Bulk starter production I								
1. Make bulk starter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. CIP bulk starter plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Use direct vat set starters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.1.2 Bulk starter production II								
1. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.1.3 Starter selection and control								
1. Select starters and determine conditions for the manufacture of product to specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.2 Cheese Curds and Whey</b>								
10.2.1 Curds and whey I								
1. Operate cheese curds and whey plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. CIP cheese curds and whey plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2.2 Curds and whey II								
1. Clear and restart cheese curds and whey plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2.3 Curds and whey III								
1. Determine cheese curds and whey parameters and conditions to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.3 Dry Salted Cheese</b>								
10.3.1 Draining, cheddaring, milling, and salting I								
1. Operate draining, cheddaring, milling, and salting plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. CIP cheese draining, cheddaring, milling plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.3.2 Draining, cheddaring, milling, and salting II								
1. Operate draining, cheddaring, milling, and salting plant (advanced)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.3.3 Draining, cheddaring, milling, and salting III								
1. Determine cheese draining, cheddaring, milling, and salting plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.4 Casomatic Operation</b>								
10.4.1 Casomatic or press-vat I								
1. Operate casomatics or pressing vats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.4.2 Casomatic or press-vat II								
1. Adjust pressing for down-stream specs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.5 Brine Cheese Molding</b>								
10.5.1 Mold changing								
1. Change cheese molds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.5.2 Brine cheese molding I								
1. Operate cheese molding plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.CIP cheese molding plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.5.3 Brine cheese molding II								
1.Determine cheese molding parameters to achieve product specifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.6 Cheese Brining								
10.6.1 Cheese brining I								
1.Brine cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.6.2 Cheese brining II								
1.Determine brining parameters to achieve product specifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.7 Parmesan								
10.7.1 Parmesan re-conditioning								
1.Recondition parmesan cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Turn green parmesan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Turn parmesan cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.7.2 Green parmesan curing								
1.Cure green parmesan to specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Cure parmesan cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.Operate parmesan grating and drying plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.7.3 Parmesan curing II/grating and drying								
1.Determine parmesan curing parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Determine parmesan grating and drying plant operating parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.8 Specialty Cheese								
10.8.1 Molding, salting, and ripening I								
1.Mold specialty cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Dry salt and ripen specialty cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.8.2 Molding, salting, ripening II and smear cheese								
1.Monitor and adjust molding, salting, and ripening of specialty cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Make up smear solution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.Apply smear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.8.3 Molding, salting, and ripening III								
1.Determine specialty cheese making parameters to achieve product specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Packing								
12.1 Continuous Dry-Salted Cheese Pressing								
12.1.1 Dry-salted cheese block-forming I								
1.Operate continuous dry-salted cheese pressing plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.CIP continuous cheese pressing plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.1.2 Dry-salted cheese block-forming II								
1.Determine pressing, vacuum, and holding times	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Clear and restart continuous cheese pressing plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.2 Rapid Cooling of Packed Product								
12.2.1 Rapid cooling of packed product								
1.Operate rapid cooling plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.3 Consumer Cheese								
12.3.1 Debinning, deboxing and stripping/cutting cheese blocks, cheese								
1.Debin, debox and strip cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Cut blocks of cheese to specified size and shape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Operate cheese shredding plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>







1. Take an aseptic sample

## 15.1.3 Develop/modify sampling methods

1. Develop or modify sampling methods and recommend solutions to sampling problems

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

## 15.2 Sensory/Functional Analysis

## 15.2.1 Basic sensory analysis

1. Conduct flavour or odour assessment of milk or product

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

## 15.2.2 Organoleptic analysis and Functional Testing

1. Conduct organoleptic assessment of product

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2. Conduct functional test following standard procedures

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## 15.2.3 Sensory/functional test performance identification

1. Identify if a sensory or functional test has performed incorrectly

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## 15.2.4 Sensory/functional test performance and validation

1. Identify the cause of a sensory or functional test not performing

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2. Validate sensory or functional test procedures

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## 15.2.5 Develop sensory/functional tests

1. Develop sensory or functional test methods

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## 15.3 Chemical Analysis

## 15.3.1 Chemical/hazardous substances, Preparation of reagents and che

1. Handle or store chemicals or dangerous substances

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2. Prepare chemical reagents

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3. Conduct a chemical or analytical test following standard procedures which involves up to 3 main stages

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4. Clean labware to specified cleaning standards

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## 15.3.2 Chemical analysis Ila

1. Conduct a chemical or analytical test following standard procedures which involves 4 - 5 main stages

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2. Conduct a chemical or analytical test following standard procedures which involves 6 or more main stages

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## 15.3.3 Chemical analysis test performance identification

1. Identify if a chemical or analytical test has performed incorrectly

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

## 15.3.4 Chemical analysis test performance and validation

1. Identify the cause of a chemical or analytical test not performing correctly

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

2. Validate chemical or analytical test method/procedures

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## 15.3.5 Develop/modify chemicals analysis methods

1. Develop chemical or analytical test methods

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## 15.4 Microbiological Analysis

## 15.4.1 Micro analysis Ia

1. Conduct micro laboratory tests following standard procedures, which involves reconstitution and/or analysis

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2. Conduct micro laboratory tests following standard procedures, which involves reconstitution, analysis, and confirmation.

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3. Prepare media for micro tests

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## 15.4.2 Micro analysis Ila

1. Conduct micro laboratory tests following standard procedures, which involves 4 or more steps such as reconstitution, analysis, resuscitation, treatment, and/or confirmation

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2. Conduct analytical test following microbiological assay procedure

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3. Test media performance

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4. Identify uncharacteristic micro test results compared to historical data

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5. Handle/store stock cultures and pathogens

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6. Prepare bulk starter or yeast inoculum

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## 15.4.3 Micro testing problems

1. Determine the cause of uncharacteristic micro test results

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2. Determine the cause of uncharacteristic microassay test results

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

3. Check and grow cultures and subcultures

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## 15.4.4 Micro test validation

1. Validate micro test procedures

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2. Validate microassay test procedures

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

3. Identify unknown micro type

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

## 15.4.5 Develop/modify micro testing methods

1. Develop micro test methods

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2. Develop microassay testing procedures

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

## 15.5 Product Grading

## 15.5.1 Product grading



1.Assign a product a grade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.5.2 Grade document release								
1.Check and release product grading documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.5.3 Product disposition								
1.Recommend product disposition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>15.6 Lab Equipment Purchase and Maintenance</b>								
15.6.1 Lab equipment I								
1.Operate chemical and analytical testing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Calibrate laboratory equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.6.2 Lab equipment II								
1.Replace laboratory equipment components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Commission lab equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.6.3 Lab equipment III								
1.Service and fault-find lab equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.6.4 Evaluation & purchase of lab equip								
1.Evaluate which laboratory equipment to purchase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>15.7 Automated Laboratory Equipment</b>								
15.7.1 Automated laboratory equipment I								
1.Operate high throughput automated laboratory testing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Clean lab equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.7.2 Automated laboratory equipment II								
1.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Determine cause of abnormal operating condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.7.3 Automated laboratory equipment III								
1.Determine cause of abnormal operating condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16. Ancillary Services</b>								
<b>16.1 Boiler Operations</b>								
16.1.1 Boiler operation I								
1.Operate boiler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Operate coal and ash handling plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.Monitor and adjust boiler feed water treatment plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.1.2 Boiler - cold start								
1.Start boiler from cold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Operate soot blower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detect abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Monitor combustion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.Operate deaerator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.1.3 Boiler fittings and equipment.								
1.Prepare boiler for annual marine survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Service boiler fittings and equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.1.4 Combustion optimisation/Boiler Water treatment								
1.Adjust air-fuel ratio to optimise combustion efficiency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Determine boiler water treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Service boiler fittings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16.2 Ancillary Services Monitoring</b>								
16.2.1 Ancillary services monitoring								
1.Monitor ancillary services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.2.2 Ancillary services operation								
1.Operate ancillary services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16.3 Water Treatment</b>								
16.3.1 Water treatment I								
1.Operate water treatment plant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.3.2 Water treatment II								
1.Determine water treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.3.3 Water treatment III								

1.Design/modify water treatment system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Rectify abnormal operating conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16.4 Refrigeration</b>								
<b>16.4.1 Refrigeration (CFCs or equivalent and ammonia) I</b>								
1.Test and repair leaks in CFC type refrigeration systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Test and repair leaks in ammonia refrigeration systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16.4.2 Refrigeration (CFCs or equivalent and ammonia) II</b>								
1.Service and fault-find CFC type refrigeration systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Service and fault-find ammonia refrigeration systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16.4.3 Refrigeration design</b>								
1.Design or modify refrigeration and air conditioning systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17. Documentation</b>								
<b>17.1 Documentation</b>								
<b>17.1.1 Food Safety</b>								
1.Identify non compliances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Write an accurate concise report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.2 Audits</b>								
1.Identify non compliance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Maintain accurate records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Detailed knowledge of plant quality system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.3 HACCP</b>								
1.Records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Action non-compliance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.4 Business Plan</b>								
1.Write an accurate and concise report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.5 Cost Model Reviews</b>								
1.Write a concise and accurate report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Interpret financial costings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Utilize basic statistical techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.6 PAMS</b>								
1.Raw data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Plant Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.7 PROMIX</b>								
1.Raw data and reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Use of information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.8 PAs</b>								
1.Understanding PAs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Monitoring production against PAs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.9 Wages and Salaries</b>								
1.Interface between payroll and staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Monitor performance against budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Alterations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.10 IPRA's</b>								
1.Product Recall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.NC/CA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Record of withdrawals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.11 Spec Changes</b>								
1.Notification of spec changes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.12 Results</b>								
1.Filing System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Traceback Procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.Reviewing Data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.13 Maintenance and Planning</b>								
1.Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Monitoring Maintenance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>17.1.14 Job Requests</b>								



