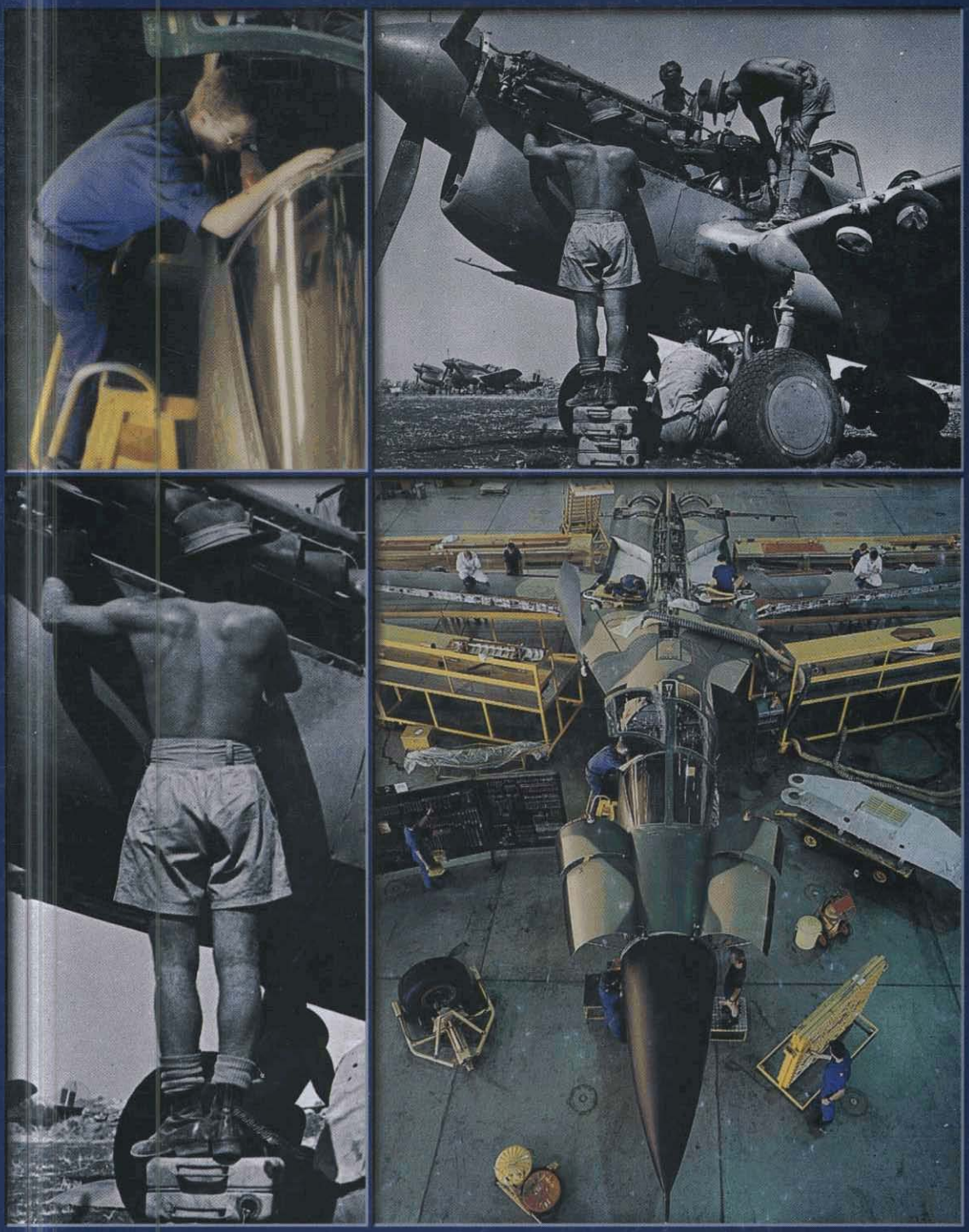

AIRCRAFT TECHNICAL TRADE DEVELOPMENT

An Airman's Perspective

WAYNE JONES

Air Power Studies Centre

Aircraft Technical Trade Development

An Airman's Perspective

Wayne Jones

DISCLAIMER

The views are those of the author and do not necessarily reflect the official policy or position of the Department of Defence, the Royal Australian Air Force or the Government of Australia.

National Library of Australia
Cataloguing-in-Publication entry

Jones, Wayne.
Aircraft technical trade development: an airman's perspective.

Bibliography
ISBN 0 64226513 5.

1. Australia. Royal Australian Air Force - Management. 2. Australia. Royal Australian Air Force - personnel management. 3. Airplanes, Military - Australia - Maintenance and repair. I. Australia. Royal Australian Air Force. Air Power Studies Centre. II. Title (Series: Fellowship Paper (Australia. Royal Australian Air Force. Air Power Studies Centre); no. 15).

358.476

Published and distributed by:

Air Power Studies Centre
RAAF Base
Fairbairn ACT 2600
Australia

Telephone: (02) 6287 6563
Facsimile: (02) 6287 6382
e-mail: apsc@pop.cc.adfa.oz.au

The Air Power Studies Centre

The Air Power Studies Centre was established by the Royal Australian Air Force at its Fairbairn Base in August 1989 at the direction of the Chief of Air Force. Its function is to promote a greater understanding of the proper application of air power within the Australian Defence Force and in the wider community. This is being achieved through a variety of methods including development and revision of doctrine, the incorporation of that doctrine into all levels of RAAF training, and increasing the level of air power awareness across the broadest possible spectrum. Comment on this publication or enquiry on any other air power related topic is welcome and should be forwarded to:

The Director
Air Power Studies Centre
RAAF Base
Fairbairn ACT 2600
Australia

Telephone: (02) 6287 6563
Facsimile: (02) 6287 6382
e-mail: apsc@pop.cc.adfa.oz.au

About The Author

Corporal Wayne Jones joined the RAAF as a engineering apprentice in 1982. Upon completion of training he graduated as an airframe fitter in 1984. He gained a deep understanding of the aircraft maintenance environment through employment in many RAAF operational and deeper level maintenance squadrons over a period of ten years. Corporal Jones was appointed as an F-18 aircraft technician instructor in 1994. In addition to instructional duties, he contributed to the rewriting of F-18 courseware to align with the post trade restructure training schedule. Whilst employed as an aircraft technician instructor he completed a Bachelor of Education at the University of Technology, Sydney. In 1996 he was chosen as the first airman CAF Fellow. Following completion of that fellowship, he was posted to the CAMM2 project to assist in the design and delivery of computer aided instruction.

Acknowledgment

There are a considerable number of people to whom I am greatly indebted for the production of this book and the personal growth I have gained as a result.

Firstly, my thanks to all the staff and fellow 'fellows' at the Air Power Studies Centre. Their invaluable advice, guidance and friendship were an inspiration. I would particularly like to thank my fellow 'airman fellow' Sergeant Walter McKinnon to whom no request for assistance was too big and for sharing my passion for the welfare of the airman force. Most especially, my thanks to my mentor, Dr Alan Stephens, whose faith in my ability was far greater than my own, and whose ability to turn around my project and my self-esteem made the successful completion of this book possible.

My thanks to the hundreds of members of the RAAF's aircraft technical workforce who took the time to complete the survey and to all those who were willing to share their time and knowledge of the workforce with me. Your input was invaluable. I would also like to thank, on behalf of present and future airman fellows, the Chief of Air Force and the Air Power Studies Centre, whose progressive approach has allowed airmen to contribute to strategic thought in the rarefied air of military academia.

Finally, and most importantly, Takeala, without whom this study may not have started let alone finished. Her constant support and reassurance gave me the courage I needed to continue giving my all, thank you.

Wayne Jones
Canberra
September 1997

Contents

Tables & Figures

Figures

Tables

Acronyms and Abbreviations

AC	Aircraftman
ACENG-AF	Assistant Chief of Engineering - Air Force
ACPERS-AF	Assistant Chief of Personnel - Air Force
ACW	Aircraftwoman
ADAVTECH	Advanced Avionics Technician
ADF	Australian Defence Force
ADIP	Associate Diploma
AFFITT	Airframe Fitter
AFLD	Air Force Logistics Directive
AFOD	Air Force Operational Directive
AFTI	Air Force Temporary Instruction
AIRCDRE	Air Commodore
ALG	Air Lift Group
ALSFITT	Aircraft Life Support Fitter
AME	Aircraft Maintenance Engineer
AM	Air Marshal
ANTA	Australian National Training Authority
AOCTC	Air Officer Commanding Training Command
ARMFITT	Armament Fitter
ASTFITT	Aircraft Structural Fitter
ASYSTECH	Aircraft Systems Technician
AVCTS	Australian Vocational Certificate Training System
AVM	Air Vice-Marshal
AVSYSTECH	Avionic Systems Technician
BCC	Base Calibration Centre
BSMITH	Blacksmith
BTECH	Bachelor of Technology
CAA	Civil Aviation Authority
CAFTS	Chief of Air Force Technical Services
CAS	Chief of the Air Staff
CASAC	Chief of the Air Staff Advisory Committee
CBI	Computer Based Instruction
CBT	Competency Based Training
CDF	Chief of the Defence Force
CESYSTECH	Communications Electronic Systems Technician
CAMM	Computer Aided Maintenance Management
CMO	Critical Maintenance Operation
COT	Certificate of Technology
CPL	Corporal
CSP	Commercial Support Program

CTC	Category Technical Competency
CTO	Course Terminal Objective
DAFR	Director of Air Force Recruiting
DCAS	Deputy Chief of the Air Staff
DEET	Department of Employment, Education and Training
DER	Defence Efficiency Review
DGTP-AF	Director General Technical Policy - Air Force
DI	Defence Instruction
DLM	Depot Level Maintenance
DMANENG	Draftsman Engineering
DPA	Directorate of Personnel - Airmen
DRP	Defence Reform Program
DTP-AF	Director of Technical Planning - Air Force
DTTRT-AF	Director of Technical Trade Restructure Team - Air Force
ED	Education
ELECFITT	Electrical Fitter
ELPTR	Electroplater
ENGFITT	Engine Fitter
ENG	Engineering
ENGR	Engineer
EO	Explosive Ordnance
EXP	Experience
FSGT	Flight Sergeant
FSR	Force Structure Review
FTF	Field Training Flight
GENFITT	General Fitter
GPCAPT	Group Captain
GSE	Ground Support Equipment
GTS	Ground Training School
HDA	Higher Duties Allowance
HQSC	Headquarters Support Command
ILM	Intermediate Level Maintenance
INSTFITT	Instrument Fitter
LAC	Leading Aircraftman
LACW	Leading Aircraftwoman
LAME	Licensed Aircraft Maintenance Engineer
LRU	Line Replaceable Unit
MBB	Motor Body Builder
MCS	Maintenance Control Section
METMACH	Metal Machinist
MLOC	Minimum Level Of Capability
MPG	Maritime Patrol Group
MPRP	Maintenance Process Re-engineer Project
MRU	Members Required in Uniform
MSI	Maintenance Supply Item
MTC	Melbourne Technical College

MTFITT	Motor Transport Fitter
MTRIM	Motor Trimmer
NAC	National Aerospace Curriculum
NACS	National Aerospace Competency Standards
NASP	National Aeroskills Project
NCO	Non-Commissioned Officer
NDI	Non-Destructive Inspection
NFROT	National Framework for the Recognition of Training
NTB	National Training Board
NTRA	National Training Reform Agenda
OA	Occupational Analysis
OLOC	Operational Level Of Capability
OLM	Operational Level Maintenance
OR	Other Ranks (non-commissioned)
PERS	Personnel
Pt	Point
RAAF	Royal Australian Air Force
RTE	Record of Training and Employment
RADS	School of Radio
RADTECHA	Radio Technician Air
RADTECHG	Radio Technician Ground
RAF	Royal Air Force
RAN	Royal Australian Navy
RPL	Recognition of Prior Learning
RTE	Record of Training and Employment
SGT	Sergeant
SL	Skill Level
SME	Subject Matter Expert
SNCO	Senior Non-Commissioned Officer
SQNLDR	Squadron Leader
SRG	Strike Reconnaissance Group
SST	Self-supervising Technician
STT	School of Technical Training
SURFIN	Surface Finisher
SYSTECH	Systems Technician
TAFE	Technical and Further Education
TDLF	Technical Distance Learning Facility
TECH	Technical
TECHAPP	Technologist Apprentice
TELSRIG	Telecommunications Rigger
TFG	Tactical Fighter Group
TPE	Termination of Period of Employment
TQM	Total Quality Management

TSRWP	Trade Structure Review Working Party
TTCDT	Technical Trades Courseware Development Team
TTR	Technical Trade Restructure
TTRSC	Technical Trade Restructure Steering Committee
TTRT	Technical Trade Restructure Team
TTRTDT	Technical Trade Restructure Training Design Team
TTSCAT	Technical Trade Structure Compliance Audit Team
WG	Wing
WGCDR	Wing Commander
WLDRACFT	Aircraft Welder
WLDRGEN	Welder General
WOFF	Warrant Officer
WOODMACH	Wood Machinist
WP	Working Party
WS	Weapon System
WSES	Weapon System Employment Streamer
1AD	No. 1 Aircraft Depot
1CAMD	No. 1 Central Ammunition Depot
1RTU	No. 1 Recruit Training Unit
1STT	No. 1 School of Technical Training

Introduction

When the Technical Trade Restructure (TTR) was first conceived in the late 1980s, it was merely another step in the evolution of the Royal Australian Air Force's aircraft technical workforce. But, by the time TTR was actually implemented in 1992 it had grown into a revolution encompassing virtually every aspect of technical life, from recruiting to training to employment. The sphere of influence of the TTR eventually became enormous, affecting virtually every structural aspect of every technical and non-technical trade. To identify all the issues and ramifications of this restructure would require a great deal more research than was possible for this paper. It is therefore with regret that the author is forced, in some cases, to gloss over issues and leave several completely untouched. There should be a good deal more research conducted in this topic as there are many questions left unanswered, and much to be learned and recorded.

The views expressed in this book do not necessarily reflect the opinions of every member of the RAAF's aircraft technical workforce. They are the perspective of one airman. As with most issues, the views held by individuals who cooperated with this project ranged from complete agreement to total disagreement. The findings represented here are, however, based on the general attitude of the technical workforce, determined through research, in surveys, by correspondence, and observed by the author during his years of employment in the workforce both pre- and post-TTR.

Chapter One

In The Beginning There Were Aircraft Tradesmen

The Royal Australian Air Force depends totally on the maintenance of its aircraft for its ability to generate air power. In order to maintain the highest possible level of aircraft airworthiness and availability the RAAF has been training and employing aircraft technical trades people in one way or another since its establishment in 1921.[1]

Between the Wars

The RAAF maintained a limited technical training capacity between the two world wars. The majority of tradesmen entering service were required to have completed a civilian apprenticeship prior to engagement. RAAF training was restricted to providing conversions from civilian trade training to aircraft specific training in accordance with its requirements, a task which was undertaken largely on the job.[2] During this time airframe maintenance was generally performed by cabinet makers and carpenter joiners whilst engine maintenance was carried out by tradesmen who had generally completed a civilian apprenticeship as a motor mechanic or fitter and turner.[3] When first established, the flying school at Point Cook employed just six Air Mechanics, consisting of four fitter and turners, one carpenter and one motor car driver.[4]

In 1934 the government of the day authorised a general expansion of the Australian military in reaction to the growing threat from Japan. Over the next five years the Air Force trebled in size to more than 3,000 people and purchased several new aircraft types. As a consequence of this rapid growth in staffing and advances in aircraft technology the RAAF established its first dedicated technical training facility at Laverton in Victoria. Designated No. 1 Aircraft Depot (1AD), its role was to provide recruit and trade training for technical musterings.[5] In October of 1937 the unit was reorganised and renamed 'Training Depot' and an Engineering School added to its instructional elements. Here the following courses were conducted:

---

1 C.D. Coulthard-Clark, *From the Ground Up: The Training of RAAF Technical Ground Staff 1948-1993,* Air Power Studies Centre, Canberra, 1997, p 5.

2 ibid, p 7.

3 Warren Sowter, *A History of the Royal Australian Air Force School of Technical Training,* unpublished BEd thesis, 1987, p 5.

4 Submission to Air Council in December 1920, reproduced in full in R. Williams, *These Are Facts*, as Appendix VII, p 382.

5 *Brief History of No 1 Engineering School*, unpublished paper, author and date unknown, RAAF Historical Section, Canberra, p 4.

a. Drill (recruit),
b. Fitter General for Metal Rigger,
c. Fitter General for Metal Aero,
d. Fitter General for Fitter Armament,
e. Fitter General for Wireless/Telegraphy Operator Mechanic, and
f. Fitter General for Wireless/Telegraphy Operator.

However, at this time the RAAF was still reluctant to deliver full trade training, instead providing only the additional training necessary to teach tradesmen 'the Air Force application of their basic trade';[6] that is, the knowledge and skills they required beyond their civilian training before they could be employed on aircraft maintenance.

World War II

With the commencement of hostilities in 1939 the requirement for ground crew with technical training grew sharply. Due to the increased competition for skilled tradesmen, the RAAF was forced to provide its own trade training for the first time. This was achieved by sending unskilled recruits to various state technical schools before transferring them to the Engineering School for service-specific skills training.[7] Both civilian and military run technical training facilities were established around Australia in locations such as Hobart, Adelaide, Perth, Sydney, Canberra and particularly Melbourne, in order to meet the demands of the wartime expansion. December 1939 saw the Engineering School sub-divided into No. 1 School of Technical Training (1 STT) and No. 1 Engineering School, located at West Melbourne and Ascot Vale respectively. The students were accommodated at 555 Latrobe St, Melbourne and were marched from there to the Melbourne Technical College (MTC)[8] and the Melbourne Showgrounds at Ascot Vale each day for training. Training was extended from the pre-war 'application' training to cover the full training requirements for musterings such as electrician, instrument maker, instrument repairer, welder and x-ray technician.

During the period from 1939 to 1945 over 65,000 men and women were provided with specialised training by these establishments and many others like them.[9] Figure 1.1 displays the range and sequence of ground training provided by the RAAF in November 1942.

Post World War II

Upon completion of hostilities in August 1945 the scope of trade training provided by the RAAF contracted with the reduced demand. The majority of training facilities were closed down as a result of the downsizing. However, because of the increase in aircraft numbers and systems complexity compared to the pre-war Air Force, the RAAF needed to maintain a scaled down yet comprehensive training infrastructure. As part of the rationalisation of trade training No. 1 Signals School was moved from

6 Booklet 'The Royal Australian Air Force as a Career' (revised June 1936).
7 Douglas Gillison, *Royal Australian Air Force 1939 - 1942*, Australian War Memorial, Canberra, 1962, p 3.
8 Later known as the Royal Melbourne Institute of Technology.
9 Coultard-Clark, *The Training of Ground Crew*, p 7.

Point Cook, where it had been during the war, to Ballarat where it formed the basis of the new Air and Ground Radio School. Additionally, in 1946 the training equipment of the Engineering School at Ascot Vale was moved to Forest Hill, ten kilometres east of Wagga Wagga, where it formed the RAAF Ground Training School (GTS).

Royal Australian Air Force School of Technical Training

RAAF Wagga Wagga was initially constructed as a pilot training facility in January 1940. Upon cessation of hostilities the flying school was no longer required and was subsequently closed, leaving many buildings unoccupied. The RAAF Ground Training School took over these facilities in March 1946 under the command of Wing Commander E.L. Chapman.[10] The unit was renamed RAAF Technical College in May 1950 and again renamed the RAAF School of Technical Training (STT) in December 1952 in attempts to more accurately reflect its function. RAAFSTT's name and its role of training all technical enlisted personnel (except the radio musterings) then remained virtually unchanged until the 1980s.

School of Radio

Established in November 1945 in Ballarat, the Air and Ground Radio School was an amalgamation of three wartime radio training institutions: No. 1 Signal School at Point Cook, Radar School at Maryborough and No. 1 Wireless Air Gunners School at Ballarat. The Air and Ground Radio school conducted courses in telegraphy, signals, telephony and radio. In recognition of the fact that radio, in its broadest sense, best epitomised RAAF communications, the school was re-named the RAAF School of Radio (RADS) in December 1952.[11] Later, in the interest of efficiency, the school was moved from Ballarat to Laverton during 1961.

Running parallel with the Air and Ground Radio school was the RAAF Radio Apprentice School formed at Frognall, Victoria, in December 1947. This school too was transferred to Laverton in late 1960 and was incorporated as a squadron of RADS in 1961. The School of Radio continued to make a great contribution to the Air Force by producing highly trained operative and technical personnel until its disbandment on 31 December 1993 following the introduction of the Technical Trade Restructure (TTR).[12]

---

10 *Units of the Royal Australian Air Force: A Concise History*, Vol 8, 'Training Units', compiled by the RAAF Historical Section, AGPS, 1995, p 205.

11 ibid., p 202.

12 The Technical Trade Restructure was the name given to a major reorganisation of the technical trades. It is discussed in detail in Chapter 3.

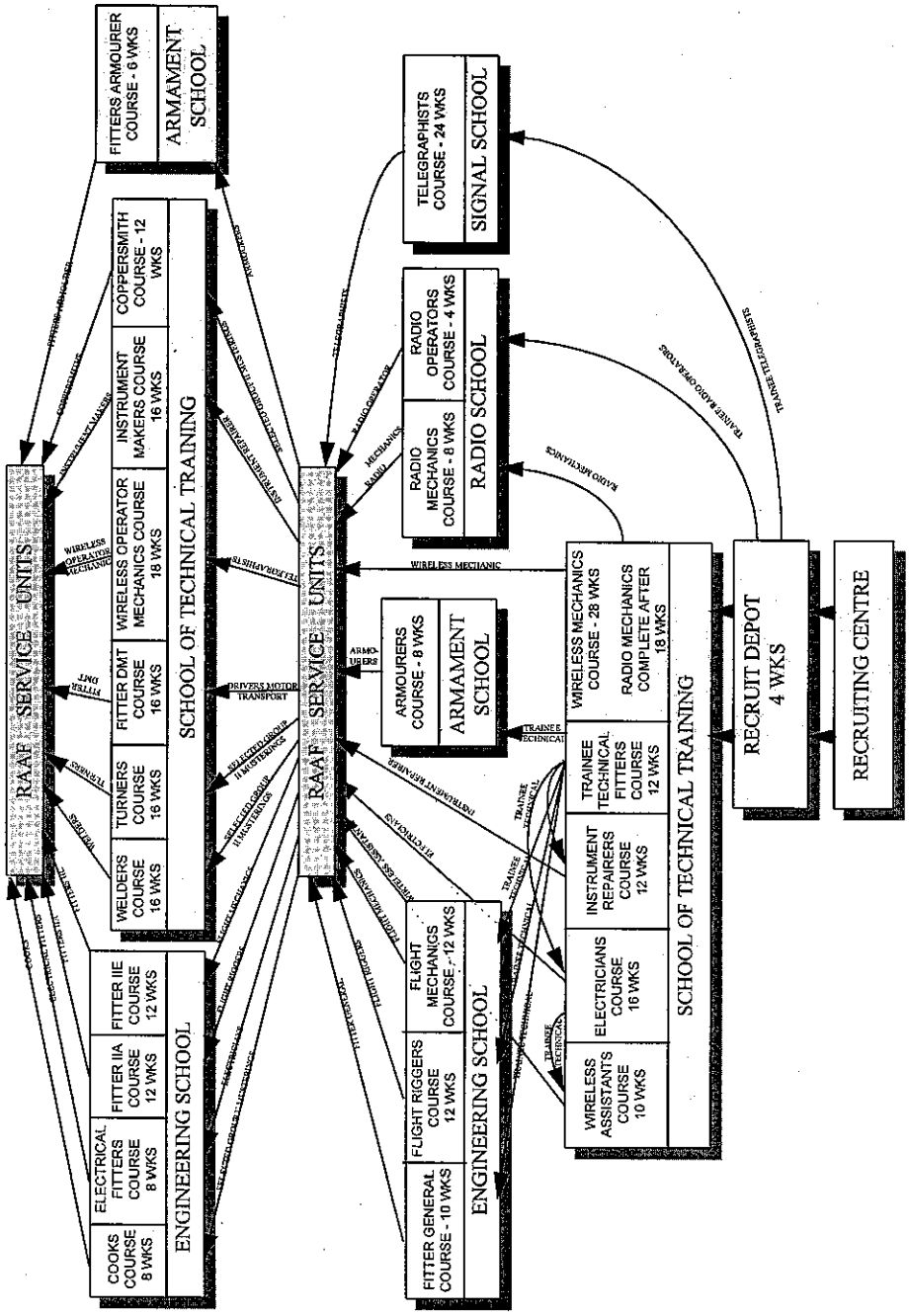

Figure 1.1 **Royal Australian Air Force technical ground training (1942)**[13]

[13] 'Royal Australian Air Force - Australian Air War Effort', 4th edn, 1 November 1942, Appendix H, Aust Archives, CRS A5954, Box 296/3.

The Apprenticeship Scheme

The need for a RAAF trade apprenticeship scheme was first examined by the Air Member for Personnel, Air Commodore J.E. Hewitt, in 1948. Reflecting on the lessons learnt during the war, Air Commodore Hewitt noted that the general education standards of technical recruits were below the required level and, given the post war competition for skilled labour, there was no reason to believe the situation would improve. He therefore suggested that the RAAF follow the example set by the RAF in establishing an apprenticeship training scheme. Three major benefits could be gained from this, being:

1. the 'air-mindedness' of the country as a whole would be increased, resulting in a better military-civilian relationship;
2. the nation's general education standard would be raised; and
3. the professional standards of the RAAF would improve. [14]

Engineering Apprentices

As a result the first intake of engineering apprentices marched into RAAF Base Wagga Wagga at the beginning of 1948. On completion of their basic training they were streamed into one of six specialisations: engine fitter, airframe fitter, electrical fitter, armament fitter, instrument fitter and motor transport fitter.[15] The duration of specialist training was to be three years with training time being allocated to such things as academic and trade training, and supplemented by sporting, recreational, religious and social activities.

The first intake consisted of only thirty-three members due to an overly stringent adherence to selection criteria. This was partly alleviated by the recruitment of a supplementary intake in July that year, bringing the total number to 139. Due to the relatively low wage paid to apprentices and the high recruiting standards the scheme never achieved its target of producing 60 per cent of all RAAF technical airmen. However, with the annual intake averaging 162, the RAAF engineering apprenticeship scheme produced 4,668 tradespeople by the time it was finally superseded in 1993. Figure 1.2 indicates the trade apprentice training progression and subsequent career options in 1967.

Radio Apprentices

At the same time as the engineering apprentices were commencing their training at RAAF Wagga Wagga, the first intake of radio fitter (air) and radio fitter (ground) telegraphist mechanic apprentices were embarking on their careers in Victoria, at the Melbourne Technical College. During the war some 5,500 radio tradesmen had been trained at Melbourne Technical College and, because of its proven track record and the cost savings achieved by utilising an existing establishment, it was decided to continue using the college as the venue for radio apprentice training. The first two

---

14 Alan Stephens, *Going Solo: The Royal Australian Air Force 1946-1971*, Australian Government Publishing Service, Canberra, 1995, p 130.

15 Motor transport fitter was the only non-aircraft trade apprenticeship.

years of the course were completed at Melbourne Technical College followed by a third and final year conducted at the RAAF Air and Ground Radio School in Ballarat. In 1961 the training was transferred to RAAF Laverton after Ballarat's closure. Radio training was carried out there until the amalgamation of technical training in 1993.

According to the RAAF's head of technical services from 1960 to 1972, Air Vice-Marshal E. Hey, the RAAF apprentice scheme was one of the best things the Air Force ever did and its graduates were absolutely outstanding.[16]

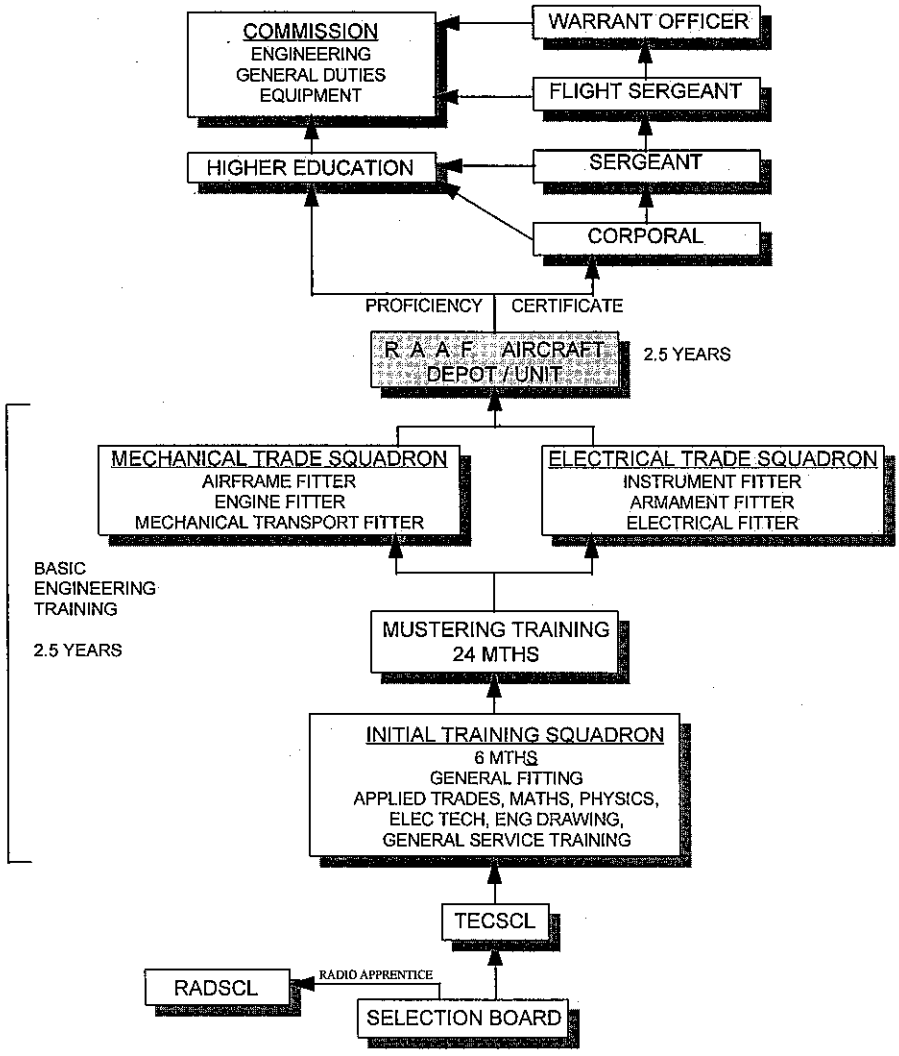

Figure 1.2 RAAF Base Wagga ground training in 1967 - apprentice[17]

16 Stephens, *Going Solo*, p 134.

17 Sowter, *A History of the Royal Australian Air Force School of Technical Training*, p 40.

Adult Trainees

The apprentice scheme, however, provided significantly less than the desired 60 per cent of the technical ground crew requirements of the RAAF. The bulk of the RAAF's aircraft technical personnel were, in fact, made up of adult trainees aged between 17 and 34. The adult program consisted of a more compact, trade specific course following recruit training.[18] The chart at Figure 1.3 was employed around 1967 and displays the early career and training paths for adult entrants. Initially, technical training for adult trainees was broken into two major phases. Firstly, the trainees underwent mechanic training where they acquired generic hand skills supported by general theory which usually took about five months. Upon successful completion of this training, the adult trainees were posted to RAAF units for work experience and job exposure under direct supervision for approximately nine months. Once competence was believed to have been achieved in the field the trainees returned to RAAF Wagga for fitter training before graduation as an aircraftman. Up to 50 mechanics were graduated each year from both RADS and RAAFSTT.[19]

This system of providing basic training followed by a consolidation period at RAAF units, then returning to Wagga for completion of training, was streamlined in 1974 to provide a straight through combined mechanic/fitter course. The move to straight through training removed the opportunity to consolidate the theoretical knowledge obtained during the early phase of the course. The decision to fundamentally alter the adult trainees' training procedure was made because of the excessive complexity of the original system, particularly with respect to the administration of postings and associated conditions of service. There were no technical reasons for this departure.[20]

The following is a list of the adult courses taught by RAAFSTT at RAAF Wagga:

- Accounting Machine Operator
- Aircraft Metal Worker
- Airframe Mechanic
- Airframe Fitter
- Armament Mechanic
- Armament Fitter
- Clerk
- Driver Motor Transport
- Electrical Serviceman
- Electrical Fitter
- Engine Mechanic
- Fabric Worker
- Instrument Mechanic
- Instrument Fitter
- Linesman
- Metal Machinist
- Motor Transport Mechanic
- Motor Transport Fitter
- Trainee Mechanic
- Trainee Fitter
- Works Fitter
- Engine Fitter

---

18 ibid., p 43.

19 The Mechanic Concept, Minute, TP1-AF to DGTP-AF, 17 Jul 89, p 1, Department of Defence file AF/87/37299 Pt (1), Held by Central Registry, Department of Defence, Russell Offices.

20 ibid., p 1.

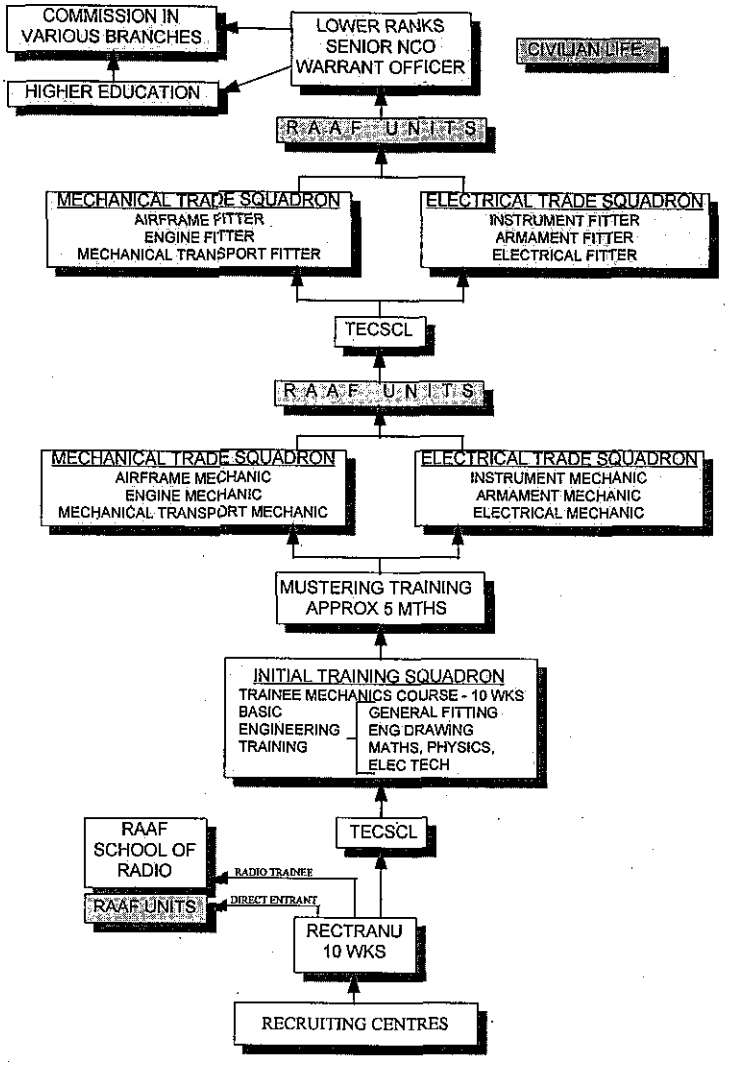

Figure 1.3 RAAF Base Wagga ground training - adult (1967)[21]

Apart from fluctuations in the course length due to modification, removal and addition of course content, both the apprentice and adult trainee training systems remained largely unchanged for almost 50 years.