18.4 Painting:									
18.4.1 Preparation for painting									
1.Prepare for painting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.4.2 Spray painting - primers and undercoats									
1.Spray paint primers and undercoats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.4.2 Brush/roller painting									
1.Apply primer and undercoat with brush or roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.4.3 Spray painting - finish coats									
1.Spray paint finish coats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.4.3 Brush/roller painting - finish coats									
1.Apply finish coats with brush or roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.5 Vehicle breakdown/recovery									
18.5.1 Vehicle breakdown/recovery									
1.Recover immobilised vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.6 Tyre servicing									
18.6.1 Tyre servicing I									
1.Change wheels, repair tubes and remount tyres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.6.2 Tyre servicing II									
1.Conduct advanced tyre servicing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Mechanical									
19.1 Mechanical - General									
19.1.1 Mechanical - general I									
1.Undertake minor mechanical servicing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.1.2 Mechanical - general II									
1.Undertake general mechanical servicing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.1.3 Mechanical - general III									
1.Undertake advanced mechanical servicing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.1.4 Preventative maintenance									
1.Develop preventative maintenance program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.1.5 Maintenance Programming									
1.Plant Care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Job Requests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.Inspections and Testing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.2 Machining									
19.2.1 Machining I									
1.Machine tools and components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.2.2 Machining II									
1.Manufacture and machine tools and components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.2.3 Machining III									
1.Design and machine tools and components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.2.4 Machining IV									
1.Design and machine specialised tools and components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.3 Mechanical Fitting									
19.3.1 Mechanical fitting I									
1.Fit mechanical components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.3.2 Mechanical fitting II									
1.Fault find and repair gearboxes and high pressure pumps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.3.3 Mechanical fitting III									
1.Fault find and repair high speed/variable speed transmissions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.3.4 Size and select pumps/fans etc									
1.Size and select pumps, fans, gear boxes and similar equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.4 Hydraulics, Pneumatics, & Process Systems									
19.4.1 Fluid systems and valves I									
1.Fault-find and service hydraulic, pneumatic, and process valves and components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.4.2 Fluid systems and valves II									
1.Fault-find and service hydraulic, pneumatic, process valves and systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.4.3 Fluid systems and valves III									
1.Size and select pneumatic, hydraulic, steam and process valves, fittings, etc	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.Overhaul hydraulic, pneumatic, and process systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.4.4 Fluid systems and valves IV									





## 22. Instrumentation





### 1.Product Mix Financials

## **APPENDIX 4.**

### **Examples of Job Models.**

Department: WPC  
 JMName: Manager

## 1. Generic Competencies

### 1.2 Safety

#### 1.2.2 Accident investigation and prevention

- |  |              |                  |
|--|--------------|------------------|
|  | <b>List:</b> | <b>Function:</b> |
| 1 Investigate accidents  |              | Monitor          |
| 2 Conduct safety audits and identify workplace health and safety hazards |              | Monitor          |

### 1.4 Planning and Organising

#### 1.4.1 Minor tasks and scheduling

- |  |              |                  |
|--|--------------|------------------|
|  | <b>List:</b> | <b>Function:</b> |
| 1 Plan and/or schedule minor activities                                  |              | Monitor          |
| 2 Implement and monitor progress of plan or schedule of minor activities |              | Monitor          |

#### 1.4.2 Medium projects and scheduling

- |   |   |                  |
|---|---|------------------|
|   | <b>List:</b>                                  | <b>Function:</b> |
| 1 Plan and/or schedule medium projects/activities                         | Capital Projects<br>Restructure of department | Monitor          |
| 2 Implement and monitor progress of plan or schedule of medium activities |   | Monitor          |

#### 1.4.3 Major projects and scheduling

- |  |              |                  |
|--|--------------|------------------|
|  | <b>List:</b> | <b>Function:</b> |
| 1 Plan and/or schedule major projects/activities                         |              | Supervise        |
| 2 Implement and monitor progress of plan or schedule of major activities |              | Supervise        |

#### 1.4.4 Production Co-ordination

- |                          |              |                  |
|--------------------------|--------------|------------------|
|                          | <b>List:</b> | <b>Function:</b> |
| 1 External Liaison       |              | Supervise        |
| 2 Internal Liaison       |              | Supervise        |
| 3 Production Planning    |              | Supervise        |
| 4 Process Control        |              | Supervise        |
| 6 Performance Monitoring |              | Monitor          |
| 7 Quality Control        |              | Monitor          |
| 8 Other                  |              | Monitor          |

### 1.5 Quality

#### 1.5.1 Documenting procedures

- |  |              |                  |
|--|--------------|------------------|
|  | <b>List:</b> | <b>Function:</b> |
| 1 Document an existing procedure                                 |              | Monitor          |
| 2 Control information quality data                               |              | Monitor          |
| 3 Audit single procedure or document                             |              | Monitor          |
| 4 Identify opportunities to apply quality improvement techniques |              | Monitor          |

#### 1.5.2 Operating procedures

- |  |              |                  |
|--|--------------|------------------|
|  | <b>List:</b> | <b>Function:</b> |
| 1 Develop operating procedures                         |              | Monitor          |
| 2 Implement and standardise new or improved procedures |              | Monitor          |
| 3 Analyse/review quality data                          |              | Monitor          |
| 4 Conduct a compliance audit                           |              | Monitor          |
| 5 Select quality improvement data collection methods   |              | Monitor          |

#### 1.5.3 Quality Management Systems

- |   |              |                  |
|---|--------------|------------------|
|   | <b>List:</b> | <b>Function:</b> |
| 1 Develop/maintain quality management system  |              | Monitor          |
| 2 Assess, interpret, report and recommend action following a production run analysis or product failure traceback |              | Monitor          |
| 3 Prepare product/material specification  |              | Supervise        |
| 4 Conduct system audits   |              | Monitor          |
| 5 Select and test possible solutions that have been generated using QIP techniques                                |              | Monitor          |

#### 1.5.4 Regulatory

- |                              |              |                  |
|------------------------------|--------------|------------------|
|                              | <b>List:</b> | <b>Function:</b> |
| 1 Product Safety Program     |              | Monitor          |
| 2 Customer Audits            |              | Supervise        |
| 3 Company Policies           |              | Monitor          |
| 4 Contractor/Visitor Control |              | Monitor          |

### 1.7 Training

#### 1.7.1 Conducting on job training

- |                           |              |                  |
|---------------------------|--------------|------------------|
|                           | <b>List:</b> | <b>Function:</b> |
| 1 Conduct on-job training |              | Action           |

#### 1.7.2 Managing training

- |                         |              |                  |
|-------------------------|--------------|------------------|
|                         | <b>List:</b> | <b>Function:</b> |
| 1 Manage staff training |              | Supervise        |

### 1.8 Workforce Planning

Department: WPC  
 JMName: Manager

<b>1.8.1 Workforce Planning</b>	<b>List:</b>	<b>Function:</b>
1 Job Models		Monitor
2 Training Needs Analysis		Monitor
3 Selection and Development		Action
4 Rosters and Shifts		Monitor
<b>1.9 Personnel</b>		
<b>1.9.1 Performance Management</b>	<b>List:</b>	<b>Function:</b>
1 Performance Management		Action
<b>1.9.2 Employee Relations</b>	<b>List:</b>	<b>Function:</b>
1 Employee Relations		Action
<b>1.9.3 Industrial Relations</b>	<b>List:</b>	<b>Function:</b>
1 Industrial Relations		Action
<b>2. Clerical</b>		
<b>2.2 Filing, Money, and Clerical Systems</b>		
<b>2.2.2 Developing &amp; implementing filing and record systems</b>	<b>List:</b>	<b>Function:</b>
1 Develop new filing and record systems		Monitor
2 Implement new filing and record systems		Monitor
<b>2.3 Invoices, Reconciliations, and Reports</b>		
<b>2.3.1 Debtors/Creditors invoices</b>	<b>List:</b>	<b>Function:</b>
1 Process debtors invoices		Supervise
2 Process creditors invoices		Supervise
<b>2.3.3 Management information reports</b>	<b>List:</b>	<b>Function:</b>
1 Prepare management information reports		Action
<b>2.4 Payroll</b>		
<b>2.4.1 Wage/salary payments</b>	<b>List:</b>	<b>Function:</b>
1 Collect timesheets, distribute wages and salaries, and resolve pay queries		Monitor
<b>2.5 Public/Customers</b>		
<b>2.5.1 Telephone switchboard PABX/Mail and couriers/Reception and site visitors.</b>	<b>List:</b>	<b>Function:</b>
4 Arrange and co-ordinate visits to site		Action
<b>3. Ancillary duties</b>		
<b>3.1 External Cleaning</b>		
<b>3.1.1 External cleaning</b>	<b>List:</b>	<b>Function:</b>
1 Clean external building, equipment, and surrounds		Monitor
<b>3.2 Internal Cleaning</b>		
<b>3.2.1 Internal cleaning/Vinyl cleaning and polishing.</b>	<b>List:</b>	<b>Function:</b>
1 Clean internal building areas and surfaces, and external plant & equipment surfaces		Monitor
<b>3.6 Pest Control</b>		
<b>3.6.1 Pest control</b>	<b>List:</b>	<b>Function:</b>
1 Develop and maintain pest control program		Monitor
<b>5. Common Process Operations</b>		
<b>5.1 Liquid Product Storage and Handling</b>		
<b>5.1.3 Abnormal milk or product</b>	<b>List:</b>	<b>Function:</b>
1 Accept/Reject abnormal product		Monitor
<b>5.7 CIP - General Operation</b>		
<b>5.7.3 CIP - general III</b>	<b>List:</b>	<b>Function:</b>
1 Determine CIP cleaning regime		Monitor
<b>6. Filtration and demineralisation</b>		
<b>6.1 Ultrafiltration</b>		
<b>6.1.3 Ultrafiltration III</b>	<b>List:</b>	<b>Function:</b>
1 Determine UF operating parameters and specifications to achieve product specification		Monitor
<b>6.3 Ion Exchange Demineralisation</b>		