Mechanics

In early 1981 a proposal was put forward for both a mechanic and avionic mechanic mustering with a career path to flight sergeant. It was to be available to applicants with a lower educational standard or to those who had not chosen appropriate subjects for entry into the RAAF as an aircraft tradesperson. The rationale for this proposal was to provide the RAAF with the opportunity to broaden the recruiting base for

---

21 Sowter, *A History of the Royal Australian Air Force School of Technical Training*, p 44.

aircraft technical musterings. It was envisaged that these personnel would be employed in lesser skilled work areas and Maintenance Control Section duties, performing such tasks as basic computer and paperwork data entry. The proposal was subsequently resisted by manning staff and no further action was taken.[22]

The mechanic mustering proposal resurfaced again in 1985 due to concern that the increase in manpower required as a result of the introduction of the F/A-18 Hornet could not be met. In this instance though, the two-trade mechanic structure was adopted but the career element was rejected. Instead individuals would graduate as mechanics and convert to fitters/technicians once the manpower hump had passed, thus overcoming the short term manpower shortage. The recruiting standards for entry into the RAAF as an aircraft tradesperson were maintained and enlistment was restricted to two years. Unfortunately, this combination did not appeal either to civilian entry or potential remusters from other RAAF musterings, resulting in insufficient numbers to establish a course.

This failure to adequately fill course positions and the realisation that the concept would be too late to assist in the alleviation of the manning hump led to a submission to the Chief of the Air Staff (CAS) to hold the mechanic scheme in abeyance pending a more appropriate time frame for its introduction. CAS approved this and no further progress was made.[23]

---

22 The Mechanic Concept, Minute, TP1-AF to DGTP-AF, 17 Jul 89, p 1.

23 ibid., p 1.

Chapter Two

The Review

Deficiencies

When initiated in 1948 the adult trainee and trade apprentice training programs gave its recipients the best training available at the time so that they in turn could provide RAAF units with the skills they required to maintain their unprecedentedly complex aircraft. By the late 1970s, however, it was felt by members of the RAAF's engineering branch that the continuing increases in aircraft complexity were again exposing shortcomings in the technical trade training system's ability to provide personnel with adequate fault diagnosis skills.[1] This lack of fault diagnosis ability among apprentice and adult trainees was subsequently confirmed by a review conducted in 1978.

The RAAF's new aircraft at this time were a leap ahead of their predecessors technologically. Aircraft such as the F/A-18 Hornet, PC3 Orion, PC9 and F111 were all acquired by the RAAF within a relatively short period. The integration of aircraft systems onboard those aircraft further exacerbated the difficulties faced by aircraft maintenance personnel by blurring the lines of demarcation between the existing trades. This problem was particularly evident within the Instrument and Radio trades and, to a lesser degree, Electrical and Armament.[2] The existing trade structure was however felt to be coping quite well with lower and mid technology aircraft types such as the C130 Hercules and Boeing 707.[3]

Systems Technicians

In order to overcome difficulties associated with the overlapping trade boundaries and to increase the squadrons' overall fault diagnosis ability, particularly in the high technology avionics field, a new trade group was established in 1980. The new trade group was given the title of 'systems technician' (SYSTECH) in order to reflect the system rather than trade focus.[4] SYSTECHs were envisaged to be a para-professional link between engineering officers and trades personnel.

---

1 Proposed Review of Avionic Trade Structure and Training, under cover of Minute, DTP-AF to ACENG-AF, 19 Jun 89, p 1, Department of Defence file AF/87/37299 Pt 1 (35), Department of Defence, Russell Offices.

2 Technical Workforce - Integration of Systems Technicians and Review of Trade Structure, under cover of Minute, CAFTS to DGTP-AF, 28 Oct 87, p 2, Department of Defence file AF/87/37299 Pt 1 (4), Department of Defence, Russell Offices.

3 ibid., p 2.

4 Technical Workforce - Integration of Systems Technicians and Review of Trade Structure, CAFTS to DGTP-AF, 28 Oct 87, p 2.

To staff the new trade group selected existing qualified tradesmen were given additional training to enable them to become more efficient fault diagnosticians. They were divided into two major categories, namely 'aircraft systems technicians' (ASYSTECH) and 'avionic systems technicians' (AVSYSTECH). The ASYSTECH would be employed at the system level on the mechanical aspects of the aircraft such as engine and airframe, while the AVSYSTECH would be employed across the three avionic trades of electrical, instrument and radio.

However the change was not without wider implications. The intended employment of the SYSTECHs was in segregated cells, performing complex problem solving and para-professional engineering tasks. This required significant changes in the organisation of RAAF units which most were generally reluctant to perform.[5] Consequently many SYSTECHs were employed in trade line management. That practice in turn led to the perception, which was not easily dispelled, that SYSTECHs were a threat to the promotion prospects of the established trades. The problem was felt to be almost entirely confined to AVSYSTECHs, as experience with ASYSTECHs indicated that they were typically employed on engine or airframe activities and seldom worked in line management positions.

When first introduced the SYSTECHs were seen by many of the existing tradespeople as removed from the rest of the workforce and elitist. The systems technician scheme has changed often since its inception and its future remains uncertain.

Technologist Apprentices

In addition to the extension of training to existing tradesmen, the apprentice scheme was modified in 1982 to include technologist apprentices. These apprentices were slightly older than their engineering counterparts (17-21) and were required to have higher entry standards. They studied subjects in association with the Royal Melbourne Institute of Technology (RMIT) and graduated with a Certificate of Technology.

Trade Review

The SYSTECHs were primarily introduced as a stop gap measure, as the first step in a total review of the aircraft technical trade structure. Indeed, there were indications that the SYSTECH presence was beginning to have an effect on the fault diagnosis deficit by the mid-1980s but the issue of overlapping trade boundaries in the existing trades had yet to be addressed. With the intention of finally integrating the SYSTECHs into the technical workforce, and overcoming the deficiencies being experienced by the existing trades with respect to advanced electronics, a case was developed in 1987 for the creation of an Avionics mustering. The Chief of Air Force Technical Services (CAFTS) suggested that 'The integration of SYSTECHs into the workforce in the avionics field is unlikely to be fully acceptable until the trade structure is rationalised'.[6] For the revised avionic trade to be acceptable and effective

---

5 ibid., p 2.

6 ibid., p 3.

it was suggested by the Director of Technical Policy - Air Force (DTP-AF) that the following criteria had to be satisfied:

a. the diversity within the RAAF inventory must be recognised and catered for, as must the progressive changes in technology level;
b. the new structure must be able to coexist with the old one for probably a decade without creating major, or even significant, manpower management problems;
c. potential economies in trade training and maintenance manpower and supervision must be exploited; and
d. the new trade must be capable of gaining civilian trade recognition because of the importance of such recognition in the recruiting process.[7]

Despite this apparently sound rationale, it was thought that the anecdotal evidence on which the need to restructure the trades was based would be insufficient to gain approval from the Chief of the Air Staff Advisory Committee (CASAC). Furthermore, due to increased economic pressure, any proposal for major alterations to the trades structure would have to provide an indication of gains in maintenance and training efficiency leading to substantial manpower savings and reductions in resources. It was therefore decided in November 1987 that in order to make an informed decision an occupational analysis (OA)[8] of the instrument, radio and electrical musterings was required, the main aim of which would be to establish the extent of overlapping task responsibilities between these trades.[9]

Prior to this occupational analysis being conducted, members present at a SYSTECH employment symposium in April 1987 expressed their concern that failure to proceed more rapidly with SYSTECH integration had contributed to the difficulties associated with SYSTECH employment in line management posts. Hence, it was with a sense of urgency that the review process was undertaken. The aim was to complete the collection and processing of data by the end of May 1988 so that a draft proposal to CAS on mustering structure and grading could be staffed before the end of 1988. Due to this time constraint it was decided by DTP-AF staff that existing occupational analysis data, which was administered in the late 1970s, would be sufficiently reliable in the case of aircraft maintenance personnel employed in lower technology areas. The 1987 OA was therefore limited to members of the electrical, instrument and radio musterings, from aircraftman to warrant officer, who were employed on F111C, RF111C, PC9, PC3 and F/A-18 avionics systems, plus C130E and C130H simulators. Additionally, and again as a consequence of time constraints, the OA was further restricted to macro tasks only, dealing with equipment, not sub-equipment. This, it was felt, would provide the information required to make an informed decision without spending undue time on a full occupational analysis. Further, in order to

---

7 ibid., p 4.

8 An occupational analysis is a practical method of collecting and analysing occupational data about a given population. For more information see DI (AF) AAP 2002.001, *RAAF Manual of Training Policy and Procedures*.

9 Technical Workforce - Integration of Systems Technicians and Review of Trade Structure, CAFTS to DGTP-AF, 28 Oct 87, p 4.

avoid non-uniform and incorrect responses, the survey was administered through face-to-face interviews by experienced senior non-commissioned officers (SNCOs) stationed at the bases requiring input, and employed in the affected musterings. The interviews were broken into three groups; three from RAAF Amberley, three from RAAF Edinburgh and four from RAAF Williamtown (this group was additionally responsible for interviews conducted at RAAF Richmond).

The results of the occupational analysis revealed a smaller number than expected of tradespeople working in integrated avionics environments.[10] However, the survey did indicate a number of common elements and it was felt that the affected tradespeople could be more widely employed without a major impact on training. The expected result was increased training efficiency and employment flexibility. The conclusion reached by the project team, based on the information available, was that a single avionics trade was the preferred option for the advanced technology digital field, whilst the existing trade structure remained appropriate for older technology, within which 84 per cent of the population was still employed. Consequently the amalgamation of three trades into one could not be justified at that time. The review therefore concluded that the current trade structure should remain but, to avoid the expense of extending all trade courses to encompass the latest digital technology, a modular training concept should be introduced. Tradesmen would, as a result, be provided with training in digital avionics only as required for their immediate employment.[11] Employment would therefore be based on training rather than trade.

Lower Skilled Employment

With the SYSTECHs the difficulties associated with maintaining higher technology equipment was felt to have been satisfied. However, in June 1989 DTP-AF highlighted what he felt was another undesirable feature of the existing trade structure, namely, that of inefficiency at the lower end of the trade skill continuum.[12] The existing training system prepared tradespeople for employment at all levels of aircraft maintenance, from simple flightline operations to deeper level component fault diagnosis. At the operating level, it was noted, the great majority of aircraft maintenance tasks did not require this depth of knowledge, rather they required breadth. Further, it was considered that the trade structure was too inflexible to cope with the inherently fluctuant nature of operational level maintenance requirements. One trade might be overburdened while another was under-utilised. As a result of these observations a case was made for an avionics tradesperson who would be trained in radio, instrument and electrical skills but to a lesser depth. Additional training appropriate to the depth needed for workshop repair could then be provided as required.

---

10 Avionic Trade Structure Review, Minute, TP1 PROJ to ACENG-AF, 17 Oct 88, p 1, Department of Defence file AF/87/37299 Pt 1 (29), Department of Defence, Russell Offices.

11 Proposed Review of Avionic Trade Structure and Training, DTP-AF to ACENG -AF, 19 Jun 89, p 1.

12 ibid., p 1.

A diagrammatic representation of the proposed concept is at Figure 2.1. The diagram shows a single entry point with various career paths depending upon the applicants' ability, school qualifications and service requirements. It was proposed that high performing candidates would take the non-stop path to Certificate of Technology (COT) level. This was actually already the case with the SYSTECHs except this proposal suggested cross-training at the start rather than the end of training and the graduate would not necessarily be a SNCO.

Applicants who performed lower than those chosen for Certificate of Technology training would, depending on results and service requirements, take the direct path to a technician course. Lowest performing candidates, or those with inadequate formal qualifications, would undertake only the basic fitter course before being posted to a unit. After some time in the field these tradespeople could be selected, based on performance and service requirements, for further training to a higher level. The distance learning concept could be employed to shorten the duration of the technician course by providing the required modules at bases, thus saving on training costs.[13]

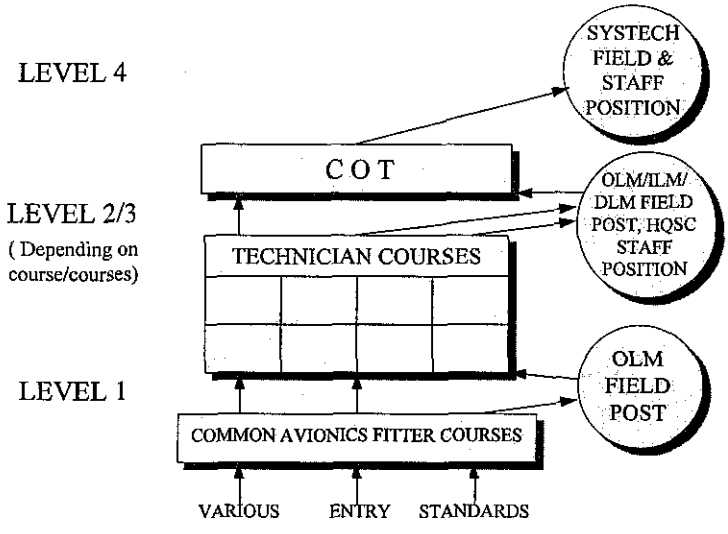

Figure 2.1 Training and career path for the proposed Avionic mustering, June 1989[14]

Upon receipt of this proposal the then Assistant Chief of Engineering - Air Force (ACENG-AF), Air Vice-Marshal I.T. Sutherland indicated his approval adding, 'In all, the working party will have a tough job reviewing the trade structure and deserves priority by selecting its members from our most experienced and clear thinking engineers and other officers. The future maintenance standards of our most important weapon systems may be at stake.'[15]

---

13 ibid., p 1.

14 Annex A to Proposed Review of Avionic Trade Structure and Training, under covering Minute, DTP-AF to ACENG -AF, 19 Jun 89, p 1.

15 Proposed Review of Avionic Trade Structure and Training, ACENG -AF to DGTP-AF, 3 Jul 89, p 2.

Mechanics

Although the proposal for a vertical career progression from fitter to systems technician was generally well received, engineering branch members felt that there was still room for a basic level tradesperson employed on the most fundamental of aircraft maintenance tasks such as carrying out simple aircraft systems self-testing procedures and replacement of modular assemblies. It was therefore considered that the mechanic mustering should once again be considered, with the following being listed as advantages of this scheme:

a. it would broaden the recruiting base by accepting applicants with a lower educational standard than had previously been the case for entry into the RAAF as an aircraft tradesperson; and
b. the personnel trained could be employed on simple remove and replace repairs and BIT[16] operations, thereby freeing fitter/technicians to perform more complex tasks. This in turn would have a positive effect on separation rates.[17]

The second item was considered particularly important because the use of an all technician workforce was creating an unacceptably long leadtime to maturity of each individual, a factor of significant relevance in times of major expansion.

Additional Pressures

By mid-1989 events had almost overtaken the self-directed review of the trade structure. Both outside and within the RAAF pressure was increasing for the aircraft technical trades to become more efficient.[18] External to the sphere of the RAAF, but affected by it, was the general efficiency move within the civilian workforce as a result of award restructuring. Within the service there was also an on-going and increasing pressure to achieve maximum economic use of manpower and resources. Concern was expressed by DTP-AF staff that if the review was not commenced shortly the RAAF would likely have a solution imposed upon it.[19] Furthermore, preliminary advice of Engineering Division to ACENG-AF indicated that technologist and trade apprentice recruiting targets for 1990 were unlikely to be met. This combined with the long-term inability to recruit sufficient radio adult trainees and periodic difficulties with electrical and mechanical adult trainees again led for a call to broaden the recruiting base. These sentiments were shared by the then Acting Deputy Chief of the Air Staff, Air Commodore F.D. Cox. Moreover, upon hearing of the RAAF's continuing inability to attract sufficient, suitable recruits Air Commodore Cox suggested that, 'If the Air Force is experiencing an inability to attract recruits at

---

16 BIT is the acronym for Built-In-Test. Performed on components with an integral self-analysis program.

17 The argument being that employment of fitter/technicians on mundane, non-challenging tasks decreases morale.

18 Review of Trade Structure and Training, Minute, TP1-AF to DTP-AF, 13 Jul 89, p 1, Department of Defence file AF/87/37299 Pt 1 (37), p 1, Department of Defence, Russell Offices.

19 ibid., p 1.

the requisite skill levels then I would appreciate ACENG-AF's comments on his perceptions of what the Air Force might do about it. Some action would seem long overdue.'[20]

It was with these building pressures in mind that DTP-AF staff submitted a proposal to CASAC in March 1989 suggesting the formation of a working party at the wing commander or group captain level, with representatives from DCAS, ACPERS and ACENG divisions. They proposed that the working party should further examine the options outlined in earlier papers and make recommendations on the methodology for changing the technical trade structure. With regard to the latter the working party would need to address:

a. the approximate time the avionics trade should be introduced and when the existing three musterings would become redundant;
b. the advantages to be gained from, and the shortcomings of, a modular approach to training, ie., training tradesmen to a basic level and then introducing modules appropriate for future employment;
c. the most efficient means of achieving modular training; and
d. the requirement for, and methodology of, introducing employment stream management.[21]

The working party would also be required to establish the percentage of para-professionals required for all aircraft trade musterings. The submission further called for the working party to prepare and staff a case for a greater number of pay levels which would be required under a modular training system through to and including para-professional tradespersons.

The review report also noted that this initiative, although developed in isolation, was in line with current industry award re-negotiations, known as 'Australia Reconstructed'.[22] The growing trend in comparable civilian industry was for fewer employment classifications and more career paths combined with progressive multi-skilling, tied to remuneration and the opportunity to progress to para-professional levels. It was hoped that the alignment with civilian trends would assist in civilian recognition and therefore help to attract and retain suitable recruits.

By mid-1989 the envisaged solutions to the original problems involving the avionic trades had greatly expanded to include such things as vertical skilling and employment aligned with training rather than trade. As a consequence, the proposal for a review of the trades was further expanded to include the mechanical trades of engine and airframe fitter as it could be seen that productivity improvement could be gained here also if such initiatives were applied. The formation of a working party to review both the avionic and mechanical trade structures was therefore proposed.

---

20 Recruiting Shortfall, Minute, A/DCAS to ACENG-AF, 24 Aug 89, p 1, Department of Defence file AF/87/37299 Pt 1 (42), Department of Defence, Russell Offices.

21 Proposed Review of Avionic Trade Structure and Training, ACENG-AF to CAS, Mar 89, p 3.

22 ibid., p 4.

After a lengthy consultation process involving the assistant chiefs and the deputy chief of staff, ACENG-AF proposed the formation of a working party to CAS on 29 August 1989. On 22 September CAS agreed and asked for the composition of the working party and its terms of reference to be submitted to him for approval. During the latter half of 1989 the composition of the working party and the terms of reference were developed and, again after further exhaustive consultation at the assistant chief and the deputy chief level, ACENG-AF submitted the composition of the working party and the terms of reference to CAS on 17 November.

The working party formed to inquire into the effectiveness of the technical trade structure met officially for the first time on 5 December 1989. Wing Commander L.C. Watts was appointed leader of the working party and ACENG-AF representative. The remaining members of the team comprised two wing comamnders and two squadron leaders, these representing: DCAS on all matters concerning productivity, organisation and establishment; ACPERS-AF on all matters concerning personnel management and graduation requirements; and the Air Officer Commanding Training Command (AOCTC) on all matters concerning training courses and management of training. The working party aimed to review the work practices of the existing workforce and make recommendations so that the trade structure could:

a. efficiently cope with the demands of the technology utilised within RAAF aircraft and technical support equipment,
b. provide for progressive adaptation as technology evolved so that productivity could be constantly optimised,
c. facilitate the maintenance of an adequate recruiting base, and
d. provide for a cost effective training system.[23]

The terms of reference agreed to by the CAS were:

a. to review current working practices against the existing defence technical instructions and existing trade training syllabuses; and to determine the extent to which the existing trades could be more flexibly employed and recommend changes to the instructions which would be necessary for this flexibility to be achieved;
b. determine and report on the impact of current technology on the appropriateness of the existing trade structure, with regard to the AFFITT, ASTFITT, ARMFITT, ELECFITT, ENGFITT, INSTFITT, RADTECHA and RADTECHG musterings, also taking into account the system technician trade group;
c. examine and report on the extent to which the civilian multi-skilling and vertical skilling concepts could be applied to the RAAF technical trade structure;
d. determine and report on the potential impact on the recruiting market of variations to entry standards;

---

23 Working Party Enquiring into the Effectiveness of the Technical Trade Structure, Minute, A/ACENG -AF to WGCDR L.C. Watts, 27 Nov 89, p.2, Department of Defence file AF/87/37299 Pt 1 (52), Department of Defence, Russell Offices.

e. recommend a trade structure and a range of skill levels that would meet the perceived needs of the RAAF for the next 20 years;
f. recommend changes necessary to the existing trade training practices for the efficient introduction of this trade structure so that maximum training cost/effectiveness would be achieved;
g. determine and report on any changes to terms of service and manpower/personnel management practices which would need to accompany this trade structure; and
h. present a draft implementation plan for this trade structure taking into account likely morale factors and achievable rates of change.[24]

In order to achieve all of the above it was agreed to conduct the review in two stages. The first stage would be a review of unit working practices and training syllabuses to determine how the trades could be employed more flexibly, in accordance with term of reference 'a'.[25] The remaining terms of reference would be treated as stage two and dealt with together because of their interdependence. There were two reasons given for this course of action, the first being to provide a background against which to assess subsequent trade structure requirements; and the second because it was envisaged that this would provide significant short-term benefits. Stage One was to be presented by 9 February 1990 and Stage Two by 1 June 1990.

The members of the WP unanimously concurred that a sound, objective data base for the review of the trade structure was required. It was noted that the OA information available consisted of a recent radio review, the avionic study from 1988, airframe and engine studies conducted in 1989 and instrument, electrical, armament and aircraft metal worker studies conducted between 1977 and 1981. The training command representative, however, argued that more up-to-date information was required. This suggestion was subsequently rejected as it was thought the time frame would not be sufficient.

Stage One

Stage One of the working party's review began in January 1990. Over the following month members of the working party visited all the major bases in order to observe and discuss with unit engineers, non-commissioned officers and tradespeople the status of the existing work practices employed by trades. The intention of this investigation was to identify process improvements. In order to derive the maximum benefit from the short periods spent on each base (one to three days) a questionnaire was compiled to assist unit personnel in preparing for discussion.

In addition to that consultation process the working party critically examined the instructions and procedures governing the work practices of the workforce with the aim of removing impediments to optimum productivity. It was as a result of these discussions, and the scrutiny of authorising documentation, that the following issues were identified and subsequently submitted to the CAS for consideration:

---

24 ibid., p 2.
25 ibid., p 3.

a. The extension of employment beyond the existing trade boundaries by amendment to the authorising publication, DI(AF)TECH 17/14.
b. The broader mechanical/avionics trade group approach to career progression and task allocation.
c. Employment of corporals as independent inspectors.[26]
d. LACs on Higher Duties Allowance to be employed as trade supervisors.
e. Reduction in the number of unit-authorised Critical Maintenance Operations.[27]
f. Adjustment of the mix between theory and practical training.
g. Review of trade testing arrangements.
h. Balance in utilisation and optimisation of SYSTECH and trade NCOs as fault diagnosticians.[28]

The report on technical work practices, Stage One of the TSRWP's project, indicated that a five per cent productivity improvement could be gained by the implementation of the recommended changes. Those recommendations were limited, however, to improvements to the existing trade structure. It was predicted that a further productivity gain of up to 20 per cent could be achieved progressively over the first five years after the introduction of a new trade structure. The actions proposed in the first stage of the report should therefore be seen as only the first step in that process.[29]

Employment Beyond Existing Trade Boundaries

On 30 April 1990 Air Force Temporary Instruction - Technical 2/90 (AFTI) was issued specifying alterations to the policy regarding employment of technical personnel beyond normal trade boundaries.[30] The AFTI was issued in order to even out the workload across the trades and obtain the optimum productivity from all technical personnel. It authorised the employment of technical personnel on tasks beyond normal trade boundaries where proficiency could be achieved through on-the-job-training (OJT). However, where a Field Training Flight (FTF) course was available it had to first be completed successfully and the proficiency on the task then authorised by an entry in the member's Record of Training and Employment (RTE) log before the task could be undertaken. Airframe fitters could now be employed on engine and aircraft structural tasks; armament fitters on airframe and electrical tasks;

---

26 An independent inspector is a tradesperson, appointed by a CO, who is authorised to perform inspections when prescribed in approved maintenance documentation or when a CMO is completed. For more information see Annex A to DI (AF) LOG 3-108, para 38.

27 A CMO is defined as a task which, regardless of trade proficiency and sound trade supervision, carries a significant risk that error would jeopardise safety. Annex A to DI (AF) LOG 3-108, para 1.

28 Action on Identified Issues, p 2 of Annex A to Minute, A/ACMAT-AF to CAS, 12 Apr 90, Department of Defence file AF/87/37299 Pt 1 (83), Department of Defence, Russell Offices.

29 The Trade Structure Review Working Party, 'Report on Technical Work Practices', 30 Mar 90, p 19, Department of Defence file AF/87/37299 Pt 1 (82), Department of Defence, Russell Offices.

30 For the purposes of the report 'normal trade boundaries' refers to officially sanctioned maintenance of aircraft/systems/components.

engine fitters on airframe tasks; and electrical, instrument and radio fitters on tasks across each others' normal trade boundaries.[31] The objective which had first been identified in the late 1970s had at last been achieved.

The authorisation to employ tradespeople across trade boundaries was in many cases only a legal authority to practice something which had always been the case, either officially or unofficially. There were already numerous examples of personnel from one mustering assisting those from others in times of high demand. Prior to the release of AFTI 2/90, the F/A-18 Technical Maintenance Plan (TMP) had 'avionic' annotations which indicated that the particular task could be completed by any suitably qualified electrical fitter, instrument fitter or radio technician; whilst the newly introduced Falcon 900 aircraft employed RAAF tradespeople along mechanical/avionic lines, more indicative of civilian Licensed Aircraft Maintenance Engineer (LAME) practices than those of the RAAF trade structure.

Supervision

Another major deficiency identified by the TSRWP during their base visits was the apparently inappropriately restrictive supervision regulations, particularly the exemption of corporals fulfilling the duties of an independent inspector. In order to address this issue another AFTI was released on 27 Jun 90, AFTI 3/90. This AFTI authorised the appointment of corporals as independent inspectors, conditional on their having at least two years experience on aircraft type and being assessed by the senior engineering officer as above average.[32]

Stage Two

After much circulation, consideration, consultation and some alteration, Stage Two of the trade structure review recommending the restructure of the aircraft technical trades was endorsed at a CASAC meeting on 11 October 1990. The agenda item contained some 23 pages outlining the working party's proposal.[33] It was concluded that the new trade structure must:

a. be broadly based to provide employment efficiency and flexibility,
b. contain sufficient skill levels to permit an efficient match of training with employment and to broaden the recruiting base,
c. provide an early career below SNCO level on each aircraft type,
d. create an opportunity to recruit straight to trade,
e. provide the greatest possible match with equivalent civilian trades, and
f. provide the shortest possible period of initial trade training.[34]

---

31 Air Force Temporary Instruction - Technical 2/90: Employment of Technical Personnel Beyond Presently Authorised Trade Boundaries, 30 Apr 90, p 2, Department of Defence file AF/87/37299 Pt 1 (84), Department of Defence, Russell Offices.

32 Air Force Temporary Instruction - Technical 3/90: Supervision and Inspection of Maintenance, 1990, p 2.

33 Trade Structure Review - Agendum Paper, Enclosure 1 to Minute, A/ACMAT-AF to CAS, 20 Sep 90, Department of Defence file AF/87/37299 Pt 1 (101), Department of Defence, Russell Offices.

34 ibid., p 2.

These changes, although appearing relatively minor, represented a radical departure from the existing methods of training, employment and management. In order to effectively coordinate the implementation stages a team representing the interested divisions was appointed under the overall control of a seven member high level steering committee. The team, subsequently known as the Technical Trades Restructure Team (TTRT), consisted of Wing Commander L.C. Watts as the team leader, a squadron leader education officer and a flight sergeant/warrant officer from each of the aircraft and avionic trades.[35]

35 Draft Project Directive for the Restructure of the Aircraft Trades, Annex C to Minute, A/ACMAT-AF to CAS, 20 Sep 90, p 3.

Chapter Three

The Revised Structure

In order to achieve the broad requirements agreed to by the CASAC a trade structure radically different from the past was proposed and approved. The new structure was implemented with effect 1 July 1992. The most fundamental alteration was the reduction from ten musterings (warrant officer engineer, aircraft systems technician, aircraft structural fitter, airframe fitter, engine fitter, avionic systems technician, electrical fitter, instrument fitter, armament fitter and radio technician) to three musterings as follows:

a. The 'aircraft' mustering which was formed by combining the aircraft systems technicians with the airframe and engine fitter musterings, plus part of the armament fitter mustering.
b. The 'avionic' mustering which was formed by combining the avionic systems technicians with the electrical and instrument fitters and radio technician musterings, plus the remaining armament fitter mustering.
c. The aircraft structural fitter mustering which was retained separately.[1]

Aircraft	Avionic	Structures
WOENG	AVSYSTECH	ASTFITT
ASYSTECH	ELECFITT	
AFFITT	INSTFITT	
ENGFITT	RADTECH	
ARMFITT (part)	ARMFITT (part)	

Table 3.1 The consolidation of the RAAF's aircraft technical trades

This structure, in addition to meeting the perceived needs of the RAAF, was in alignment with the trade structure adopted by the domestic airline industry in 1989.[2] The new system provided the greatest possible match with equivalent civilian trades, thus meeting one of the original aims of the restructure. This would facilitate the inclusion into RAAF training of the national aerospace curriculum (the emerging civilian standard for aircraft trade training), thereby ensuring full civilian recognition of the RAAF trades.[3]

---

1 Trade Structure Review - Agendum Paper, A/ACMAT-AF to CAS, 20 Sep 90, p 2.
2 Directorate of Technical Trade Structure, 'RAAF Technical Trade Structure Synopsis and Question/Answer Supplement', p 7, 1991.
3 ibid., p 7.

Armament

The TSRWP identified two major reasons to justify the absorption of the armament mustering into the Aircraft and Avionic trade groups. Firstly, armament fitters did not have an equivalent civilian trade and concern was held for the ability to recruit the numbers required when the industry wide trade structure of Aircraft, Avionic and Structures was adopted for the other aircraft trades.[4] The other reason provided for the absorption of the mustering was to overcome long-standing problems associated with weapons programs on units, particularly restrictions placed on weapons preparation and loading rates by armament manpower levels established against the overall, rather than peak, requirement.[5] A Technical Trade Restructure Team (TTRT) analysis of the armament fitter syllabus indicated that Aircraft and Avionic personnel could be given the necessary basic training in explosives and weapon handling in a course of 4.8 weeks duration. The team suggested then that it should be possible to train a relatively large percentage of the workforce to load weapons when necessary and be fully employed on other maintenance activities at other times.[6]

Training

The training philosophy adopted by the RAAF for the new trade structure was based on the integrated job performance training system. The system was implemented in 1992 and remains the current system for aircraft technical training. Students first acquire broad handskills ability (mechanic), then the operation and maintenance of complete systems (fitter) before ultimately gaining an understanding of the detailed operation and diagnostic maintenance of system components (technician and above).[7] Both the aircraft and avionic trades have five skill levels (SL) which align with these categories, ranging from mechanic (SL1) at the entry level through to fitter (SL2) and technician (SL3). Selected individuals are then required to undergo additional training in order to be employable as an advanced technician (SL4) or systems technician (SL5). Below the technician level, training and employment is across the full span of mustering responsibilities, while specialist streams are employed at technician level and beyond.[8]

Skill levels are shown at Table 3.2.

---

4 Technical Trade Restructure - Review of the Performance of Armament Related Duties, under cover of Minute, HTTRT-AF to DGLOG-AF, 2 Dec 94, p 2, Department of Defence file AF 91-13301 Pt 1 (36), Department of Defence, Russell Offices.

5 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure,* 1990, p 21.

6 Trade Structure Proposal - Consideration by CASAC, Minute, A/ACMAT-AF to CAS, 20 Sep 90, p 2, Department of Defence file AF/87/37299 Pt 1 (101), Department of Defence, Russell Offices.

7 DI(AF)AAP 2320.101-1, Trade Specification, Sect 2, Chap 2, Training Requirement, p 1, 1996.

8 Trade Structure Review - Agendum Paper, A/ACMAT-AF to CAS, 20 Sep 90, p 2.

Skill Level	Aircraft & Avionic
Skill Level 5	Systems technician
Skill Level 4	Advanced technician
Skill Level 3	Technician
Skill Level 2	Fitter
Skill Level 1	Mechanic

Table 3.2 Skill level system as employed by the RAAF, 1 is the lowest and 5 the highest

Additionally, training for all entrants is now divided into generic and application training. Generic training involves the basic trade skills which are mandatory for progression. It is delivered by RAAFSTT in the case of more basic training, and Technical Distance Learning Facilities (TDLF) situated at major bases for more advanced courses. (The exception to this is No. 1 Central Ammunition Depot which provides generic explosive ordnance training.) Application training is specific to an aircraft or equipment type. This is usually delivered by field training flights (FTF), but may be given by individual working areas or manufacturers.

There are two discrete avenues for entry into this trade structure; namely, the mechanic and technician streams.

Mechanic Entry

The mechanic entry stream enables the RAAF to alleviate its periodic recruitment shortfalls by accepting applicants who demonstrate a suitable aptitude for aircraft trade employment but who do not meet the technician stream educational standards in mathematics and science. Personnel entering via this stream complete the required Recruit Training Unit (RTU) course, where they acquire the requisite general service knowledge. They are then posted to RAAF Wagga where in 20 weeks they gain handskill, technical administration and aircraft handling skills before graduating as a Skill Level One mechanic. Upon graduation, the mechanics are posted to a unit for consolidation of training and receive some application specific training on the aircraft type on which they are to be employed. They are required at this early stage to overcome any educational short-comings through a bridging course, and to complete a minimum of six months work experience before commencing fitter training which consists of approximately 18 weeks of self-paced learning at the Technical Distance Learning Facility (TDLF) on base. Following the remuster to fitter, Skill Level Two, they are required to complete a further 12 months work experience before being transferred to the technician stream. Those who are unable to gain selection for transfer are discharged at the completion of their engagement. The initial enlistment period for these members is three years without guarantee of advancement to technician. However, provided milestones are achieved, advancement is the norm via a second engagement of three years.

Technician Entry

The only other avenue for entry into the aircraft technical workforce is via the technician stream, which is similar to the course duration and entry requirements of the schemes it replaced. Technicians are required to have a higher educational

standard than their mechanic counterparts, with passes in english, maths and science (physics) at Year Ten level, but the aptitude levels are substantially the same. Members entering this stream complete a 42 week combined mechanic/fitter course at RAAFSTT before being posted to the field as an LAC/LACW Skill Level Two fitter. Once at a unit they are required to complete 12 months work experience before beginning conversion training to technician, which takes approximately 12 months part-time. As with the mechanic stream, progression is conditional on meeting training and career progression milestones. The technician entry stream allows for a faster progression for qualified applicants; thus, the level of priority placed on recruitment into one of these streams over the other can be used as a tool to control the population of the aircraft technical workforce. In 1995 the technician entry stream was suspended indefinitely due to its comparative undesirability compared to mechanic entry system. The reasons for this are mentioned in greater detail in Chapter Seven.

Initially, progression as a technician is as an LAC/LACW, with eligibility for promotion to corporal after one year. This, however, is conditional on satisfying various qualifying aspects. The concept of 'on-time-promotion' is one of the most inflammatory aspects of the technical trade system and as a result is treated as a separate issue in Chapter Seven.

Technician Progression Options

At the technician level and beyond there are a number of career options available. They are however competitive and in accordance with the requirements of the RAAF.