Department: WPC  
 JMName: Manager

<b>6.3.3 Ion exchange III</b>	<b>List:</b>	<b>Function:</b>
1 Determine ion exchange plant operating parameters to achieve product specification		Monitor
<b>6.4 Reverse Osmosis</b>		
<b>6.4.3 Reverse osmosis III</b>	<b>List:</b>	<b>Function:</b>
1 Determine reverse osmosis plant operating parameters to achieve product specification		Monitor
<b>6.5 Filter Press</b>		
<b>6.5.3 Filter pressing III</b>	<b>List:</b>	<b>Function:</b>
1 Determine filter press plant operating parameters to achieve product specification		Monitor
<b>8. Dry Products</b>		
<b>8.1 Evaporation</b>		
<b>8.1.4 Evaporation IV</b>	<b>List:</b>	<b>Function:</b>
1 Determine evaporation plant operating parameters to achieve product specification		Monitor
<b>8.4 Drying - (Powders and Caseins)</b>		
<b>8.4.4 Drying IV</b>	<b>List:</b>	<b>Function:</b>
1 Determine drying plant operating parameters to achieve product specification		Monitor
2 Rectify abnormal operating conditions		Monitor
3 Rectify abnormal operating conditions		Monitor
4 Rectify abnormal operating conditions		Monitor
<b>8.6 Powder Sifting and Conveying</b>		
<b>8.6.3 Sifting and conveying III</b>	<b>List:</b>	<b>Function:</b>
1 Determine sifting and conveying plant operating parameters to achieve product specification		Monitor
<b>12. Packing</b>		
<b>12.5 Dry Products Packing (Consumer/Bulk)</b>		
<b>12.5.3 Dry product pack filling III</b>	<b>List:</b>	<b>Function:</b>
2 Design/modify dry products pack filler		Monitor
<b>12.6 Consumer/Bulk Bag, Sachet, Sealing</b>		
<b>12.6.3 Sealing of bags, liners and sachets III</b>	<b>List:</b>	<b>Function:</b>
1 Determine sealing parameters		Monitor
<b>15. Laboratory</b>		
<b>15.5 Product Grading</b>		
<b>15.5.3 Product disposition</b>	<b>List:</b>	<b>Function:</b>
1 Recommend product disposition		Monitor
<b>17. Documentation</b>		
<b>17.1 Documentation</b>		
<b>17.1.1 Food Safety</b>	<b>List:</b>	<b>Function:</b>
2 Write an accurate concise report		Monitor
<b>17.1.2 Audits</b>	<b>List:</b>	<b>Function:</b>
1 Identify non compliance.		Monitor
2 Maintain accurate records.		Monitor
<b>17.1.3 HACCP</b>	<b>List:</b>	<b>Function:</b>
1 Records		Monitor
<b>17.1.4 Business Plan</b>	<b>List:</b>	<b>Function:</b>
1 Write an accurate and concise report.		Action
2 Objectives		Action
<b>17.1.5 Cost Model Reviews</b>	<b>List:</b>	<b>Function:</b>
1 Write a concise and accurate report		Supervise
2 Interpret financial costings		Supervise
3 Utilize basic statistical techniques		Action
<b>17.1.6 PAMS</b>	<b>List:</b>	<b>Function:</b>
2 Plant Performance		Monitor



Department: WPC  
 JMName: Manager

3 Feedback		Supervise
17.1.7 PROMIX	List:	Function:
2 Use of information		Supervise
17.1.8 PAs	List:	Function:
2 Monitoring production against PAs.		Supervise
3 Procedures		Supervise
17.1.9 Wages and Salaries	List:	Function:
1 Interface between payroll and staff		Monitor
2 Procedures		Monitor
3 Monitor performance against budget.		Supervise
4 Alterations		Supervise
17.1.10 IPRA's	List:	Function:
1 Product Recall		Monitor
2 NC/CA		Supervise
3 Record of withdrawals		Monitor
17.1.12 Results	List:	Function:
1 Filing System		Monitor
2 Feedback		Monitor
3 Traceback Procedures.		Monitor
4 Reviewing Data		Monitor
17.1.13 Maintenance and Planning	List:	Function:
1 Maintenance		Monitor
2 Monitoring Maintenance.		Supervise
17.1.15 Capital Improvements	List:	Function:
1 Investigating Suggestions		Action
2 Accessing Information		Monitor
3 Procedures		Supervise
17.1.16 Budgeting	List:	Function:
1 Performance		Supervise
2 SMART		Supervise
3 Write an accurate and concise report.		Action
17.1.17 Plant Reliability Teams	List:	Function:
1 Maintenance Issues		Action
2 Monitor Progress		Monitor
17.1.18 Loss Monitoring	List:	Function:
1 Feedback		Monitor
2 Minimising Losses.		Action
17.1.19 Reading/Correspondence	List:	Function:
1 Maintain an effective filing system		Supervise
2 Write accurate and concise reports.		Action
19. Mechanical		
19.1 Mechanical - General		
19.1.4 Preventative maintenance	List:	Function:
1 Develop preventative maintenance program		Monitor
20. Using Computers		
20.1 Basic Computer/Keyboard Skills		
20.1.1 Basic Computer/Keyboard	List:	Function:
1 Use a computer for basic data entry and information retrieval		Action
20.2 Using Computer Applications		
20.2.1 Basic Wordprocessing	List:	Function:
1 Use basic wordprocessing functions		Action
2 Use basic spreadsheet functions		Action
3 Use drawing/graphics software package		Action

Department: WPC  
JMName: Manager

---

**20.2.2 Intermediate Wordprocessing and Spreadsheets****List:****Function:**

- 1 Use intermediate wordprocessing functions
- 2 Use intermediate spreadsheet functions

Action  
Action

---

**20.3 Reporting Applications/Software Design****20.3.1 Use Reporting Application****List:****Function:**

- 1 Use database reporting application

Action

---

**23. Market****23.1 Market****23.1.1 Product Mix****List:****Function:**

- 1 Production Programming
- 2 Internal and External Liaison

Supervise  
Supervise

---

**23.1.2 Dealing with outside personnel****List:****Function:**

- 1 Liaison and communication

Action

---

**23.1.3 Complaints****List:****Function:**

- 1 Complaint Resolution

Action

---

**24. Financial****24.2 Budgets****24.2.2 Budgets****List:****Function:**

- 2 Formulate/set a departmental budget
- 3 Using a budget as a control tool

Action  
Action

---

**24.3 Costs****24.3.3 Costs****List:****Function:**

- 3 Investigation and Control

Monitor

---

**24.5 Capital Expenditure****24.5.1 Capital Expenditure****List:****Function:**

- 3 Capital Project Control

Monitor

---

Department: WPC

JMName: Manager

**1. Generic Competencies****1.1 Working Together****1.1.1 Basic Competencies**

List:

Function:

2 Record information

Competency

3 Comply with critical hygiene requirements

Competency

4 Count, add and subtract numbers

Competency

5 Follow safety and emergency procedures

Competency

**1.1.2 Seeking & providing information**

List:

Function:

1 Seek &amp; provide information

Competency

2 Write memos, letters or brief reports

Competency

**1.1.3 Facilitating & representing workgroups**

List:

Function:

1 Facilitate a small group discussion

Competency

2 Present and represent information

Competency

**1.1.4 Formal meetings, reports & negotiation**

List:

Function:

1 Write formal reports

Competency

2 Negotiate with others

Competency

3 Chair meetings

Competency

**1.1.5 Formal presentations**

List:

Function:

1 Conduct lectures and formal presentations

Competency

**1.2 Safety****1.2.1 First aid**

List:

Function:

1 Administer first aid

Competency

**1.3 Maths and Statistics****1.3.1 Basic maths**

List:

Function:

1 Perform basic calculations

Competency

2 Calculate volumes, areas, square roots &amp; logs

Competency

3 Calculate averages &amp; standard deviations

Competency

4 Prepare graphs and charts

Competency

**1.3.2 Simultaneous equations**

List:

Function:

1 Solve simple simultaneous equations

Competency

2 Condense calculations

Competency

3 Calculate significance, normality, and probability

Competency

4 Perform statistical regressions

Competency

**1.3.3 Complex simultaneous equations and Analysis of Variance**

List:

Function:

1 Complex simultaneous equations

Competency

2 Analyse variance

Competency

**1.4 Planning and Organising****1.4.4 Production Co-ordination**

List:

Function:

5 Specification Control

Competency

**1.5 Quality****1.5.1 Documenting procedures**

List:

Function:

5 Use quality improvement data collection techniques

Competency

**1.5.2 Operating procedures**

List:

Function:

6 Use quality improvement tools to determine problem cause and generate possible solutions

Competency

**1.5.3 Quality Management Systems**

List:

Function:

6 Implement successful problem solution

Competency

**1.6 Supervision****1.6.1 Coaching & guiding**

List:

Function:

1 Coach and guide people in their work

Competency

**1.6.2 Staff development**

List:

Function:

1 Assess staff performance, and provide feedback &amp; counselling to people

Competency

Department: WPC  
 JMName: Manager

2 Facilitate and arbitrate difficult work group situations		Competency
1.10 Team Leading		
1.10.1 Leadership	List:	Function:
1 People Skills - Leadership		Competency
2. Clerical		
2.1 Office Equipment		
2.1.1 General office equipment	List:	Function:
1 Operate general office equipment		Competency
2.1.2 Evaluation of office equipment	List:	Function:
1 Evaluate costs and specifications of office equipment		Competency
2.2 Filing, Money, and Clerical Systems		
2.2.1 Filing/Petty Cash/Imprest cheque account/Receiving Money.	List:	Function:
1 File records/information		Competency
2 Operate petty cash system		Competency
2.3 Invoices, Reconciliations, and Reports		
2.3.2 Reconciliations	List:	Function:
1 Reconcile two different sets of data		Competency
2 Action reconciliation variances		Competency
17. Documentation		
17.1 Documentation		
17.1.1 Food Safety	List:	Function:
1 Identify non compliances		Competency
17.1.2 Audits	List:	Function:
3 Detailed knowledge of plant quality system.		Competency
17.1.7 PROMIX	List:	Function:
1 Raw data and reports		Competency
17.1.8 PAs	List:	Function:
1 Understanding PAs		Competency
24. Financial		
24.1 Accounting Basics		
24.1.1 Accounting Basics	List:	Function:
1 Basic Principles		Competency
2 Links between principles		Competency
3 Generating reports		Competency
24.2 Budgets		
24.2.2 Budgets	List:	Function:
1 Understanding what a budget is		Competency
24.3 Costs		
24.3.3 Costs	List:	Function:
1 Main Costs		Competency
2 CEU Models		Competency
24.4 Financial Information		
24.4.1 Financial Information	List:	Function:
1 Reports		Competency
2 Interpreting Information		Competency
24.5 Capital Expenditure		
24.5.1 Capital Expenditure	List:	Function:
1 Know what capital is.		Competency
2 Writing up a proposal		Competency
24.6 Purchasing		
24.6.1 Purchasing	List:	Function:
1 Aspects of purchasing		Competency