Through Promotion

The technician may wish to remain a technician and progress through the ranks to warrant officer. Employment can be over a large range of operational and deeper level aircraft maintenance tasks. The majority of the aircraft technical workforce consists of technicians and this is the path the greater percentage of trainees are expected to take.

Technician Grade Two

Corporal technicians can apply for employment as a Self-supervising Technician[9] (SST), Technician Grade 2. Employment for self-supervising technicians is almost entirely on aircraft, as opposed to workshop maintenance activities. This issue is dealt with in greater depth in Chapter Seven.

Advanced Technician

This avenue is reserved for leading aircraftmen and corporals who have completed the first semester of the advanced certificate by distance learning in their own time and have at least 12 months work experience. If successful in competition for an

---

[9] A self-supervising technician is a member who has been authorised to perform, and be the single signatory for, a maintenance task. This is in contrast to standard RAAF maintenance activities where one member performs the task and signs for their work and has the maintenance counter-signed by a trade supervisor.

advanced avionic technician (ADAVTECH) appointment the individual will complete the advanced certificate before being employed. Employment in the case of ADAVTECH is generally in off-aircraft deeper maintenance activities and workshop environments. Advanced aircraft technician (ADATECH) employment was suspended early in the implementation process when units advised that they had no requirement or justification for such positions.

Alternatively, eligible members may apply for employment in the field of Non-Destructive Inspection (NDI).[10] Employment in this mustering is open to both aircraft and avionic personnel. They may be required to complete tasks on aircraft or perform workshop component inspection. Once employed as a non-destructive inspector the member may remain in this stream with eventual promotion through to warrant officer.

Systems Technician

Corporal technicians are eligible for training leading to remuster to systems technician after they have two years of technician experience. There are a number of methods for progression to systems technician; however, in each case the completion of an associate diploma and the system technician course is required. SYSTECHs may be employed in a supervisory role normally associated with the rank of sergeant but may also be employed as part of a work team or in digital posts applying trade and/or engineering skills.[11]

Above Sergeant

Aircraft technical personnel above the rank of sergeant - that is, flight sergeants (FSGTs) and warrant officers (WOFFs) - are rarely employed in hands on aircraft maintenance, rather they are typically seen as technical administrators. In recognition of this fact they are not identified by skill level. However, in the few cases where a position requires specialist skills, they are annotated as such, ensuring that only members with the requisite knowledge are employed in these posts.

Figure 3.1 provides a diagrammatical representation of the aircraft trade career and training progression as at 1996.[12] Table 3.3 shows the general relationship between rank, skill levels and trade duties.[13]

---

10 Non-Destructive Inspection is performed on aircraft and aircraft components in order to ensure their integrity. The inspections are done without adverse effect on materials.

11 DI(AF)AAP 2320.101-1, *Trade Specification Aircraft Engineering Trade Group*, Sect 6, Chap 1, 'The Trade Structure for Aircraft and Avionic', para 130.

12 Directorate of Technical Trade Structure, 'RAAF Technical Trade Structure Synopsis and Question/Answer Supplement, Annex A.

13 DI(AF)AAP 2320.101-1, Sect 2, Chap 3, Table 1, 'Career Progression of Aircraft Tradespeople'.

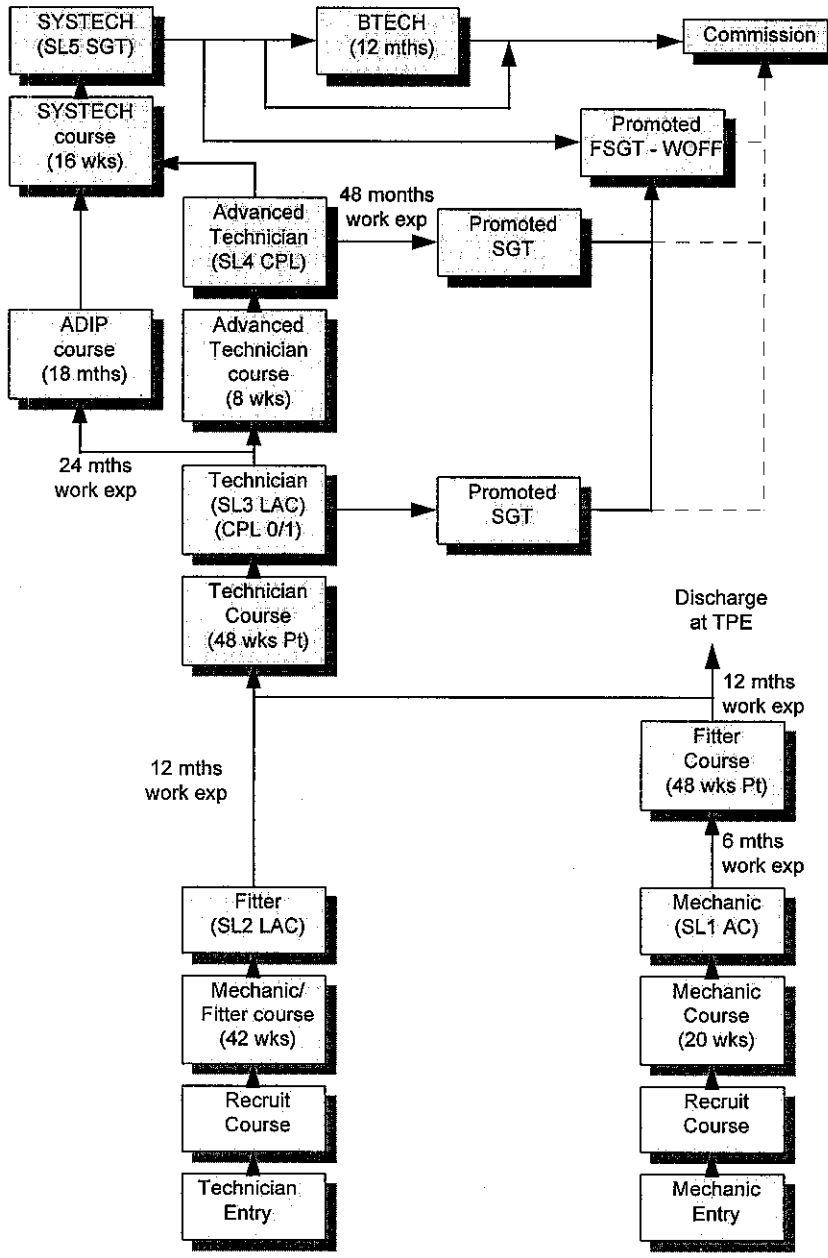

Figure 3.1 Avionic and Aircraft musterings career path (1990)[14]

[14] The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure*, 1990, Appendix 1 to Annex H.

Rank	Skill Level	Duties
AC	MECH	Tradesperson duties - range of duties restricted to handskills related tasks, aircraft handling and technical administration
LAC	FITT1	Tradesperson duties - range of duties restricted to scheduled maintenance and mechanic tasks
LAC	FITT2	Tradesperson duties - range of duties expanded beyond those of fitter grade 1 if technician training completed
LAC	TECH1	Tradesperson duties - range of duties dictated by employment streaming
CPL	TECH1	Tradesperson duties, trades supervision and independent inspection (selective)
CPL	TECH2	Tradesperson duties, trade supervision, self-supervision and independent inspection (primarily on-aircraft)
CPL	ADTECH	Advanced technician duties, trade supervision and independent inspection (selective)
SGT	TECH1	Tradesperson duties, trades supervision, independent inspection and work allocation/shift supervision
SGT	TECH2	Tradesperson duties, trade supervision, self-supervision, independent inspection and work allocation/shift supervision
SGT	ADTECH	Advanced technician duties, trade supervision, independent inspection and work allocation/shift supervision
SGT	SYSTECH	Para-professional duties, trade supervision, independent inspection and work allocation/shift supervision
FSGT	TECH/ADTECH/ SYSTECH	Technical management (other trade duties subject to annotation)
WOFF	TECH/ADTECH/ SYSTECH	Technical management (other trade duties subject to annotation)

Table 3.3 **The relationship between rank, skill levels and trade duties since the inception of the technical trade restructure**

Weapon Systems Employment

In the early 1980s aircraft specific maintenance and fault diagnosis knowledge had fallen to critically low levels.[15] The TSRWP's appraisal of the issue led them to conclude that experience levels could be improved greatly by the retention of personnel in units for longer periods of time. This eventually led to the introduction of the weapon system posting concept.

[15] Review of Trade Structure and Training, Minute, TP1-AF to DTP-AF, 13 Jul 89, p 1.

The RAAF's assets are divided into four weapons systems (WS), being the strike/reconnaissance, fighter, airlift and maritime weapons systems. The career of aircraft maintenance personnel within these weapons systems is coordinate by Weapon System Employment Streamers (WSES). Weapon system employment streamers are employed by the Directorate of Personnel - Airmen (located in Canberra) and are physically situated at the bases with the highest concentration of personnel within their weapon system. This relative proximity provides them with ready access to the training institutions and the bulk of the population within their weapon system, thereby enabling ready contact with most of the individuals they coordinate. However, the weapon system employment streamers are also often responsible for individuals at a number of bases, employed on a variety of aircraft types and for the members of their weapon system employed in non-weapon system posts such as training and logistics. This is particularly the case for the fighter and airlift systems where the members are distributed across the entire country, as indicated at Table 3.4.

Weapon System	Aircraft	Locations of WSES	Locations of Responsibility
Strike/ Recon	F111	Amberley	Amberley
Fighter	F/A 18, Macchi and PC9	Williamtown	Williamtown, Tindal, Edinburgh, Pearce, East Sale
Transport	Hercules, Boeing 707, Caribou, C-47, HS748, Falcon 900	Richmond	Richmond, Amberley, Townsville, Darwin, Pearce, East Sale, Fairbairn
Maritime	P3C Orion	Edinburgh	Edinburgh, Richmond

Table 3.4 Distribution and responsibilities of the Weapon System Employment Streamers

Conversion: From Old to New

So a completely revised training and employment plan was established for recruits entering the RAAF. But what of the thousands of tradespeople employed in the existing workforce? During 1992 all personnel up to and including sergeants (except SYSTECHs) were converted to the new structure by completing a 100 hour conversion training course.[16] The course consisted of a mixture of general theory topics contributing to multi-skilling. This conversion was never intended to fully cross-train personnel instead being designed to provide a base-line of multi-skilling equivalent to civilian conversion course training.[17]

Non-Technical Trade Restructure

When approving the restructure of the aircraft technical trades CAS directed that the structure of the non-aircraft technical trades should be reviewed likewise and subsequently this also became the responsibility of the technical trade review team.

---

16 Directorate of Technical Trade Restructure, *RAAF Technical Trade Structure Synopsis and Question/Answer Supplement*, 1991, p 18.

17 ibid., p 18.

Their report on the proposed alterations to the aircraft support engineering, ground support engineering and communication electronic engineering trades groups was submitted on 21 August 1991.[18] A proposal was presented as a CASAC agenda item during late 1991 for approval of the following recommendations:

1. Civilianisation of
   - Draftsman Engineering (DMANENG)
   - Motor Body Builder (MBB)
   - Motor Trimmer (MTRIM)
   - Wood Machinist (WOODMACH)
   - Surface Finisher (SURFIN)
   - Metal Machinist (METMACH)
   - Electroplater (ELPTR)
2. Welder General (WLDRGEN) be made redundant;
3. Aircraft Structures mustering be broadened to include duties of Aircraft Welders (WLDACFT) and heat treatment skills of Blacksmiths (BSMITH);
4. General Fitter (GENFITT) and Motor Transport Fitter (MTFITT) musterings be combined;
5. Communications Electronic Systems technician (CESYSTECH), Telecommunications Rigger (TELSRIG) and Radio Technician Ground (RADTECHG) to form a communications mustering;
6. Aircraft Life Support Fitter (ALSFITT) be multi-skilled with two skill levels; and
7. be overseen by Trade Restructure Steering Group and carried out by Technical Trade Restructure Team. [19]

The Working Party concluded that, similar to the aircraft engineering trades, significant inefficiencies existed within the trade structure at the time. By disbanding some musterings and amalgamating others, savings in the order of 10 to 15 per cent, amounting to around 930 positions, would be possible. As with the aircraft engineering trades report, the figures quoted could not be substantiated; however, the project executive accepted the report and the existing workforce was transferred with effect 1 July 1993. In the case of these ground trades, heavy reliance was placed on some musterings being civilianised, eg., METMACH, ELPLTR, SURFIN and a significant portion of the GSE trade. As this foreseen civilianisation has not occurred to date, the estimated number of savings has not been realised.[20]

---

18 Report on the Structure of the Non-Aircraft Support Engineering Trades, Minute, DGLOG-AF to DCAS, 21 Aug 91, p 2, Department of Defence file AF/87/37299 Pt 1 (106), Department of Defence, Russell Offices.

19 Aircraft Support Engineering, Communications Electronic and Ground Support Engineering Trades Structure Review - Agendum Paper, Enclosure 1 to Minute, A/ACMAT-AF to CAS, 25 Oct 91, p 3, Department of Defence file AF/87/37299 Pt 1 (115), Department of Defence, Russell Offices.

20 HTTRT, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 2.

Chapter Four

Recruiting

Recruiting Shortfalls

During the late 1980s there were indications that the experience level in the aircraft technical workforce had fallen dangerously low. This, it was observed, could be largely attributed to a combination of relatively high separation rates and difficulty replacing those departing. Air Force recruiting figures for 1987/88 indicated that a recruiting achievement of only 77 per cent of target for engineering adult trainees and 74 per cent of target for radio adult trainee target was achieved.[1] Furthermore, preliminary investigations by ACENG-AF staff indicated that technologist and trade apprentice recruiting targets for 1990 were also unlikely to be met.[2]

In August 1989 the then ACENG-AF, Air Vice-Marshal B.J. Graf, supported the concern expressed by DCAS that more had to be done to remedy the current and foreseen recruiting shortfalls across the aircraft technical trades. In an attempt to alleviate the situation, ACENG-AF requested the Trade Structure Review Working Party (TSRWP) to provide him with recommendations to change the trade structure in order to facilitate an adequate recruiting base.[3]

Deficiencies

The TSRWP, as a result of their inquiries, identified several concerns which may have been affecting the RAAF's ability to attract suitable applicants. They suggested that in order to attract potential recruits the RAAF needed to:

- recruit direct to trade,[4]
- move trainees to adult rates of pay sooner,
- provide the shortest possible period of initial training,
- broaden the recruiting base,
- provide training on in-service (as opposed to obsolete) aircraft,
- give entrants more influence over their career paths, and
- provide civilian aligned training.

---

1 Figures supplied by Department of Air Force Recruiting, 6 Apr 97.

2 Recruiting Shortfalls, Minute, ACENG-AF to DCAS, 30 Aug 89, p 1, Department of Defence file AF/87/37299 Pt 1 (43), Department of Defence, Russell Offices.

3 Working Party Inquiring into the Effectiveness of the Technical Trade Structure, A/ACENG - AF to Watts, 27 Nov 89, p 2.

4 HTTRT-AF, *Brief to the Engineer's Conference on the Closure of the TTR Cell*, May 1996, p 18.

Consequently, by the time the restructuring of the technical trades was approved by CASAC, some of the major initiatives concerned recruiting. In fact, three of the major aims of the trade restructure were that the new trade structure must:

- contain sufficient skills to broaden its recruiting base,
- create an opportunity to recruit straight to trade, and
- provide the greatest possible match with equivalent civilian trades.[5]

Recruitment Direct to Trade

The Technical Trade Restructure Team identified early in their investigation that the existing system of trade selection was inadequate. They observed that applicants were enlisted directly into an entry scheme (adult trainee, engineering apprentice or technologist apprentice) and, once their period of initial training was completed, applied for the trade of their choice. However, they were selected in competition with their fellow trainees based on academic performance and in accordance with service requirements. It was often the case, therefore, that if a student was uncompetitive, or if the RAAF had no requirement for additions to a specific trade at that time, he would find himself training for employment in a trade he had never envisaged. The Technical Trade Restructure Team felt this approach to trade selection was detrimental to the RAAF's ability to recruit suitable applicants. Consequently, the establishment of a system whereby applicants could be recruited direct to a trade became one of the primary aims of the technical trade restructure.

Entrants are now recruited via either the mechanic or technician scheme directly to their chosen trade: aircraft, avionic or structures. Upon completion of mechanic and fitter training they are offered a selection of technician streams, subject to service requirements. This system overcomes another of the perceived deficiencies of the extant system by giving members a greater influence over their career through multi-skilling and vertical articulation.[6]

Initial Training

The provision of a short period of initial training, fast progression to adult rates of pay and training on in-service aircraft have all been achieved by reducing the period of initial trade training to 20 weeks. Trainees can now be posted to active units where they continue their theory training at Technical Distance Learning Facilities (TDLFs) and undergo on-the-job training on in-service aircraft.

Broadening the Base

Prior to the technical trade restructure there were large numbers of potential recruits who had a suitable aptitude for technical employment but were considered unsuitable for entry into the aircraft technical workforce because of educational deficiencies,

---

5 Trade Structure Review - Agendum Paper, Enclosure 1 to Minute, A/ACMAT-AF to CAS, 20 Sep 90, p 2.

6 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996.

which often related to poor subject choice at secondary school.[7] The mechanic entry scheme enables such people to be enlisted and trained in handskills and lower skilled tasks whilst receiving assistance to overcome their educational short-comings. The Technical Trade Restructure Team also provided an entry stream which is attractive to more highly educated and capable applicants: the technician scheme. The technician scheme has however been suspended indefinitely due to its perceived undesirability compared with the mechanic scheme. This issue is covered in greater detail in Chapter Six.

Civilian Aligned Training

The aforementioned changes, although major, caused barely a ripple compared to the change the Technical Trade Restructure Team felt the aircraft technical workforce most needed if it was going to be competitive in attracting suitable applicants, namely, civilian trade equivalence.