Department: WPC  
JMName: Manager

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- 24.7 Product Mix
- 24.7.1 Product Mix
- 1 Product Mix Financials

List:

Function:  
Competency

Department: Site wide models  
 JMName: Process Assistant

## 1. Generic Competencies

### 1.2 Safety

#### 1.2.2 Accident investigation and prevention

List:

Function:

- 1 Investigate accidents
- 2 Conduct safety audits and identify workplace health and safety hazards

Supervise  
Monitor

### 1.4 Planning and Organising

#### 1.4.1 Minor tasks and scheduling

List:

Function:

- 1 Plan and/or schedule minor activities
- 2 Implement and monitor progress of plan or schedule of minor activities

Monitor  
Monitor

#### 1.4.2 Medium projects and scheduling

List:

Function:

- 1 Plan and/or schedule medium projects/activities
- 2 Implement and monitor progress of plan or schedule of medium activities

Supervise  
Supervise

#### 1.4.3 Major projects and scheduling

List:

Function:

- 1 Plan and/or schedule major projects/activities
- 2 Implement and monitor progress of plan or schedule of major activities

Action  
Action

#### 1.4.4 Production Co-ordination

List:

Function:

- 1 External Liaison
- 2 Internal Liaison
- 3 Production Planning
- 4 Process Control
- 6 Performance Monitoring
- 7 Quality Control

Action  
Action  
Action  
Action  
Action  
Supervise

### 1.5 Quality

#### 1.5.1 Documenting procedures

List:

Function:

- 1 Document an existing procedure
- 2 Control information quality data
- 3 Audit single procedure or document
- 4 Identify opportunities to apply quality improvement techniques

Supervise  
Action  
Supervise  
Action

#### 1.5.2 Operating procedures

List:

Function:

- 1 Develop operating procedures
- 2 Implement and standardise new or improved procedures
- 3 Analyse/review quality data
- 4 Conduct a compliance audit
- 5 Select quality improvement data collection methods

Supervise  
Supervise  
Action  
Action  
Action

#### 1.5.3 Quality Management Systems

List:

Function:

- 1 Develop/maintain quality management system
- 2 Assess, interpret, report and recommend action following a production run analysis or product failure traceback
- 3 Prepare product/material specification
- 4 Conduct system audits
- 5 Select and test possible solutions that have been generated using QIP techniques

Supervise  
Supervise  
Action  
Action  
Supervise

#### 1.5.4 Regulatory

List:

Function:

- 1 Product Safety Program
- 2 Customer Audits
- 3 Company Policies
- 4 Contractor/Visitor Control

Supervise  
Action  
Supervise  
Supervise

### 1.7 Training

#### 1.7.1 Conducting on job training

List:

Function:

- 1 Conduct on-job training

Action

#### 1.7.2 Managing training

List:

Function:

- 1 Manage staff training

Action

### 1.8 Workforce Planning

#### 1.8.1 Workforce Planning

List:

Function:

- 1 Job Models

Supervise



Department: Site wide models  
 JMName: Process Assistant

2 Training Needs Analysis		Supervise
3 Selection and Development		Action
4 Rosters and Shifts		Supervise
<b>1.9 Personnel</b>		
1.9.1 Performance Management	List:	Function:
1 Performance Management		Action
1.9.2 Employee Relations	List:	Function:
1 Employee Relations		Action
1.9.3 Industrial Relations	List:	Function:
1 Industrial Relations		Action
<b>2. Clerical</b>		
2.2 Filing, Money, and Clerical Systems		
2.2.2 Developing & implementing filing and record systems	List:	Function:
1 Develop new filing and record systems		Action
2 Implement new filing and record systems		Action
2.3 Invoices, Reconciliations, and Reports		
2.3.1 Debtors/Creditors invoices	List:	Function:
1 Process debtors invoices		Action
2 Process creditors invoices		Action
2.3.3 Management information reports	List:	Function:
1 Prepare management information reports		Action
2.4 Payroll		
2.4.1 Wage/salary payments	List:	Function:
1 Collect timesheets, distribute wages and salaries, and resolve pay queries		Supervise
2.5 Public/Customers		
2.5.1 Telephone switchboard PABX/Mail and couriers/Reception and site visitors.	List:	Function:
4 Arrange and co-ordinate visits to site		Action
<b>3. Ancillary duties</b>		
3.1 External Cleaning		
3.1.1 External cleaning	List:	Function:
1 Clean external building, equipment, and surrounds		Monitor
3.2 Internal Cleaning		
3.2.1 Internal cleaning/Vinyl cleaning and polishing.	List:	Function:
1 Clean internal building areas and surfaces, and external plant & equipment surfaces		Monitor
3.6 Pest Control		
3.6.1 Pest control	List:	Function:
1 Develop and maintain pest control program		Supervise
<b>5. Common Process Operations</b>		
5.1 Liquid Product Storage and Handling		
5.1.3 Abnormal milk or product	List:	Function:
1 Accept/Reject abnormal product		Supervise
5.7 CIP - General Operation		
5.7.3 CIP - general III	List:	Function:
1 Determine CIP cleaning regime		Supervise
<b>6. Filtration and demineralisation</b>		
6.1 Ultrafiltration		
6.1.3 Ultrafiltration III	List:	Function:
1 Determine UF operating parameters and specifications to achieve product specification		Supervise
6.3 Ion Exchange Demineralisation		
6.3.3 Ion exchange III	List:	Function:

Department: Site wide models  
 JMName: Process Assistant

1 Determine ion exchange plant operating parameters to achieve product specification		Supervise
<b>6.4 Reverse Osmosis</b>		
<b>6.4.3 Reverse osmosis III</b>	List:	Function:
1 Determine reverse osmosis plant operating parameters to achieve product specification		Supervise
<b>6.5 Filter Press</b>		
<b>6.5.3 Filter pressing III</b>	List:	Function:
1 Determine filter press plant operating parameters to achieve product specification		Supervise
<b>8. Dry Products</b>		
<b>8.1 Evaporation</b>		
<b>8.1.4 Evaporation IV</b>	List:	Function:
1 Determine evaporation plant operating parameters to achieve product specification		Supervise
<b>8.4 Drying - (Powders and Caseins)</b>		
<b>8.4.4 Drying IV</b>	List:	Function:
1 Determine drying plant operating parameters to achieve product specification		Supervise
2 Rectify abnormal operating conditions		Supervise
3 Rectify abnormal operating conditions		Supervise
4 Rectify abnormal operating conditions		Supervise
<b>8.6 Powder Sifting and Conveying</b>		
<b>8.6.3 Sifting and conveying III</b>	List:	Function:
1 Determine sifting and conveying plant operating parameters to achieve product specification		Supervise
<b>12. Packing</b>		
<b>12.5 Dry Products Packing (Consumer/Bulk)</b>		
<b>12.5.3 Dry product pack filling III</b>	List:	Function:
2 Design/modify dry products pack filler		Action
<b>12.6 Consumer/Bulk Bag, Sachet, Sealing</b>		
<b>12.6.3 Sealing of bags, liners and sachets III</b>	List:	Function:
1 Determine sealing parameters		Supervise
<b>13. Stores</b>		
<b>13.7 Stock control</b>		
<b>13.7.2 Ordering, Stores Maintenance and Security.</b>	List:	Function:
1 Order stock items		Supervise
<b>13.7.3 Inventory levels</b>	List:	Function:
1 Control inventory levels		Supervise
<b>13.7.4 Purchasing</b>	List:	Function:
1 Purchase and control critical stock items		Supervise
<b>15. Laboratory</b>		
<b>15.1 Sampling</b>		
<b>15.1.3 Develop/modify sampling methods</b>	List:	Function:
1 Develop or modify sampling methods and recommend solutions to sampling problems		Monitor
<b>15.4 Microbiological Analysis</b>		
<b>15.4.2 Micro analysis IIa</b>	List:	Function:
4 Identify uncharacteristic micro test results compared to historical data		Supervise
<b>15.4.3 Micro testing problems</b>	List:	Function:
1 Determine the cause of uncharacteristic micro test results		Monitor
<b>15.5 Product Grading</b>		
<b>15.5.3 Product disposition</b>	List:	Function:
1 Recommend product disposition		Supervise
<b>15.6 Lab Equipment Purchase and Maintenance</b>		
<b>15.6.4 Evaluation &amp; purchase of lab equip</b>	List:	Function:

Department: Site wide models

JMName: Process Assistant

1 Evaluate which laboratory equipment to purchase		Supervise
<b>17. Documentation</b>		
<b>17.1 Documentation</b>		
<b>17.1.1 Food Safety</b>	List:	Function:
1 Identify non compliances		Supervise
2 Write an accurate concise report		Action
<b>17.1.2 Audits</b>	List:	Function:
1 Identify non compliance.		Supervise
2 Maintain accurate records.		Action
3 Detailed knowledge of plant quality system.		Supervise
<b>17.1.3 HACCP</b>	List:	Function:
1 Records		Monitor
2 Action non-compliance.		Action
<b>17.1.4 Business Plan</b>	List:	Function:
1 Write an accurate and concise report.		Action
2 Objectives		Action
<b>17.1.5 Cost Model Reviews</b>	List:	Function:
1 Write a concise and accurate report		Action
2 Interpret financial costings		Action
3 Utilize basic statistical techniques		Action
<b>17.1.6 PAMS</b>	List:	Function:
2 Plant Performance		Supervise
3 Feedback		Action
<b>17.1.7 PROMIX</b>	List:	Function:
2 Use of information		Action
<b>17.1.8 PAs</b>	List:	Function:
2 Monitoring production against PAs.		Action
3 Procedures		Action
<b>17.1.9 Wages and Salaries</b>	List:	Function:
1 Interface between payroll and staff		Supervise
2 Procedures		Supervise
3 Monitor performance against budget.		Action
4 Alterations		Action
<b>17.1.10 IPRAs</b>	List:	Function:
1 Product Recall		Supervise
2 NC/CA		Action
3 Record of withdrawals		Supervise
<b>17.1.11 Spec Changes</b>	List:	Function:
1 Notification of spec changes.		Monitor
<b>17.1.12 Results</b>	List:	Function:
1 Filing System		Supervise
2 Feedback		Supervise
3 Traceback Procedures.		Supervise
4 Reviewing Data		Action
<b>17.1.13 Maintenance and Planning</b>	List:	Function:
1 Maintenance		Supervise
2 Monitoring Maintenance.		Action
<b>17.1.14 Job Requests</b>	List:	Function:
1 Monitoring open jobs		Supervise
<b>17.1.15 Capital Improvements</b>	List:	Function:
1 Investigating Suggestions		Action
2 Accessing Information		Supervise
3 Procedures		Action

Department: Site wide models  
 JMName: Process Assistant

<b>17.1.16 Budgeting</b>	<b>List:</b>	<b>Function:</b>
1 Performance		Action
2 SMART		Action
<b>17.1.17 Plant Reliability Teams</b>	<b>List:</b>	<b>Function:</b>
1 Maintenance Issues		Action
2 Monitor Progress		Supervise
<b>17.1.18 Loss Monitoring</b>	<b>List:</b>	<b>Function:</b>
1 Feedback		Supervise
2 Minimising Losses.		Action
3 Interpreting Results.		Monitor
<b>17.1.19 Reading/Correspondence</b>	<b>List:</b>	<b>Function:</b>
1 Maintain an effective filing system		Action
2 Write accurate and concise reports.		Action
<b>19. Mechanical</b>		
<b>19.1 Mechanical - General</b>		
<b>19.1.4 Preventative maintenance</b>	<b>List:</b>	<b>Function:</b>
1 Develop preventative maintenance program		Supervise
<b>19.1.5 Maintenance Programming</b>	<b>List:</b>	<b>Function:</b>
1 Plant Care		Monitor
2 Job Requests		Monitor
<b>19.3 Mechanical Fitting</b>		
<b>19.3.4 Size and select pumps/fans etc</b>	<b>List:</b>	<b>Function:</b>
1 Size and select pumps, fans, gear boxes and similar equipment		Action
<b>19.4 Hydraulics, Pneumatics, &amp; Process Systems</b>		
<b>19.4.3 Fluid systems and valves III</b>	<b>List:</b>	<b>Function:</b>
1 Size and select pneumatic, hydraulic, steam and process valves, fittings, etc		Action
<b>19.4.4 Fluid systems and valves IV</b>	<b>List:</b>	<b>Function:</b>
1 Design and size hydraulic, pneumatic, and process systems		Action
<b>20. Using Computers</b>		
<b>20.1 Basic Computer/Keyboard Skills</b>		
<b>20.1.1 Basic Computer/Keyboard</b>	<b>List:</b>	<b>Function:</b>
1 Use a computer for basic data entry and information retrieval		Action
<b>20.2 Using Computer Applications</b>		
<b>20.2.1 Basic Wordprocessing</b>	<b>List:</b>	<b>Function:</b>
1 Use basic wordprocessing functions		Action
2 Use basic spreadsheet functions		Action
3 Use drawing/graphics software package		Action
<b>20.2.2 Intermediate Wordprocessing and Spreadsheets</b>	<b>List:</b>	<b>Function:</b>
1 Use intermediate wordprocessing functions		Action
2 Use intermediate spreadsheet functions		Action
<b>20.3 Reporting Applications/Software Design</b>		
<b>20.3.1 Use Reporting Application</b>	<b>List:</b>	<b>Function:</b>
1 Use database reporting application		Action
<b>20.4 Operator Interfaces</b>		
<b>20.4.1 Operator interface</b>	<b>List:</b>	<b>Function:</b>
1 Use operator interface		Action
<b>20.4.2 Operator interface screen design</b>	<b>List:</b>	<b>Function:</b>
1 Design operator interface screen		Action
<b>20.4.3 Operator interface function design</b>	<b>List:</b>	<b>Function:</b>
1 Design operator interface function design		Action
<b>20.5 Programmable Process Controllers</b>		
<b>20.5.2 Basic PLC Software</b>	<b>List:</b>	<b>Function:</b>
1 Write and commission simple PLC program		Action

Department: Site wide models

JMName: Process Assistant

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**21. Electrical/Electronics****21.1 Electrical/Electronics****21.1.6 Energy management**

List:

Function:

1 Determine cost effective electrical energy usage and electrical equipment use

Action

**22. Instrumentation****22.1 Instrumentation****22.1.5 Selection of instruments**

List:

Function:

1 Determine specifications and select instruments

Action

**23. Market****23.1 Market****23.1.1 Product Mix**

List:

Function:

1 Production Programming

Action

2 Internal and External Liaison

Action

**23.1.2 Dealing with outside personnel**

List:

Function:

1 Liaison and communication

Action

**23.1.3 Complaints**

List:

Function:

1 Complaint Resolution

Action

**24. Financial****24.2 Budgets****24.2.2 Budgets**

List:

Function:

2 Formulate/set a departmental budget

Action

3 Using a budget as a control tool

Action

**24.3 Costs****24.3.3 Costs**

List:

Function:

3 Investigation and Control

Supervise

**24.5 Capital Expenditure****24.5.1 Capital Expenditure**

List:

Function:

3 Capital Project Control

Action

Department: Site wide models  
 JMName: Process Assistant

## 1. Generic Competencies

### 1.1 Working Together

#### 1.1.1 Basic Competencies

List:

Function:

- |   |            |
|---|------------|
| 1 Work with others                          | Competency |
| 2 Record information                        | Competency |
| 3 Comply with critical hygiene requirements | Competency |
| 4 Count, add and subtract numbers           | Competency |
| 5 Follow safety and emergency procedures    | Competency |

#### 1.1.2 Seeking & providing information

List:

Function:

- |   |            |
|---|------------|
| 1 Seek & provide information            | Competency |
| 2 Write memos, letters or brief reports | Competency |

#### 1.1.3 Facilitating & representing workgroups

List:

Function:

- |                                       |            |
|---------------------------------------|------------|
| 1 Facilitate a small group discussion | Competency |
| 2 Present and represent information   | Competency |

#### 1.1.4 Formal meetings, reports & negotiation

List:

Function:

- |                         |            |
|-------------------------|------------|
| 1 Write formal reports  | Competency |
| 2 Negotiate with others | Competency |
| 3 Chair meetings        | Competency |

#### 1.1.5 Formal presentations

List:

Function:

- |   |            |
|---|------------|
| 1 Conduct lectures and formal presentations | Competency |
|---|------------|

### 1.2 Safety

#### 1.2.1 First aid

List:

Function:

- |                        |            |
|------------------------|------------|
| 1 Administer first aid | Competency |
|------------------------|------------|

### 1.3 Maths and Statistics

#### 1.3.1 Basic maths

List:

Function:

- |   |            |
|---|------------|
| 1 Perform basic calculations                    | Competency |
| 2 Calculate volumes, areas, square roots & logs | Competency |
| 3 Calculate averages & standard deviations      | Competency |
| 4 Prepare graphs and charts                     | Competency |

#### 1.3.2 Simultaneous equations

List:

Function:

- |  |            |
|--|------------|
| 1 Solve simple simultaneous equations                | Competency |
| 2 Condense calculations                              | Competency |
| 3 Calculate significance, normality, and probability | Competency |
| 4 Perform statistical regressions                    | Competency |

#### 1.3.3 Complex simultaneous equations and Analysis of Variance

List:

Function:

- |                                  |            |
|----------------------------------|------------|
| 1 Complex simultaneous equations | Competency |
| 2 Analyse variance               | Competency |

### 1.4 Planning and Organising

#### 1.4.4 Production Co-ordination

List:

Function:

- |                         |            |
|-------------------------|------------|
| 5 Specification Control | Competency |
| 8 Other                 | Competency |

### 1.5 Quality

#### 1.5.1 Documenting procedures

List:

Function:

- |  |            |
|--|------------|
| 5 Use quality improvement data collection techniques | Competency |
|--|------------|

#### 1.5.2 Operating procedures

List:

Function:

- |  |            |
|--|------------|
| 6 Use quality improvement tools to determine problem cause and generate possible solutions | Competency |
|--|------------|

#### 1.5.3 Quality Management Systems

List:

Function:

- |   |            |
|---|------------|
| 6 Implement successful problem solution | Competency |
|---|------------|

### 1.6 Supervision

#### 1.6.1 Coaching & guiding

List:

Function:

- |  |            |
|--|------------|
| 1 Coach and guide people in their work | Competency |
|--|------------|

#### 1.6.2 Staff development

List:

Function:



Department: Site wide models  
 JMName: Process Assistant

1 Assess staff performance, and provide feedback & counselling to people		Competency
2 Facilitate and arbitrate difficult work group situations		Competency
<b>1.10 Team Leading</b>		
<b>1.10.1 Leadership</b>	List:	Function:
1 People Skills - Leadership		Competency
<b>2. Clerical</b>		
<b>2.1 Office Equipment</b>		
<b>2.1.1 General office equipment</b>	List:	Function:
1 Operate general office equipment		Competency
<b>2.1.2 Evaluation of office equipment</b>	List:	Function:
1 Evaluate costs and specifications of office equipment		Competency
<b>2.2 Filing, Money, and Clerical Systems</b>		
<b>2.2.1 Filing/Petty Cash/Imprest cheque account/Receiving Money.</b>	List:	Function:
1 File records/information		Competency
2 Operate petty cash system		Competency
<b>2.3 Invoices, Reconciliations, and Reports</b>		
<b>2.3.2 Reconciliations</b>	List:	Function:
1 Reconcile two different sets of data		Competency
2 Action reconciliation variances		Competency
<b>17. Documentation</b>		
<b>17.1 Documentation</b>		
<b>17.1.7 PROMIX</b>	List:	Function:
1 Raw data and reports		Competency
<b>17.1.8 PAs</b>	List:	Function:
1 Understanding PAs		Competency
<b>24. Financial</b>		
<b>24.1 Accounting Basics</b>		
<b>24.1.1 Accounting Basics</b>	List:	Function:
1 Basic Principles		Competency
2 Links between principles		Competency
3 Generating reports		Competency
<b>24.2 Budgets</b>		
<b>24.2.2 Budgets</b>	List:	Function:
1 Understanding what a budget is		Competency
<b>24.3 Costs</b>		
<b>24.3.3 Costs</b>	List:	Function:
1 Main Costs		Competency
2 CEU Models		Competency
<b>24.4 Financial Information</b>		
<b>24.4.1 Financial Information</b>	List:	Function:
1 Reports		Competency
2 Interpreting Information		Competency
<b>24.5 Capital Expenditure</b>		
<b>24.5.1 Capital Expenditure</b>	List:	Function:
1 Know what capital is.		Competency
2 Writing up a proposal		Competency
<b>24.6 Purchasing</b>		
<b>24.6.1 Purchasing</b>	List:	Function:
1 Aspects of purchasing		Competency
<b>24.7 Product Mix</b>		
<b>24.7.1 Product Mix</b>	List:	Function:
1 Product Mix Financials		Competency

Department: Site wide models

JMName: Process Assistant

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Department: WPC  
 JMName: Packing Supervisor

## 1. Generic Competencies

### 1.2 Safety

#### 1.2.2 Accident investigation and prevention

1 Investigate accidents

List:

Function:

Action

2 Conduct safety audits and identify workplace health and safety hazards

Supervise

### 1.4 Planning and Organising

#### 1.4.1 Minor tasks and scheduling

1 Plan and/or schedule minor activities

List:

Function:

Action

2 Implement and monitor progress of plan or schedule of minor activities

Action

#### 1.4.2 Medium projects and scheduling

1 Plan and/or schedule medium projects/activities

List:

Function:

Action

2 Implement and monitor progress of plan or schedule of medium activities

Action

#### 1.4.4 Production Co-ordination

2 Internal Liaison

List:

Function:

Action

4 Process Control

Action

6 Performance Monitoring

Action

7 Quality Control

Action

### 1.5 Quality

#### 1.5.1 Documenting procedures

1 Document an existing procedure

List:

Function:

Action

2 Control information quality data

Action

3 Audit single procedure or document

Action

4 Identify opportunities to apply quality improvement techniques

Action

#### 1.5.2 Operating procedures

1 Develop operating procedures

List:

Function:

Action

2 Implement and standardise new or improved procedures

Action

3 Analyse/review quality data

Action

4 Conduct a compliance audit

Action

5 Select quality improvement data collection methods

Action

#### 1.5.3 Quality Management Systems

2 Assess, interpret, report and recommend action following a production run analysis or product failure traceback

List:

Function:

Action

3 Prepare product/material specification

Action

4 Conduct system audits

Action

5 Select and test possible solutions that have been generated using QIP techniques

Action

#### 1.5.4 Regulatory

1 Product Safety Program

List:

Function:

Action

2 Customer Audits

Action

3 Company Policies

Action

4 Contractor/Visitor Control

Action

### 1.7 Training

#### 1.7.1 Conducting on job training

1 Conduct on-job training

List:

Function:

Action

#### 1.7.2 Managing training

1 Manage staff training

List:

Function:

Action

### 1.8 Workforce Planning

#### 1.8.1 Workforce Planning

1 Job Models

List:

Function:

Action

2 Training Needs Analysis

Action

3 Selection and Development

Action

4 Rosters and Shifts

Action

### 1.9 Personnel

#### 1.9.1 Performance Management

1 Performance Management

List:

Function:

Action

Department: WPC  
 JMName: Packing Supervisor

<b>1.9.2 Employee Relations</b>	<b>List:</b>	<b>Function:</b>
1 Employee Relations		Action
<b>2. Clerical</b>		
<b>2.2 Filing, Money, and Clerical Systems</b>		
<b>2.2.2 Developing &amp; implementing filing and record systems</b>	<b>List:</b>	<b>Function:</b>
1 Develop new filing and record systems		Action
2 Implement new filing and record systems		Action
<b>2.3 Invoices, Reconciliations, and Reports</b>		
<b>2.3.3 Management information reports</b>	<b>List:</b>	<b>Function:</b>
1 Prepare management information reports		Action
<b>2.4 Payroll</b>		
<b>2.4.1 Wage/salary payments</b>	<b>List:</b>	<b>Function:</b>
1 Collect timesheets, distribute wages and salaries, and resolve pay queries		Action
<b>2.5 Public/Customers</b>		
<b>2.5.1 Telephone switchboard PABX/Mail and couriers/Reception and site visitors.</b>	<b>List:</b>	<b>Function:</b>
4 Arrange and co-ordinate visits to site		Action
<b>3. Ancillary duties</b>		
<b>3.2 Internal Cleaning</b>		
<b>3.2.1 Internal cleaning/Vinyl cleaning and polishing.</b>	<b>List:</b>	<b>Function:</b>
1 Clean internal building areas and surfaces, and external plant & equipment surfaces		Supervise
<b>3.6 Pest Control</b>		
<b>3.6.1 Pest control</b>	<b>List:</b>	<b>Function:</b>
1 Develop and maintain pest control program		Action
<b>5. Common Process Operations</b>		
<b>5.1 Liquid Product Storage and Handling</b>		
<b>5.1.3 Abnormal milk or product</b>	<b>List:</b>	<b>Function:</b>
1 Accept/Reject abnormal product		Action
<b>12. Packing</b>		
<b>12.5 Dry Products Packing (Consumer/Bulk)</b>		
<b>12.5.1 Dry product pack filling I</b>	<b>List:</b>	<b>Function:</b>
1 Operate dry products pack filling plant		Supervise
2 Detect abnormal operating conditions		Supervise
3 Rectify abnormal operating conditions		Supervise
4 Operate bag folding or presenting equipment		Supervise
<b>12.5.2 Dry product pack filling II</b>	<b>List:</b>	<b>Function:</b>
1 Setup and adjust dry products pack filling plant		Supervise
2 Set up and adjust dry product pack filler for different product characteristics and environmental conditions		Supervise
<b>12.5.3 Dry product pack filling III</b>	<b>List:</b>	<b>Function:</b>
2 Design/modify dry products pack filler		Action
<b>12.6 Consumer/Bulk Bag, Sachet, Sealing</b>		
<b>12.6.1 Sealing of bags, liners and sachets I</b>	<b>List:</b>	<b>Function:</b>
1 Operate pack sealing equipment		Supervise
2 Detect abnormal operating conditions		Supervise
<b>12.6.2 Sealing of bags, liners and sachets II</b>	<b>List:</b>	<b>Function:</b>
1 Rectify abnormal operating conditions		Supervise
<b>12.6.3 Sealing of bags, liners and sachets III</b>	<b>List:</b>	<b>Function:</b>
1 Determine sealing parameters		Action
<b>12.9 Product/Pack Weighing</b>		
<b>12.9.1 Weighing (automatic and manual).</b>	<b>List:</b>	<b>Function:</b>
1 Operate automated weighing equipment		Supervise
2 Detect abnormal operating conditions		Supervise

Department: WPC

JMName: Packing Supervisor

3 Manually weigh product or pack		Supervise
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**12.10 Coding**

<b>12.10.1 Mechanised coding, printing, and embossing I</b>	<b>List:</b>	<b>Function:</b>
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1 Code, print or emboss product pack		Supervise
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1 Manually code product or package		Supervise
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<b>12.10.2 Mechanised coding, printing, and embossing II</b>	<b>List:</b>	<b>Function:</b>
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1 Set up coding or printing of product or package		Supervise
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2 Rectify abnormal operating conditions		Supervise
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**12.11 Metal Detection**

<b>12.11.1 Metal Detection I</b>	<b>List:</b>	<b>Function:</b>
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1 Operate metal detector		Supervise
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<b>12.11.2 Metal Detection II</b>	<b>List:</b>	<b>Function:</b>
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1 Calibrate metal detector		Supervise
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**12.12 Palletising/Binning and Conveying**

<b>12.12.1 Palletising/Binning (manual)</b>	<b>List:</b>	<b>Function:</b>
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1 Manually palletise or bin product, and/or assemble bins		Supervise
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<b>12.12.2 Palletising/Binning (mechanised)</b>	<b>List:</b>	<b>Function:</b>
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1 Operate palletiser or robot to palletise or bin product		Supervise
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**12.13 De - Palletising/Binning**

<b>12.13.1 De - Palletising/Bin tipping I</b>	<b>List:</b>	<b>Function:</b>
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1 Operate de-palletising or bin tipping plant		Supervise
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2 Detect abnormal operating conditions		Supervise
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**12.14 Pallet Shrouding**

<b>12.14.1 Pallet shrouding/stretch-wrapping</b>	<b>List:</b>	<b>Function:</b>
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1 Shroud or stretchwrap pallets or bins		Supervise
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**12.15 Cleaning Packing Equipment**

<b>12.15.1 Cleaning packing equipment</b>	<b>List:</b>	<b>Function:</b>
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1 Clean packing equipment		Supervise
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**12.19 Conveying**

<b>12.19.1 Conveying I</b>	<b>List:</b>	<b>Function:</b>
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1 Operate conveyors		Supervise
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<b>12.19.2 Conveying II</b>	<b>List:</b>	<b>Function:</b>
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1 Setup, adjust and service conveyors		Supervise
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<b>12.19.3 Conveying III</b>	<b>List:</b>	<b>Function:</b>
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2 Design/modify/select conveyors		Action
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**13. Stores****13.2 Fumigation**

<b>13.2.1 Fumigation</b>	<b>List:</b>	<b>Function:</b>
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1 Fumigate stores or buildings		Action
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**13.3 Mobile Load Shifting Vehicles**