The RAAF has long recognised that the provision of civilian accredited training assists in attracting applicants to its workforce and thus has sought to provide such training since its inception. This fact was acknowledged as early as December 1920 in the submission to the Air Board and Air Council regarding the formation of the Royal Australian Air Force, which states: 'It is proposed that as the force develops, a percentage of boys under 18 years of age may be enlisted and trained in various trades, provided that arrangements can be made for the recognition of such training out-side the service.'[8]

Prior to the restructuring of the technical trades, adult trainees and engineering apprentices were, on request, issued with a civilian aerospace qualification under the Tradesman's Rights Regulation Act 1946. This qualification, although adequate for many years, was becoming increasingly unacceptable to the civilian aerospace industry, thereby having a negative effect on the RAAF's ability to attract suitable recruits. As ACENG-AF noted: 'Our freedom of action [to restructure the aircraft technical workforce] is limited by the need to maintain civil trade recognition which is an essential element of the recruiting package.'[9]

ACENG-AF pointed out that there were initiatives being considered by his staff with the potential to impact on recruiting figures, one of which involved an attempt by Directorate of Technical Planning - Air Force staff to form an Aerospace Skills Foundation under the auspices of the Department of Employment, Education and Training (DEET).[10] The foundation, it was hoped, would benefit the RAAF by leading to uniform trade training standards and curricula across the entire industry, thereby enhancing RAAF trade recognition. The National Aeroskills Project is a tri-partite industry body formed to rationalise training across the entire Australian

---

7 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure,* 1990, p 43.

8 Williams,R., *These Are Facts: the autobiography of Air Marhsal Sir Richard Williams, KBE, CB, DSO,* Australian War Memorial, Canberra, 1977, p 389.

9 Recruiting Shortfalls, Minute, ACENG-AF to DCAS, 30 Aug 89, p 2.

10 Later known as the National Aeroskills Project (NASP).

Aerospace Industry. The ADF was initially represented by HTTRT and later by the sponsor for the technical trades. The project is recognised by the Australian National Training Authority (ANTA) as the Competency Standards Body for the industry. As a result of the RAAF's membership of the National Aeroskills Project (NASP), students at Wagga were granted accredited training to the draft National Aerospace Curriculum (NAC) from 1991. The National Aerospace Curriculum was designed by the National Aeroskills Project with significant input from the RAAF for the aircraft, avionic and aircraft structures trades. However, this draft curriculum did not incorporate competency standards as is the requirement for the recognition of civil trade qualifications and was therefore not accepted by industry.[11]

In January 1995 the civil aerospace industry introduced a nationally agreed National Aeroskills Project training structure. This encompassed the National Aeroskills Curriculum as the off-the-job training component and National Aerospace Competency Standards (NACS) as the on-the-job component. Both elements must be completed to achieve trade recognition within the Australian aerospace industry. Personnel trained under the draft National Aeroskills Curriculum will not receive any form of directly transferable civil recognition for their service training.

However, with the inclusion of the nationally agreed NAC95 in 1997, RAAF members will be eligible for the nationally accredited Certificate of Engineering (Aircraft Mechanical - Maintenance, Aircraft Avionics - Maintenance, or Aircraft Structures - Maintenance) in recognition of the off-the-job training component. In short, the RAAF has offered from the beginning of 1997 the nationally accepted and delivered aerospace curriculum leading to accredited training as civilian Aircraft Maintenance Engineer (AME), but it will not deliver fully recognised training until such time as it agrees to provide workplace competency assessment.

Competency Assessment

The competency assessment system is a Federal government initiative to achieve a more flexible and efficient workforce. Competency assessments are the on-the-job component of training validation and are now the national standard form of assessment. Competency Based Training (CBT), of which competency assessments are a vital component, is based on the premise that an individual can be considered competent at a given task only if he or she has been assessed as having successfully completed the task. The system is designed to ensure that trainees are able to do the task for which they have been trained and that they are assessed as competent by an approved assessor observing completion of the task. The assessor completes a formal log entry to record the trainee's competence. With competency based training there are no degrees of competence; either you can physically do the job or you cannot. Competency based training focuses on what is expected of the employee in the workplace rather than in the learning environment.

---

[11] Introduction of a Competency Assessment System for the RAAF Aircraft, Avionic and Aircraft Structures Trades, Minute, DGLOG-AF to DCAS, 27 Nov 89, p 1, Department of Defence file AF94-29066 Pt 5 (12), Department of Defence, Russell Offices.

Influence of CBT on the RAAF

The RAAF has long had a form of competency assessment in the RAAF Record of Training and Employment (RTE) but it is subjective in nature and not standardised to any format. Moreover, there are no written guidelines on the assessment required or on the details which need to be recorded. Consequently the system is not auditable and would not stand up to scrutiny under AS 9000.[12]

There have been several attempts by the Technical Trade Restructure Team to fulfil its commitment to provide trade recognition by the establishment of a competency assessment system. A report released at the time of the NAC95 changeover by HTTRT suggested that competency assessment should be conducted by full-time assessors, which would have necessitated an establishment increase of approximately 50 personnel. From a resource perspective this approach was considered unfeasible and the proposal was subsequently rejected.[13]

A second attempt was made in March 1996 before the disbandment of the Technical Trade Restructure Team. This system proposed that approximately 460 personnel be appointed with Workplace Assessment as a secondary duty. These personnel would be required to register as assessors with the National Aerospace Assessment Committee (NAAC). The rank of sergeant was considered to be the most appropriate as generally sergeants are more experienced in diverse areas while remaining in contact with the working environment. Additionally, it was suggested that four full-time and five part-time base coordinators would be required to coordinate assessments at bases.

With this system each trainee would be responsible for his own development, including obtaining the necessary experience and having it documented. Once the individual had gained sufficient experience he/she would apply to the applicable competency assessor or base assessment coordinator for approval to undergo assessment. The trade supervisor would have no part in the assessment process except to assist the trainee in gathering sufficient experience and validation of his work experience history log. To carry out an assessment the assessor would first ensure that the trainee had enough experience at the task and identify the evidence required for the assessment. The assessor observes the member completing the task. If it is carried out to the assessor's satisfaction he/she completes the assessment report form and forwards it to the trainee and base National Aeroskills Project coordinator. Following confirmation the assessor signs off the trainee's journal and his own record of assessment completed. The base National Aeroskills Project coordinator would collate all on-base assessments and advise the trade sponsor monthly. The trade sponsor would collate all returns from bases and advise the National Aeroskills Project of progress monthly.[14]

---

12 Concept Paper on the Introduction of a Competency Assessment System for the Aircraft, Avionic and Aircraft Structures Trades, 13 Mar 96, p 3, Department of Defence file AF 94-29066 Pt 5 (11), Department of Defence, Russell Offices.

13 Introduction of a Competency Assessment System for the RAAF Aircraft, Avionics and Aircraft Structures Trades, DGLOG-AF to DCAS, 21 Mar 96, p 1.

14 ibid., p 10.

This proposal for competency assessment was also rejected. However, a third proposal is currently in progress and the authors of this proposal are confident it will be accepted. It is expected that some form of competency assessment system will be established for the RAAF's aircraft technical workforce by the year 2000.

Competence

Whilst the concept of workplace assessment is a good one, in practical terms it has its limitations, primarily with respect to the assumption that there are only two states of skills attribution: competent or incompetent.

The concept of competency assessment was first employed to assess whether mass-production line staff were capable of completing physical tasks. Assessment was conducted in a stable and predicable environment, where inputs were constant, the skills predominantly physical and outcomes easily measured. The assumption was that if employees were able to complete the task successfully once, then they would be capable of successfully completing the same task many hundreds of times in future, under the same conditions. Aircraft operational level maintenance, on the other hand, is often quite the opposite: inputs are not constant; the environment is not stable or predictable; and the outcomes are often immeasurable. Also, in addition to physical skills, aircraft maintenance personnel require cognitive skills up to and including the higher order skills of evaluation, analysis and synthesis - skills which are almost impossible to assess objectively.

The problem exists that before any Australian industry can have its training nationally accredited it must conform to the Australian National Training Authority (ANTA) endorsed standard, which is currently competency based. So, the RAAF is left in a difficult situation: whilst it must go through the paces with competency based workplace assessment it is clearly not appropriate for our needs. Ideally, the RAAF needs a workplace assessment system which is within the Australian National Training Authority guidelines, thereby allowing for accredited training and at the same time providing an assessment system which is actually a true reflection of the exploitable skills of its workforce.

Perhaps then an alternative, which may remove some of the subjectivity in assessment and which will more accurately reflect the true nature of aircraft maintenance, is to assess the tradesperson's level of competence. The RAAF manual of training policy and procedures provides four levels of skill acquisition, as per Table 4.1.[15]

---

15 DI (AF) AAP 2002.001, Annex D to Chap 4.

Level	Level of Performance	Supervision Requirement	The Graduate Can :
1	Expert	Minimum	perform task quickly; tell others how to do the task; cope with difficult & unusual problems; apply skill and associated knowledge to new situations.
2	Skilled	Normal	cope with common problems; apply skill & associated knowledge to new situations with moderate confidence only.
3	Trained	Close	perform the task (actual or simulated); demonstrate awareness of common problems; apply skill & associated knowledge to new situations with limited confidence. (The graduate has performed the task at least once in training.)
4	Prepared	Constant	perform some of the component skills; describe the task. (The graduate has not performed the complete task during training.)

Table 4.1 Course terminal objective proficiency levels

Course Terminal Objective (CTO) proficiency levels are used to identify to the trainer the level of proficiency expected by a student in order to successfully complete a phase of training. As shown in Table 4.1, the proficiency attainment levels range from level four, the lowest, to level one, the highest. The application of a method such as this for recording on-the-job task experience, because of its closer proximity to actually practice, would prove to be a more useable management tool for staff/task selection and would also be less prone to subjectivity.

This system is only useful in that it records the number of times the member has successfully completed a given task; however, if used in conjunction with a competency log, the level of both accuracy and usefulness would be multiplied. It would be particularly useful, for example, when choosing personnel to conduct away-base maintenance, such as aircraft rescue. Any person having access to the squadron member's competence levels could choose the appropriate combination of skilled personnel to meet specific requirements.

This system would be more difficult to administer than the standard competent/not competent model and it may have to be carefully worded in order to maintain accreditation. It would seem, though, that the benefits of the outcome could justify the extra effort involved. The RAAF would be leading the way in developing a competency assessment system which would be a useful on-going management tool, rather than the training liability the proposed system is likely to eventually become.

The Outcome of Restructuring

HTTRT, in the final report on the technical trade restructure project, claims that the recruiting outcomes of the project were achieved. While it is true that recruiting target achievement rates rose from 75.5 per cent in 1987/88 to 99.5 per cent in 1993/94,[16] it is questionable whether the Technical Trade Restructure Team can take full credit for the improvement. The Technical Trade Restructure Team project was one of a number of large projects running over the same period, each with the ability to affect manning figures.

Year	Category	Targets	Achievements	Percentage
87/88	CAT 1	216	161	74
	CAT 2	516	397	77
	Total	**732**	**558**	**75.5**
88/89	CAT 1	198	156	79
	CAT 2	415	314	76
	Total	**613**	**470**	**77.5**
89/90	CAT 1	216	162	75
	CAT 2	355	288	81
	Total	**571**	**440**	**78**
90/91	CAT 1	252	247	98
	CAT 2	268	263	98
	Total	**520**	**510**	**98**
91/92	AMECH	138	138	100
	AVMECH	116	116	100
	RADTECHG	165	159	96
	Total	**419**	**413**	**98.6**
92/93	AMECH	36	36	100
	AVMECH	64	64	100
	ATECH	9	9	100
	AVTECH	34	34	100
	Total	**143**	**143**	**100**
93/94	AMECH	32	32	100
	AVMECH	18	18	100
	AFITT	45	45	100
	AVFITT	44	43	98
	Total	**139**	**138**	**99.5**
95/96	**Total**			**98.9**

Table 4.2 Technical Targets/Achievements (1988 - 1996)[17]

16 HTTRT-AF, *Brief to the Engineer's Conference on the Closure of the TTR Cell*, p 18.

17 1988-1994 Figures supplied by Department of Air Force Recruiting, 6 Apr 97.
1995/96 figure obtained from, *Final Report of the Technical Trade Restructure Implementation Project*, p 18, under covering Minute HTTRT-AF to DGLOG-AF, 22 May 96, Department of Defence file AF 94-23202 Pt 1 (17), Department of Defence, Russell Offices.

Projects such as Members Required in Uniform (MRU), Commercial Support Program (CSP) and Force Structure Review (FSR) had a combined effect of significantly reducing the total number of personnel required by the workforce. In addition, the economic downturn in the Australian job market at the time of project implementation led to an increase in suitable applicants along with a corresponding decrease in members of the aircraft technical workforce applying for discharge. It is difficult, therefore, to attribute the easing of the recruiting shortfall problem to any one factor. In fact, if anything, it appears that technical trade restructure's recruiting initiatives had little effect on recruiting achievement rates, as Table 4.2 indicates.

As indicated in Table 4.2, the recruiting target numbers for aircraft technical personnel have been steadily falling for the past ten years while the percentage of target achievement has increased continually. When this is coupled with the national employment trend, the decreasing size of the workforce as a result of rationalisation and the RAAF's aircraft technical workforce wastage rates being well below the long term average (Table 4.3), it seems very unlikely that the increase in recruitment target achievements from 75.5 per cent to 99.5 per cent can be solely attributable to technical trade restructuring.

	1989 / 90			1994 / 95		
Mustering	**Strength**	**Separation**	**%**	**Strength**	**Separation**	**%**
Aircraft	2245	271	12	2030	85	4
Avionic	3263	346	10	2710	144	5

Table 4.3 Average Aircraft Mustering Separation Rates[18]

Army/Navy Recruiting

Army and Navy are currently unable to meet recruiting targets for their Aircraft and Avionic musterings by a large margin. By way of comparison, the achievement rate for RAAF Aircraft/Avionic musterings for the period Jul 95/Apr 96 was 98.9 per cent, while for the same period the Army achieved only 30 per cent of target and the Navy 78 per cent. Although the training for Army and Navy is similar, Navy offers accredited training whereas Army does not, and this may account for the difference between these two. The difference between the RAAF's achievement rate and others is less easily understood, so more research in this area might net some useful findings.

Workforce Opinion

As stated earlier in this chapter the RAAF has long recognised the link between the provision of civilian trade recognition and its ability to attract suitable recruits. This point has been iterated many times since the RAAF's inception up to and including the technical trade restructure. Interestingly, 48 per cent of respondents to a 1996 survey of the RAAF's aircraft technical workforce said they had not been made aware before joining the RAAF of its offer to provide civilian accredited trade training.

[18] Figures supplied by DWPC staff, 14 Apr 97.

This figure is consistent across all Force Element Groups (FEGs)[19] and is independent of time in service, indicating that each separate sample group experienced the same likelihood of being informed, regardless of when or where they enlisted. Figure 4.1 displays the percentage of members being informed against the length of time in service in months..

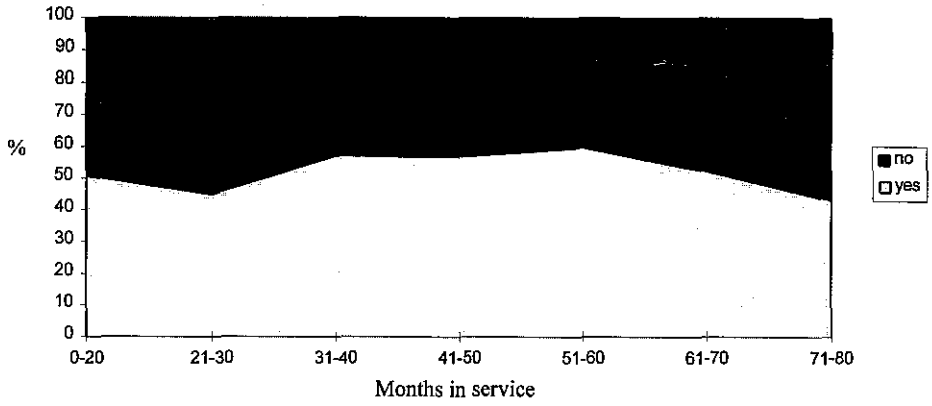

Figure 4.1 **The percentage of members informed of civilian trade alignment against their time in service in months.**

Further to this line of inquiry, members were asked whether or not being informed about civilian trade alignment would have made a difference. Of those respondents who answered 'yes' to the earlier question, 78 per cent said that it did make a difference. Of those who answered 'no' approximately half said it would have made a difference. It could be argued therefore that there may well be another group of people, highly suited to employment as aircraft technical personnel, who were not surveyed due to their decision not to join the RAAF - a decision taken because they were unaware of the offer to provide civilian accredited training (see Figure 4.2). As only 50 per cent of the most recent respondents indicated that they were informed of the offer and members, whether they were informed or not, say that it does makes a difference, it appears there is room for improvement when it comes to ensuring that potential recruits are informed.

[19] Except MPG whose results were considered unreliable due to the disappointingly low survey return rate.

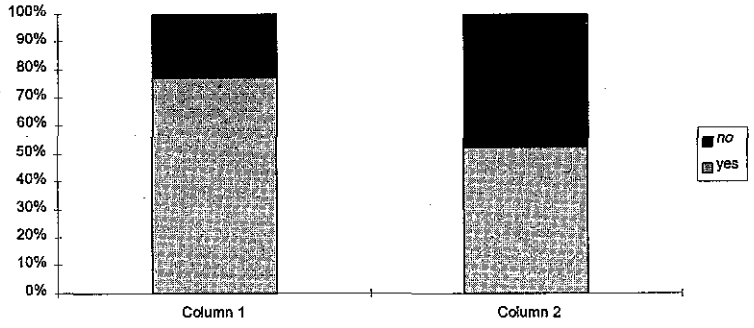

Figure 4.2 **Asked if civilian trade alignment made a difference to enlisting. Column one represents members who were aware of the offer. Column two represents members who were not.**

Regardless of whether or not the technical trade restructure influenced changes to the recruiting figures, it is obvious from the survey that the issue of civilian accredited training is very important to members now employed in the workforce. In fact, 87 per cent of respondents trained under the post TTR training system either agree or strongly agree that it is important that RAAF technical training provides the greatest possible match with civilian trades and training, as indicated in Figure 4.3 below.

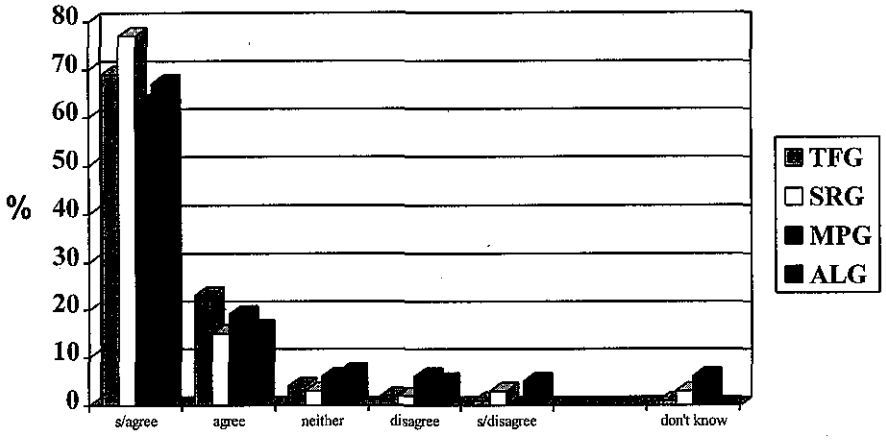

Figure 4.3 **It is important that RAAF technical training provides the greatest possible match with equivalent civilian trades and training.**

Lateral Recruitment

The attraction of suitable recruits was not the only benefit of alignment of RAAF aircraft technical training to the national aerospace training standard. It also gave the RAAF the option of recruiting qualified tradesmen directly to higher skill levels: so-called 'lateral recruitment'. Lateral recruitment is not new to most civilian

organisations who have long accepted training received elsewhere. However, this has not generally been the case with the military who, because of the seemingly unique nature of employment, have in general conducted all their own training, without a mechanism for accepting training undertaken outside the military. One of the major benefits of RAAF and civilian training alignment is the ease with which people can now transfer from one organisation to another. Members of the RAAF's aircraft technical workforce can, if they please, resign from the Air Force to accept employment with a civil operator. Conversely, by recognising civilian-obtained skills and training, the RAAF is able in times of high demand to accept fully trained civilian aircraft tradespeople, appointing them to equivalent status within the RAAF. The success of this system relies on an objective means of recognising the learning received prior to application.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) may be granted to individuals who have completed equivalent training at a civilian establishment or during previous military service. It provides the RAAF with an objective method of assessing whether the applicant is capable of carrying out the required duties and is particularly useful during times of major expansion or when separation rates are high by fast-tracking the individuals (as required) to an extent not previously possible. It should be noted, however, that while recognition of prior learning may be granted, service requirements may dictate that no advantage be given.[20] Such is currently the case, as continuing downsizing has resulted in a glut of qualified tradespeople thus effectively eliminating the need for fast-tracking the aircraft technical workforce.

Thus there are several positive and negative aspects of recognition of prior learning and lateral recruitment from the RAAF's perspective. As stated above, the benefits are a reduction in training costs and faster ramp-up in times of need. The negative aspects are, firstly, that the wholesale granting of exemptions to individual training modules interrupts the scheduling of full-time courses. Secondly, there is only a limited amount of money allocated to pay the aircraft technical workforce, X amount for mechanics, X amount for fitters, etc. If too many people are granted recognition of prior learning or are recruited laterally they will proceed to higher pay levels more quickly than accounted for, thereby exceeding the total financial allowance for the workforce. The final aspect, and the most important in the eyes of many in the workforce, concerns the relationship between trade progression, the military rank structure, time-in-service and course eligibility. For example, a person trained in the civilian aircraft industry who possesses a para-professional qualification, such as an appropriate associate diploma, might be eligible to be recruited directly into a systems technician position. However, systems technician employment is accompanied by the rank of sergeant and, because military rank has traditionally been tied to time-in-service and course completion, a level of command and leadership understanding is automatically assumed.

---

[20] DI (AF) AAP 2320.101-1, Sect 2, Chap 2, para 215.

Because of this factor, the RAAF now has in place a system for the recognition of prior learning and lateral recruitment which it appears reluctant to exploit to its full capacity because of its real or assumed negative aspects.

The outlook for the aircraft technical workforce appears to be a continuing round of commercial support program, members required in uniform, the maintenance process re-engineer project, etc, all of which have the potential to affect numbers. It may, therefore, be a considerable length of time, if indeed ever, before the changes brought about by the technical trade restructure in order to improve recruiting can be assessed in isolation.

Chapter Five

Training

> The importance of thorough and efficient training cannot be emphasised too strongly as it is on this that the morale of the Force will depend.[1]

Training was the element most affected by the implementation of the technical trade restructure (TTR). The pre-technical trade restructure training system was completely overhauled in order to make it more efficient, effective and relevant. It was so radically altered in fact that it now has little in common with the system it replaced.

Pre-Technical Trade Restructure

Prior to the implementation of the technical trade restructure, entry into the RAAF's aircraft technical workforce was via three autonomous streams, namely, the adult trainee scheme, the engineering apprentice scheme and the technologist apprentice scheme. Each scheme was entirely discrete and no one was recruited direct to trade; that is, the enlistee signed on into one of these schemes and upon completion of initial training was offered a range of trades within that scheme, depending on availability.

Adult Trainee

Adult trainees constituted the bulk of the aircraft technical workforce. They were mature entrants, aged between 17 and 34 years. Their trade training consisted of a trade specific course with an average length of 52 weeks. Members entering via this scheme had generally completed secondary school to at least Year Ten.

Engineering Apprentice

The apprentices were younger than their adult trainee counterparts, aged between 15 and 17 years. Because of the greater depth of study and the additional subjects required for civil apprenticeship alignment, engineering apprentices spent considerably longer in training. The actual course length varied over the years from three years full time[2] to about 80 weeks prior to the scheme's demise.[3] In addition to the formal off-the-job training carried out at training institutions, apprentices were

---

1 Williams,R., *These Are Facts: the autobiography of Air Marhsal Sir Richard Williams, KBE, CB, DSO,* Australian War Memorial, Canberra, 1977, p 398 (referring to aircraft technical training in the proposal for the formation of the RAAF).

2 Alan Stephens, *Going Solo: The Royal Australian Air Force 1946-1971*, Australian Government Publishing Service, Canberra, 1995, p 131.

3 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure,* p 31.

required to complete two years on-the-job experience before being granted their 'apprentice proficiency certificate'. Like the adult trainees, the average educational standard required by apprentices was Year Ten.

Apart from the differences in age and course duration these two schemes were relatively similar, and although engineering apprentices spent considerably longer in training than their adult counter-parts, once appointed to a unit they were considered professionally equivalent.

Technologist Apprentice

Although producing much smaller numbers than either the adult trainee or engineering apprenticeship schemes, the contribution made by the technologist apprentice (TECHAPP) scheme was significant. The technologist apprentices were aged between 16 and 21 and were required to have completed Year 11, with Year 12 preferred. Their course took three years to complete and included an 18 month Certificate of Technology (COT). Upon successful completion of their course TECHAPPs were required to complete an additional 12 months on-the-job training at a RAAF unit before receiving their trade proficiency certificate. They then completed another year at the unit before being award their Certificate of Technology. After a further two years they were eligible for selection for a six month course conducted at RAAF Wagga. This course covered aspects of supervision and management, problem solving techniques, and advanced systems. Upon successful completion of this course TECHAPPs were graduated as sergeant systems technicians. Unlike the other two schemes this course was aligned with the civilian standard and was accreditable.

Internal Influences

For over 40 years prior to the technical trade restructure implementation, virtually all generic aircraft technical training was conducted at the major training establishments of RAAF Base Wagga and RAAF Base Laverton.[4] All students undergoing training at one of these institutions, regardless of entry scheme or mustering, were required to complete both theoretical and practical training phases. Because military aircraft are extremely expensive, practical training phases were invariably carried out on retired, obsolete aircraft and equipment. It was suggested by the Technical Trade Restructure Team that training on these out-dated platforms was both ineffective and inefficient: ineffective in that the training aids were not a true reflection of the types of aircraft and equipment the trainees were likely to encounter in units; and inefficient because up to 800 students were 'locked up' in the training system for extended periods and were therefore not contributing to the productivity of operational units. If trainees were provided with supervised on-the-job training, in operational units and on operational aircraft, they would not only be assisting qualified tradespeople and thus increasing unit productivity, but would also be getting hands-on experience on in-service aircraft. This was the case with civil aviation, where apprentices spent part of their working week in the training environment and the remainder employed on in-

[4] With some notable exceptions such as explosive ordnance (EO) related training conducted at No. 1 Central Ammunition Depot (1CAMD), RAAF Base Kingswood.

service aircraft. Indications were that a general productivity improvement of 50 per cent could be expected in the second year and 85-90 per cent in the fourth year by the introduction of this method.[5]

The second issue raised by the Technical Trade Restructure Team concerning the ineffectiveness of the extant trade training system was the straight through approach. Personnel trained under the pre-technical trade restructure training system received all their training 'up-front'. That is, all knowledge and skills required for employment were taught sequentially, in one chunk, before posting to an operating unit for employment. In arguing against this approach, the Technical Trade Restructure Team pointed out that a new entrant to a squadron is unlikely to be employed on tasks requiring advanced knowledge or skills until several years after completion of their trade course. Thus, individuals may have lost some skills by the time they are called upon to apply them to in-service aircraft. The alternative proposed by the team was a training system in which an individual receives subject training immediately prior to using that knowledge and/or skill - the so called 'just-in-time' system. This system of training followed by employment, followed by more comprehensive training, followed by more advanced employment, had been employed to a limited extent quite effectively for adult trainees in the past, but had been suspended for administrative reasons some 15 years previously.

A further inherent inefficiency with the pre-technical trade restructure training system involved duplication of training and training facilities, both between the various training localities and the assortment of courses taught within each locality. The most notable example was electronics training, which was carried out for several musterings at both Wagga and Laverton.

External Influences

Although the RAAF has been somewhat shielded from the turbulent workplace activities external to its sphere of influence, it is not totally immune to them. It is to the RAAF's advantage to merge neatly at the points of contact with the civilian world and to integrate the better aspects of both forms of management. Such is the case with the aircraft technical workforce which must recruit from the outside world, potentially at short notice, and return these people to civilian life upon completion of service.

As with the RAAF, education and training in Australian industry prior to the late 1980s executed change only in the form of relatively small alterations in order to remain relevant. Industry was mainly interested in improving on the past and was not particularly concerned with training for employment.[6] A sense of security, even complacency, had been generated by Australia's isolation and plentiful supply of natural resources.

---

5 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure*, p 31.

6 Dawkins, J.S, *Higher Education: A Policy Discussion Paper*, AGPS, Canberra, 1987, Foreword.

However, the by the late 1980s the increasing globalisation of the world's economies was beginning to impact heavily on Australia. The increase in international competition posed problems for a number of industrialised countries including Australia. The Australian Government's response to increasing international competition was to deregulate the Australian economy and to promote major structural changes in the labour market, industrial relations and vocational education and training. The then-Minister for Employment, Education and Training, John Dawkins declared:

> If we are to respond [to the challenges of international competition] and to prosper as a nation, there must be changes in attitudes, practices and processes in all sectors and at all levels of the Australian community. The education sector must play a leading role in promoting these changes.[7]

Fortunately, a cooperative climate existed at this time between the leadership of the Australian Council of Trade Unions (ACTU) and the government. The unique relationship led to an integrated approach to the required industrial reform, award restructuring and educational change.

The first step undertaken to reform Australian industry was award restructuring. Prior to the 1987 wage case, classifications were established by years of industrial negotiation and compromises between parties. Demarcation disputes were often caused by legitimising arbitrary barriers based more on traditional differences than working realities. This was thought by government and unions of the day to limit employer and employee options and unnecessarily restrict workplace mobility, which in turn adversely affected productivity. Award restructuring allowed, therefore, for the first time in Australia, employment in accordance with training, not trade. A clause in the agreement allowed employers to direct employees to 'carry out such duties as are within the limits of the employee's skill, competence and training'.[8] In addition, workers within industry were given access to sponsored training, providing them with a career pathway within industry and enabling them to move up the new wage classifications. This meant that for the first time there was clear guidance for those employees who wanted to plan a career within an industry.

Award restructuring was implemented in order to make the workforce more productive and, as a consequence, more competitive in the global market. However, productivity through award restructuring could only be maximised if workers were able to obtain the necessary training required for expansion of their employment and gain the skills required to be employable at a higher level. Given the situation, increased commitment by government was needed for vocational education and training. The vocational education sector was required to redefine itself. It needed to become more flexible and more accountable to government and industry. Workplace skills, competence and training were now an integral part of workplace

---

7 ibid., Foreword.

8 Dawkins, John, 'Employment, Education and Training: Key Trends and Government Initiatives', AGPS, 1989, in, Chappell, Clive, *Needs Analysis and Program Design: An Introduction to the Australian Context,* University of Technology, Sydney, 1996, p 4.

negotiations with wages being based on the ability to complete tasks to industry standards. Restrictions to educational pathways, duplication of training and inequity were all targets for reform. Figure 5.1 represents the extent of industrial workplace reform in the late 1980s.

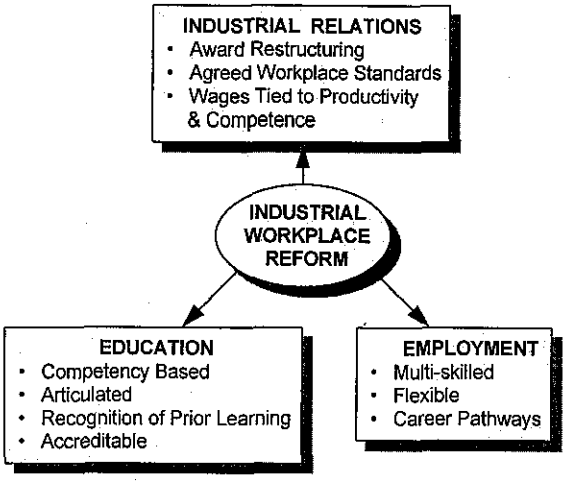

Figure 5.1 Components of industrial workplace reform during the late 1980s.

The ministers in Australia responsible for vocational education, employment and training (MOVEET) were heavily involved in the early stages of these changes, establishing the National Training Board (NTB) to oversee the establishment of competency standards for all industries. The competency standards were the centre-piece of the initiative to develop a national framework for the recognition of training to provide a nationally portable training program which could be delivered by either the public or private sector. In support of bodies such as MOVEET and the National Training Board was a plethora of government sponsored committees and reports, notably the Finn Review, the Mayer Committee and the Carmichael Report, with each building on the findings of its predecessors.

The Finn Review, the first of these reports released in July 1991, argued that for Australia to remain competitive it would require education of higher quality and more relevant to the needs of industry. In order to achieve this Finn proposed that by the year 2001, 95 per cent of 19 year olds should have completed Year 12 or the TAFE equivalent.[9] Additionally, and of more relevance to RAAF training, Finn suggested several changes to education and training such as:

- a new entry level training system, extending reforms beyond existing apprenticeships and traineeships;
- providing various 'pathways', acknowledging that there are several approaches through which to reach a desired occupational objective; and

---

9 Australian Education Council Review Committee, *Young Peoples Participation in Post-Compulsory Education and Training,* Report of the AEC Review Committee, AGPS, Canberra, 1991, p 4.

- establishing general and occupation specific competencies.[10]

The committee believed that for young people to be prepared for employment, they required an education system to give them certain essential elements, regardless of the training pathway. They referred to these elements as the 'key competencies'. Their report proposed that these employment related key competencies should be identified in the areas of: language and communication; mathematics; scientific and technological understanding; cultural understanding; problem solving; and personal and interpersonal characteristics.

Finally, the Finn Committee suggested that there would need to be a centrally controlled national curriculum if these changes were going to be successfully incorporated across Australia.

The Mayer Committee's contribution to the development of Australian education was to identify the actual key competencies in the areas suggested by Finn and to describe them in a universally understood manner. The committee handed down its findings in July 1992, adding an access and equity emphasis. [11]

Like Finn, the Carmichael Report set participation rates for post compulsory education and proposed the establishment of a competency based 'Australian vocational certificate training system' to replace apprenticeships and traineeships, thus providing a flexible range of fully articulated, substantially work based training programs.[12] Further, following on from the work of Finn and Mayer, Carmichael advocated the use of the competency based training system as the basis for the Australian vocational certificate training system, with the attainment and demonstration of knowledge and skills, rather than length of time served, being the basis for accreditation. Carmichael proposed using the key competencies to underpin the acquisition of vocational and occupational specific competencies which met the needs of each industry. Finally, Carmichael supported the pathways concept and reiterated the need for some form of recognition of prior learning to provide acceptance of skills and knowledge between institutions. The Australian vocational certificate training system came into operation in 1995.[13]

As a result of this radical transformation of Australian education, all sectors, be they government, private or industry, were required to redefine their relationships with each other. Quality in Australian education was now defined in terms of outcomes for the learner rather than by inputs from the provider.

---

10 ibid., p 5.

11 Australian Education Council and Ministers for Vocational Education, Employment and Training, *Putting General Education to Work,* AGPS, 1992, Foreword.

12 Goozee, Gillian, *The Development of TAFE,* NCVER, 1993.

13 Employment and Skills Formation Council (Australia), *Australian Vocational Certificate Training System,* AGPS, Canberra, 1992, p 3.

A Case Study in Award Restructuring

The case study recounted below is typical of industrial workplace reform within Australian organisations during the late 1980s and early 1990s.

Telecom Line Staff Workplace Restructuring

This review was based on a joint Telecom, Australia Post and Telecommunication Union study of 20,000 line staff carried out in 1989.

Restructuring began for line staff in 1989 with the replacement of the traditional traineeships which provided structured, ordered, broad training with a system designed to provide flexible, effective training of a timely nature. The new system has few qualifying conditions, is job specific and provides the necessary skills to permit staff to work in a safe and effective manner. Training is available to staff as and when determined by management to permit the development of a pre-determined multi-skilled workforce.