<b>13.3.1 Load shifting vehicle I</b>	<b>List:</b>	<b>Function:</b>
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1 Operate load shifting vehicle		Action
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2 Detect abnormal operating conditions		Action
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<b>13.3.2 Load shifting vehicle II</b>	<b>List:</b>	<b>Function:</b>
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1 Operate load shifting vehicle to shift difficult goods or under difficult situations		Action
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**13.7 Stock control**

<b>13.7.1 Receival, storage &amp; issue of stock items</b>	<b>List:</b>	<b>Function:</b>
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1 Receive and check goods		Action
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2 Place and store goods		Action
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<b>13.7.2 Ordering, Stores Maintenance and Security.</b>	<b>List:</b>	<b>Function:</b>
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1 Order stock items		Action
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Department: WPC  
 JMName: Packing Supervisor

<b>13.7.3 Inventory levels</b>	<b>List:</b>	<b>Function:</b>
1 Control inventory levels		Action
<b>13.7.4 Purchasing</b>	<b>List:</b>	<b>Function:</b>
1 Purchase and control critical stock items		Action
<b>15. Laboratory</b>		
<b>15.1 Sampling</b>		
<b>15.1.1 Sampling</b>	<b>List:</b>	<b>Function:</b>
1 Take a representative sample		Action
<b>15.1.2 Aseptic sampling</b>	<b>List:</b>	<b>Function:</b>
1 Take an aseptic sample		Action
<b>15.1.3 Develop/modify sampling methods</b>	<b>List:</b>	<b>Function:</b>
1 Develop or modify sampling methods and recommend solutions to sampling problems		Action
<b>17. Documentation</b>		
<b>17.1 Documentation</b>		
<b>17.1.1 Food Safety</b>	<b>List:</b>	<b>Function:</b>
1 Identify non compliances		Action
2 Write an accurate concise report		Action
<b>17.1.2 Audits</b>	<b>List:</b>	<b>Function:</b>
1 Identify non compliance.		Action
<b>17.1.3 HACCP</b>	<b>List:</b>	<b>Function:</b>
2 Action non-compliance.		Supervise
<b>17.1.4 Business Plan</b>	<b>List:</b>	<b>Function:</b>
1 Write an accurate and concise report.		Action
2 Objectives		Action
<b>17.1.5 Cost Model Reviews</b>	<b>List:</b>	<b>Function:</b>
2 Interpret financial costings		Action
3 Utilize basic statistical techniques		Action
<b>17.1.6 PAMS</b>	<b>List:</b>	<b>Function:</b>
2 Plant Performance		Action
<b>17.1.9 Wages and Salaries</b>	<b>List:</b>	<b>Function:</b>
1 Interface between payroll and staff		Action
2 Procedures		Action
4 Alterations		Action
<b>17.1.10 IPRA's</b>	<b>List:</b>	<b>Function:</b>
1 Product Recall		Action
3 Record of withdrawals		Action
<b>17.1.12 Results</b>	<b>List:</b>	<b>Function:</b>
3 Traceback Procedures.		Action
<b>17.1.13 Maintenance and Planning</b>	<b>List:</b>	<b>Function:</b>
1 Maintenance		Action
<b>17.1.15 Capital Improvements</b>	<b>List:</b>	<b>Function:</b>
1 Investigating Suggestions		Action
2 Accessing Information		Action
3 Procedures		Action
<b>17.1.17 Plant Reliability Teams</b>	<b>List:</b>	<b>Function:</b>
1 Maintenance Issues		Action
2 Monitor Progress		Action
<b>17.1.18 Loss Monitoring</b>	<b>List:</b>	<b>Function:</b>
1 Feedback		Action
2 Minimising Losses.		Action
3 Interpreting Results.		Supervise



Department: WPC  
 JMName: Packing Supervisor

17.1.19 Reading/Correspondence	List:	Function:
2 Write accurate and concise reports.		Action
19. Mechanical		
19.1 Mechanical - General		
19.1.4 Preventative maintenance	List:	Function:
1 Develop preventative maintenance program		Action
19.1.5 Maintenance Programming	List:	Function:
1 Plant Care		Supervise
2 Job Requests		Action
19.7 Machine adjustment		
19.7.1 Machine adjustment	List:	Function:
1 Adjust and set machine operation		Supervise
20. Using Computers		
20.1 Basic Computer/Keyboard Skills		
20.1.1 Basic Computer/Keyboard	List:	Function:
1 Use a computer for basic data entry and information retrieval		Action
20.2 Using Computer Applications		
20.2.1 Basic Wordprocessing	List:	Function:
1 Use basic wordprocessing functions		Action
2 Use basic spreadsheet functions		Action
3 Use drawing/graphics software package		Action
20.2.2 Intermediate Wordprocessing and Spreadsheets	List:	Function:
1 Use intermediate wordprocessing functions		Action
2 Use intermediate spreadsheet functions		Action
20.3 Reporting Applications/Software Design		
20.3.1 Use Reporting Application	List:	Function:
1 Use database reporting application		Action
23. Market		
23.1 Market		
23.1.1 Product Mix	List:	Function:
2 Internal and External Liaison		Action
23.1.2 Dealing with outside personnel	List:	Function:
1 Liaison and communication		Action
24. Financial		
24.2 Budgets		
24.2.2 Budgets	List:	Function:
2 Formulate/set a departmental budget		Action
3 Using a budget as a control tool		Action
24.3 Costs		
24.3.3 Costs	List:	Function:
3 Investigation and Control		Action
24.5 Capital Expenditure		
24.5.1 Capital Expenditure	List:	Function:
3 Capital Project Control		Action

Department: WPC

JMName: Packing Supervisor

**1. Generic Competencies****1.1 Working Together****1.1.1 Basic Competencies****List:****Function:**

- 1 Work with others
- 2 Record information
- 3 Comply with critical hygiene requirements
- 4 Count, add and subtract numbers
- 5 Follow safety and emergency procedures

Competency

Competency

Competency

Competency

Competency

**1.1.2 Seeking & providing information****List:****Function:**

- 1 Seek & provide information
- 2 Write memos, letters or brief reports

Competency

Competency

**1.1.3 Facilitating & representing workgroups****List:****Function:**

- 1 Facilitate a small group discussion
- 2 Present and represent information

Competency

Competency

**1.1.4 Formal meetings, reports & negotiation****List:****Function:**

- 1 Write formal reports
- 2 Negotiate with others
- 3 Chair meetings

Competency

Competency

Competency

**1.2 Safety****1.2.1 First aid****List:****Function:**

- 1 Administer first aid

Competency

**1.3 Maths and Statistics****1.3.1 Basic maths****List:****Function:**

- 1 Perform basic calculations
- 2 Calculate volumes, areas, square roots & logs
- 3 Calculate averages & standard deviations
- 4 Prepare graphs and charts

Competency

Competency

Competency

Competency

**1.3.2 Simultaneous equations****List:****Function:**

- 1 Solve simple simultaneous equations

Competency

**1.4 Planning and Organising****1.4.4 Production Co-ordination****List:****Function:**

- 5 Specification Control
- 8 Other

Competency

Competency

**1.5 Quality****1.5.1 Documenting procedures****List:****Function:**

- 5 Use quality improvement data collection techniques

Competency

**1.5.2 Operating procedures****List:****Function:**

- 6 Use quality improvement tools to determine problem cause and generate possible solutions

Competency

**1.5.3 Quality Management Systems****List:****Function:**

- 6 Implement successful problem solution

Competency

**1.6 Supervision****1.6.1 Coaching & guiding****List:****Function:**

- 1 Coach and guide people in their work

Competency

**1.6.2 Staff development****List:****Function:**

- 1 Assess staff performance, and provide feedback & counselling to people
- 2 Facilitate and arbitrate difficult work group situations

Competency

Competency

**1.10 Team Leading****1.10.1 Leadership****List:****Function:**

- 1 People Skills - Leadership

Competency

**2. Clerical****2.1 Office Equipment****2.1.1 General office equipment****List:****Function:**

Department: WPC  
 JMName: Packing Supervisor

1 Operate general office equipment		Competency
2.1.2 Evaluation of office equipment	List:	Function:
1 Evaluate costs and specifications of office equipment		Competency
2.2 Filing, Money, and Clerical Systems		
2.2.1 Filing/Petty Cash/Imprest cheque account/Receiving Money.	List:	Function:
1 File records/information		Competency
2.3 Invoices, Reconciliations, and Reports		
2.3.2 Reconciliations	List:	Function:
1 Reconcile two different sets of data		Competency
2 Action reconciliation variances		Competency
17. Documentation		
17.1 Documentation		
17.1.2 Audits	List:	Function:
3 Detailed knowledge of plant quality system.		Competency
17.1.7 PROMIX	List:	Function:
1 Raw data and reports		Competency
17.1.8 PAs	List:	Function:
1 Understanding PAs		Competency
24. Financial		
24.1 Accounting Basics		
24.1.1 Accounting Basics	List:	Function:
1 Basic Principles		Competency
2 Links between principles		Competency
3 Generating reports		Competency
24.2 Budgets		
24.2.2 Budgets	List:	Function:
1 Understanding what a budget is		Competency
24.3 Costs		
24.3.3 Costs	List:	Function:
1 Main Costs		Competency
2 CEU Models		Competency
24.4 Financial Information		
24.4.1 Financial Information	List:	Function:
1 Reports		Competency
2 Interpreting Information		Competency
24.5 Capital Expenditure		
24.5.1 Capital Expenditure	List:	Function:
1 Know what capital is.		Competency
2 Writing up a proposal		Competency
24.6 Purchasing		
24.6.1 Purchasing	List:	Function:
1 Aspects of purchasing		Competency
24.7 Product Mix		
24.7.1 Product Mix	List:	Function:
1 Product Mix Financials		Competency

## **APPENDIX 5.**

### **Job Description developed from Job Model**

## **POSITION DESCRIPTION: PROCESS ASSISTANT**

### **GENERAL DESCRIPTION**

The Process Assistants are responsible for the function below as well as other duties as may be required from time to time by the Manager. They will share on call duties with the Manager and will undertake other technical and administrative functions described in this Position Description.

### **AREAS OF RESPONSIBILITY**

Process Assistant in WPC Hall.

### **TEAM BUILDING & STAFF DEVELOPMENT**

To ensure that work in the WPC Department is carried out by appropriately trained and motivated work teams. Cross functional teams are working on specific problem areas. Staff are setting their own performance standards that are in excess of requirements.

Responsibility Analyse the identified training needs (ie assess whether on-the-job or off-the-job training is required). Plan and implement training in coordination with the ODT.

Standard: Ensure that suitable and timely courses are available.

Responsibility Effective member of supervisory management, PRT and Process Control Teams.

Standard: Teams work co-operatively together and team output to exceed requirements. Teams are to be involved in improvement projects.

### **QUALITY**

Quality systems are to be maintained and reviewed as necessary so that product quality ensures maximum revenue.

Responsibility To develop Quality Documentation of Process Control systems and ensure QC1 product is manufactured.

Standard: To ensure that systems are appropriate to meet QC1 requirements.

Responsibility Quality systems are developed, administered, utilised and kept up to date.

Standard: Ensure ISO 9002 is maintained at all times.

## **PRODUCTION**

Production is planned and discussed in conjunction with WPNZ, Production Assistant, Packing Supervisor and Technical Officers and all associated departments are informed in advance of the plan and any changes thereto.

Responsibility: To ensure the production plan is available for staff.

Standard: In accordance with WPC Procedures Manual.

Responsibility Key staff and other departments and relevant organisations are kept informed.

Set up systems which allow materials and ingredients usage to be monitored.

Standard: To ensure that targets are identified and systems implemented.

Responsibility: To develop and implement a system which monitors tonnage vs PAs.

Standard: To ensure that production meets PA requirements.

## **YIELDS AND LOSSES**

To ensure the maximum use is made of the valued components supplied.

Responsibility: As a member of PC Team, ensure composition targets are achieved to maximise yields.

Standard: Establish and maintain systems to ensure the optimum combination of yield and quality are achieved.

Responsibility: Establishment of targets to control losses.

Standard: Targets are established that reflect excellent manufacturing practise for the plant available

Responsibility: Use loss targets to establish a reduction programme.

Standard: Loss reduction programme is established and monitored.



Responsibility: Establish departmental KPIs in conjunction with Manager, Production Assistant and Departmental Accountant.

Standard: Departmental KPIs are established and monitored.

## **COSTS**

To ensure maximum use is made of ingredients, consumables, packaging and cleaning/CIP costs to maintain budgetary requirements.

Responsibility: Establish KPIs for ingredients, chemicals, consumables and packaging materials.

Standard: Monitoring systems to identify areas where usage exceeds budget in a timely manner.

Responsibility: Minimise usages in line with KPIs.

Standard: Teams aware of usages and working to minimise the same.

Responsibility: Ensure costs are charged under the correct cost centre.

Standard: Ensure centres accurately reflect the actual costs.

## **BUDGETS**

Budgets reflect the planned production and budget monitoring accurately reflects actual WPC operations.

Responsibility: Budget usages for all major expense items are established.

Standard: Usages reflect excellent manufacturing practise within the limits of the plant.

Responsibility: Information on plant operations is available as required.

Standard: Accurate information is provided in a timely manner.

Responsibility: Published records of plant performance are an accurate reflection of plant operations.

Standard: Records are accurate.

## **SAFETY**

A zero accident rate is achieved and all Company Health and Safety initiatives are supported and implemented.

Responsibility: Safety management systems are developed, implemented and maintained.

Standard: All staff are involved and a zero accident rate is achieved.

## **MAINTENANCE**

A Plant Reliability Team is managing plant availability, planning maintenance and controlling costs.

Responsibility: To ensure all plant downtime and remedial actions are monitored.

Standard: To ensure plant downtime and remedial actions are defined, recorded and rectified.

Responsibility: To establish a preventative maintenance programme in conjunction with PRTs.

Standard: To ensure a preventative maintenance programme is in place and functioning effectively.

## **CUSTOMER SERVICING**

Internal and external customers are satisfied with the products and services of the Whey Products Department.

Responsibility: The requirements of internal customers are defined and systems are in place to monitor that these requirements are being met.

Standard: Customer requirements are met.

Responsibility: Establish systems which monitor performance against service agreements, PAs and specifications to ensure external customer requirements are met.

Standard: External customer requirements are met.

## **PRODUCT DEVELOPMENT**

Responsibility: In conjunction with PRTs and winter maintenance (including capital projects) is effectively planned and carried out.

Standard: Winter maintenance and capital projects are completed within budget.

## **PRODUCT DEVELOPMENT AND PROJECTS**

Work with WPNZ, DRI, customers and other groups as required to ensure new products are developed which benefits both KIWI and New Zealand Dairy Industry.

Responsibility: Co-ordinate product development effectively.

Standard: All groups are well informed and trials run to plan.

Responsibility: Work with suppliers to ensure appropriate purchasing for product development and projects.

Standard: Ensure good relationships are achieved, leading to effective purchasing.

Responsibility: Where appropriate, develop and manage small to medium sized capital projects.

Standard: Projects are successfully completed.

## **POSITION DESCRIPTION: PRODUCTION ASSISTANT**

### **AREAS OF RESPONSIBILITY**

Production Assistant in WPC Hall

### **TEAM BUILDING & STAFF DEVELOPMENT**

To work as a key member of the Whey Products Department management/supervisory team. Coach the shift teams and ensure they are setting and achieving performance standards in excess of requirements. Ensure effective communication by encouraging the flow of information up, down and across department structure.

Responsibility: To ensure training needs analysis and records are maintained and training plans are co-ordinated and implemented.

Standard: To ensure all staff have up to date training needs analysis records and training is made available, timely and effective.

Responsibility: Shift teams are working effectively both within the teams and also cross-functionally with the other teams.

Standard: Teams work co-operatively together and team output exceeds requirements. Team members are involved in the Process Control and Plant Reliability Teams as well as capital projects.

### **QUALITY**

Quality systems and documentation are maintained and operated effectively. Process Control systems are used in daily production. Product quality ensures maximum revenue is achieved.

Responsibility: Quality, Documentation and Process Control systems are used to ensure that QC1 product is produced.

Standard: Exceed QC1 budgeted tonnage and ISO 9002 accreditation is maintained.

## PRODUCTION

Production requirements are discussed and planned with both the Process Assistant, Shift Supervisor and Packing Supervisor to ensure WPNZ requirements are met.

Responsibility: Production Plan and specification changes to be communicated to appropriate staff and departments.

Standard: In accordance with WPC Procedures Manual.

Responsibility: All staff are kept informed on all appropriate matters.

Standard: To ensure that all staff are well informed.

Responsibility: Materials and ingredients for production are available as required.

Standard: Materials/ingredients available without holding excess stock.

Responsibility: To conduct on-the-job assessment and be able to report on all training.

Standards: Timely on-the-job assessments to be completed.

## YIELDS AND LOSSES

To ensure the maximum use is made of the valued components supplied to the Department.

Responsibility: Implement and maintain composition target control systems as set by Process Assistant and Process Control Teams.

Standard: The systems are used effectively to ensure optimum yield and quality.

Responsibility: Implement and monitor loss targets control systems as set by Process Assistant and PC Teams.

Standard: The systems are working effectively ensuring loss targets are met or improved on.

Responsibility: Loss reduction programme is implemented and monitored.

Standard: Work with shift teams and individuals to identify and resolve loss problems.

Responsibility: KPIs are monitored and communicated to all staff.

Standard: KPI performance known by all staff.

## **COSTS**

Maximum use is made of ingredients, consumables, packaging and cleaning/CIP chemicals. Costs are maintained according to budget.

Responsibility: Monitor the use of ingredients, chemicals, consumables and packaging materials using established KPIs.

Standard: Monitoring systems to identify areas where usage exceeds budget in a timely manner.

Responsibility: Minimise usages in line with KPIs

Standard: Work with the teams to minimise usages.

## **BUDGETS**

Budgets reflect the planned production and budget monitoring accurately reflects actual Whey Products operations.

Responsibility: Budget usages for all major expense items are monitored against KPIs.

Standard: Usages reflect excellent manufacturing practise as identified by the KPIs.

Responsibility: Information on plant operations is supplied as required.

Standard: Accurate information is supplied in a timely manner.

## **SAFETY**

A zero accident rate is achieved. All Company Health & Safety initiatives are supported, implemented and monitored.

Responsibility: Work with the Process Assistant and departmental Health & Safety representatives to develop, implement and maintain safety management systems.

Standard: All staff are involved and a zero accident rate is achieved.



## **MAINTENANCE**

The Plant Reliability Team is managing plant availability, planning maintenance and controlling costs.

Responsibility: Plant downtime and remedial work is reported.

Standard: Causes of downtime are defined and rectified.

Responsibility: Function as an effective member of the PR Team.

Standard: To attend and contribute to all PR Team meetings

Responsibility: Monitor and implement winter maintenance and capital projects as required.

Standard: Winter maintenance and capital projects are completed within the budget.

## **CUSTOMER SERVICING**

Internal and external customers are satisfied with the products and services of the Whey Products Department.

Responsibility: To ensure that systems are in place for monitoring internal customer requirements are used to meet expected standards.

Standards: Internal customer requirements are met.

Responsibility: Systems are used to monitor performance to ensure external customer requirements, in the form of CSAs, Pas and product specifications.

Standards: To ensure external customer requirements are met.

## **SUPPLIER LIAISON**

Establish working relationships with all company representatives who supply Whey Products.

Responsibility: Establish and maintain good working relationships with suppliers to ensure effective purchasing of materials, ingredients and labour.

Standard: Good relationships are achieved, leading to effective purchasing.

## **PRODUCT DEVELOPMENT AND PROJECTS**

Work as required with the Process Assistant and other groups for product development and projects.

Responsibility: Communicate and co-ordinate with production staff.

Standard: All staff are kept well informed.

Responsibility: Work with Process Assistant to manage small and medium sized capital projects.

Standard: To ensure that projects are successfully completed.