In accordance with wage restructuring principles and the objective to develop a multi-skilled workforce, some 20 line staff designations were compressed down to six with a consequential broader range of functions. There is now a minimum of ten very broad functions specific to the operative levels (levels 1-3) embracing quite broad technologies. Training modules are available for specific aspects of each of these technologies. A total of approximately 180 modules are currently on offer. These modules vary in accordance with content and complexity and range from an hour to five weeks. Reduced training times are gained by the abandoning of the traineeships, with no loss of job performance and career pathways now exist from the lowest level operator through to managers.

All recruitment is now carried out on a local level in lieu of the centralised recruitment associated with traineeships. Local managers are now able to recruit staff to perform specific functions and all training is specific to the needs of the individual and local management. Staff are selected for training to further enhance their skills on merit and training modules completed are recognised as one of the criteria for promotion, no academic qualifications are specified and eligibility is on the basis of completion of a limited number of qualifying modules and recognised knowledge and aptitude. Structured training, conducted by qualified instructional staff from a training centre continues to provide the bulk of training. The need for formal training has continued due to the complexity of the tasks and the potential disruption to a working telecommunications network. This is complemented by on-the-job training where students consolidate their learning by working on appropriate disciplines under the supervision of experienced, skilled field operatives. Field training officers (staff employed by local management and trained to perform theory and practical instruction) have been introduced to provide training for staff which is of short duration (less than five days) and can be readily contacted on or near the job site, thereby reducing staff downtime. Field training officers can also be employed where training is of a specific nature to the local area or is of an urgent nature and cannot be serviced in a timely manner by the formal system.

Benefits gained from the restructure include higher efficiency of instructional staff resulting in increased productivity, reduced downtime and consequently better value for the training dollar. Also, improved employee relations has resulted from increased job satisfaction, increased wages and more meaningful, timely training.[14]

---

[14] Adapted from, Employment and Skills Formation Council (Australia), *Australian Vocational Certificate Training System,* AGPS, Canberra, 1992, pp 5-6.

The Australian Aerospace Aspect

During the latter half of the 1980s there was a severe shortage of skilled personnel in the Australian aerospace industry, and by early 1989 it was estimated that more than 3000 additional trained persons were required to fully staff aircraft maintenance positions Australia wide.[15] In response to widespread concern the Royal Aeronautical Society sponsored a meeting of affected parties in July 1989 that led to the formation of a tri-partite steering committee which identified the need for a national aerospace training advisory body. The body, known as the National Aeroskills Project (NASP), was formed in July the following year. Representation on the National Aersoskills Project covers the entire industry and related support services, with representatives from:

- the manufacturers,
- each major airline,
- general aviation,
- third-party maintenance organisations,
- the ACTU and unions with aerospace coverage,
- the Association of Licensed Aircraft Maintenance Engineers of Australia,
- the Civil Aviation Authority,
- the Australian Defence Force,
- Colleges of Technical and Further Education,
- DIST, and
- the Department of Employment, Education and Training.

During its first two years of existence the National Aeroskills Project had its competency standards at the trade level endorsed by, and gained recognition from, the National Training Board. As the aerospace industry representative on the Industry Training Advisory Body (ITAB), in 1993 the National Aeroskills Project was requested by the Department of Employment, Education and Training to produce training plans for the implementation of the Australian vocational certificate training system. The National Aeroskills Project has produced a training plan through to 1999 which fully reflects the training needs of the Australian aerospace industry in terms of content, location and delivery method while fully exploiting the benefits of the Australian vocational certificate training system.[16]

This cooperative approach to alleviating the Australia aerospace industries recruiting shortfall problems was ideally timed for the RAAF. They too were experiencing considerable difficulties and their representation in this project was seen as a bonus which might help overcome their own problems.

---

15 National Aerospace Project, *Aerospace Industry Training Plan, 1994 - 1999,* Report to the Commonwealth Department of Employment, Education and Training, p iv.

16 National Aerospace Project, *Aerospace Industry Training Plan, 1994 - 1999,* p iv.

Multi-skilling the Existing RAAF Workforce

Once the technical trade restructure was approved for implementation in 1992, it became unacceptable for the RAAF to maintain what would be in effect two different workforces: one which was pre-TTR trained and the other post-TTR. Apart from the obvious administrative difficulties of running the two systems in parallel, there was a significant productivity yield which could not be realised until the existing workforce was cross-trained and multi-skilled. According to the Technical Trade Restructure Team, the technical trade restructure conversion course was somewhat shallow in depth and political in nature.[17] The conversion training was not intended to provide the highest level cross-training for the existing workforce, it was only intended to provide sufficient base-line multi-skilling to enabled pre-technical trade restructure personnel to be employed as tradespersons at fitter level in an allied trade.

All aircraftmen, leading aircraftmen, corporals and sergeants (except SYSTECHs) were required to do conversion training across their allied trades (see Table 5.1 for trade alliance). The course length was set at 100 hours per trade and provided a base-line equivalent to civilian conversion training.[18]

Aircraft Trade	Avionic
Airframe	Electrical
Engine	Radio
	Instrument

Table 5.1 Pre-TTR trade alliances

Since the conversion training would only provide pre-technical trade restructure tradespeople with the ability to be employed at fitter level in their allied trade, further training to technician level was intended to be made available through the technician specialist courses for those wishing to gain full technician level understanding of their allied trades. However, individuals wishing to access training for cross-training purposes had the lowest priority for allocation of limited on-base training resources.[19] Consequently, although many pre-technical trade restructure tradespeople are currently employed at technician level in their allied trades, to the author's knowledge very few, if any, have had the benefit of full cross-training via the appropriate technician specialist courses.

---

17 Technical Trade Restructure - Weapon System Employment Streamers, Minute, TTRT2 to WSESs, 24 Jun 94, p 2, Department of Defence file AF 92-21573 Pt 1 (12), Department of Defence, Russell Offices.

18 Directorate of Technical Trade Restructure - Air Force Office, *Technical Trade Restructure Synopsis and Question/Answer Supplement*, 1991, p 18.

19 Minutes of the Second Meeting of the Technical Trade Restructure Steering Committee, Held at Air Force Office on 21 May 1991, p 3, Department of Defence file AF 91-13301 Pt 1 (3), Department of Defence, Russell Offices.

The RAAF's New Training System

The implementation of the new training system in 1992 was very much a case of out with the old and in with the new in accordance with civilian workplace reform. As with civilian reform, a multi-skilled workforce was developed which actually reduced the number of trades whilst increasing the number of trade specialisations. The number of trades was, in fact, reduced from 10 (warrant officer engineer, aircraft systems technician, airframe fitter, engine fitter, armament fitter, avionic systems technician, electrical fitter, instrument fitter, radio technician and aircraft structural fitter) to three: aircraft, avionic and structures. Each of these new trade designations has a broader range of functions with trade specific modules available at higher skill levels. Additionally, progression is available beyond trade level to advanced technician and systems technician by completion of various qualifying course; with selection based on merit and strictly in accordance with service requirements. As with civilian workplace reform, career pathways now exist from the lowest level operators to technical managers.

Major Training Establishments

Prior to the implementation of the technical trade restructure, radio training was carried out at the RAAF School of Radio (RADS) at Laverton, while virtually all other aircraft technical training was performed at the RAAF School of Technical Training (RAAFSTT) at Wagga. The Technical Trade Restructure Team suggested that, in order to improve efficiency, the training facility at Laverton should be closed and all aircraft technical training resources rationalised at Wagga. The approval of this proposal led to one of the first and most profound effects of the trade restructure, the official closure of the School of Radio after a long and successful history. RAAFSTT is now the sole initial generic technical training facility for the ADF catering for all three services - Army, Navy and Air Force. The facilities now available at RAAFSTT provide technical training up to and including technician level for all three services, but are not fully utilised at the time of writing because of the RAAF's preference for conducting fitter and technician training at units. Additionally, RAAFSTT is responsible for the central management and production of courseware for the Technical Distance Learning Facilities (TDLFs).

Generic & Application Training

There are basically two types of aircraft technical training conducted by the RAAF, generic and application. Generic training is defined in the aircraft engineering trade group trade specification as 'that training in basic trade skills which is mandatory for progression within trade'.[20] Application training is defined as 'training specifically targeted at aircraft or equipment'.[21]

For example, all cars are fundamentally the same, they all have similar basic systems such as electrical, steering and instrumentation. Therefore, when motor mechanics learn about car maintenance they are first required to grasp the concepts of these

---

20 DI (AF) AAP 2320.101-1, Sect 2, Chap 2, para 202.

21 ibid., para 203.

systems at this generic level. Once they have a good understanding of motor vehicle systems in general they progress to an applied knowledge of the particular cars they will be working with. In much the same way, an aircraft tradesperson must first become familiar with general concepts of aircraft maintenance before understanding the specific features of the aircraft on which they are employed. This sequence of training, always generic before application, ensures that aircraft technical personnel can easily transfer from one aircraft type to another with minimum difficulty, requiring only the application training relevant to the new aircraft type before employment. Application training can take from one week to several months.

In the past, generic training was segregated from application training geographically and philosophically. The individuals who established the pre-technical trade restructure training system believed it appropriate for students to gain a thorough understanding of generic aircraft systems in a safe learning environment before being permitted near in-service aircraft. For this reason all generic training was carried out at one of the large training establishments on obsolete aircraft and equipment, isolated from the operational units. Once an acceptable level of understanding was achieved the graduates were posted to an active unit for employment. Shortly after arriving at their unit they would be sent for comprehensive application training at a field training flight (FTF).[22] During the new recruits' first few years of service they could expect to complete virtually all of the knowledge and skills training required for employment on that aircraft type, both generic and application. Each individual received an equal amount of training to an equal level. This block knowledge dissemination, although easily managed, was observed by the Technical Trade Restructure Team to be deficient in at least two major respects. Firstly, because all students were trained to an equal level, the system was producing technical personnel who were in many cases under or over trained, depending on their area of employment. Secondly, it provided members with task knowledge which they would not be able to apply until they were competent enough to undertake that task. If the task was a sophisticated one it could conceivably take several years before they were given the opportunity, in which time they may have forgotten the intricacies of the operation.

The training philosophy for the post-technical trade restructure system is based on the 'integrated job performance training system' in which students are first given broad handskills, then trained in the operation and maintenance of complete systems before ultimately being trained in the detailed operation and diagnostic maintenance of system components.[23] Training initially is of a broad nature, spanning the required knowledge of the individual's chosen trade; and as training continues it becomes increasingly narrow, eventually focusing on a particular trade specialist stream or streams. However, the most fundamental difference between the new system and the one it replaced is its considerable emphasis on training 'just-in-time'. Post-technical trade restructure tradespeople can expect to rotate between generic off-the-job training, application off-the-job training, and workplace on-the-job training for their

22 FTFs are on-base training establishments specifically configured for the task of providing training on every aspect of the aircraft stationed on that base.

23 DI (AF) AAP 2320.101-1, Sect 2, Chap 2, p 1.

first three years or so, ensuring they consolidate the information they have been provided before proceeding to more difficult concepts.

Figure 5.2 diagrammatically represents the schedules of training and employment both pre- and post- the technical trade restructure. As represented in the diagram, the just-in-time training schedule does appear to provide a more logical knowledge dissemination pattern, but at the expense of administrative and logistical complexity.

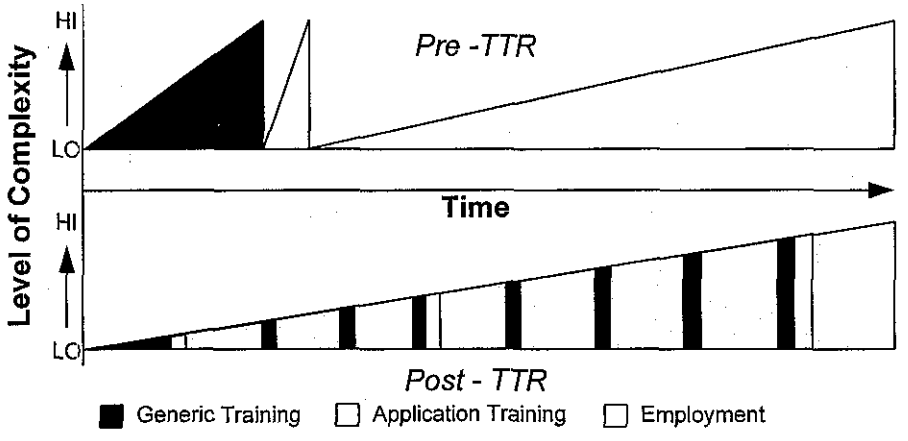

Figure 5.2 **Diagrammatical representation of the relationship between the training and employment schedules, pre- and post-TTR.**

Administration

Prior to the implementation of just-in-time training, the training establishments alone were responsible for student scheduling. The schedular was simply required to ensure that students, clumped together into courses, were presented with a new topic immediately after completion of the previous one. The only real requirement was to ensure that students were occupied at all times, and that scarce training resources were maximised. Students had no responsibilities other than learning; and training resources were largely centralised.

Post-technical trade restructure student training administration is more complex and expansive. Moreover, it provides significant scheduling difficulties for both the off-the-job training provider (technical distance learning facilities and field training flights) and the on-the-job training provider (the operational units), as students have to be rostered on and off unit maintenance tasks as well as being rostered in and out of the training facility. This is a burden which many units feel they can ill afford.

Logistics

The centralised training establishments of the pre-technical trade restructure era have not completely disappeared as a consequence of the restructure, but they have been rationalised. Whilst the RAAF has reaped the benefits of a severe reduction in the

training infrastructure associated with large dedicated training establishments, the establishment and continuing operation of the technical distance learning facilities has somewhat offset the anticipated windfall.

Mechanic Entry

Bridging Training

The RAAF was expecting recruiting problems when the major concepts of the restructure were formulated, and as a result the Technical Trade Restructure Team proposed accepting applicants with a suitable aptitude but without passes in the previously required subjects of mathematics and physics. Bridging training in those subjects was introduced as a means of bringing these recruits up to the required standard. Although bridging training was originally intended only to bring mechanic entrants up to technician entry standard, it was found that many technician entrants also needed remedial bridging tuition. This discovery was one of the major factors leading to the suspension of the technician entry scheme in 1996.[24]

Regardless of their entry stream, all students, upon completion of a phase of generic training, are required to complete a corresponding period of application training at a field training flight which will generally be situated at the same base as the TDLF but not within the same facility. Field training flights are dedicated to the provision of application specific training related to the particular aircraft type operated by that weapon system. The nominal period allocated for this training is four weeks but it very much depends on the complexity of the aircraft upon which the person is employed.[25]

The Mechanic Course

Aircraft and avionic mechanics, upon completion of their recruit training, are posted to RAAFSTT where they commence a compact, 20 week mechanic course. Mechanic training is almost entirely practical in nature with students gaining knowledge and skills in all aspects of safety awareness related to their trade, general engineering handskills training, aircraft handling, technical administration practices and component removal and installation.[26] As with the schemes it replaced, mechanic training is conducted full-time in a training environment.

This training is notably different from its predecessors in one important aspect - its level of fidelity. Training staff have successfully managed to replicate the environment of an operational unit in almost every aspect, which was not the case prior to the technical trade restructure. Students can now carry out simulated maintenance on Macchi aircraft, identical to those still in service with RAAF units, and Winjeels, which have only recently been retired. The hands-on maintenance training is of an extremely high standard and is performed in hangars similar to those used by operational units, with instructors acting as trade supervisors and signing for

---

24 HTTRT, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 4.

25 ibid.

26 DI (AF) AAP 2320.101-1, Sect 2, Chap 2, p 2.

the maintenance on the same forms they are likely to find in units. The ground handling phase of the mechanic course has also had a substantial increase in fidelity through the replication of an operational flight line, complete with aircraft taxied by instructional staff.

In accordance with one of the primary aims of the restructure this initial trade training is now as short as possible, completing only the skills needed to be employable in the field. Upon successful completion of this phase, students are remustered from aircraftman aircraft/avionic mechanic trainee to aircraftman aircraft/avionic mechanic and posted to operational units. Once in the field mechanics complete an additional six months experience on the job to consolidate their training before commencing the fitter course.

Technical Distance Learning Facilities

To a large extent the success or failure of technical trade restructure rested on its ability to provide the appropriate level of training, tailored to the individual's and service requirements, when and where required. Again the team looked to civilian workplace and educational reforms for guidance, suggesting a combination of state of the art educational concepts such as just-in-time training, distance education, simulation, multi-media and self-pacing.

So that students would not have to return to Wagga for continuation training, the Technical Trade Restructure Team proposed establishing learning facilities on each major base, extensively employing the recently evolved distance learning media such as technology based training and interactive video. Here the training facilities and tutorial staff would be available to assist students complete the necessary sequence when required. The role of technical distance learning facilities is to provide generic aircraft and avionic technical training at fitter and technician level.[27]

Technical distance learning facilities were established at 11 RAAF bases: Edinburgh, Pearce, Tindal, Darwin, Townsville, Amberley, Williamtown, Richmond, Kingswood, Fairbairn and East Sale. They were situated at training services/personnel services flights, supported administratively by their respective Air Base Wings (ABWs) and functionally controlled by Training Control Flight (TCF), which is centrally located at RAAF Wagga. Figure 5.3 illustrates the location of RAAF Wagga and the distribution of the TDLFs in 1992.

Fitter Course

Once mechanic entrants complete their mandatory six months on-the-job training (OJT) they are scheduled for attendance at their on-base technical distance learning facilities for the commencement of fitter training. The fitter course consists of approximately 18 weeks of self-paced, distance learning delivered at technical distance learning facilities over one calendar year.[28] In contrast to the mechanic

---

27 DI(AF)AAP 2003.001, *Manual of Training Operations for Technical Distance Learning Facilities*, 1996, Chap 2, p 4.

28 DI (AF) AAP 2320.101-1, Sect 2, Chap 2, para 207.

course, the fitter course is almost entirely theoretical in nature. Students obtain an understanding of aircraft systems down to the block diagram level within their chosen trade group of aircraft or avionic. Thus fitters are capable of scheduled aircraft or component maintenance which is strictly in accordance with technical maintenance documentation, but are limited in their fault diagnosis capability.[29]

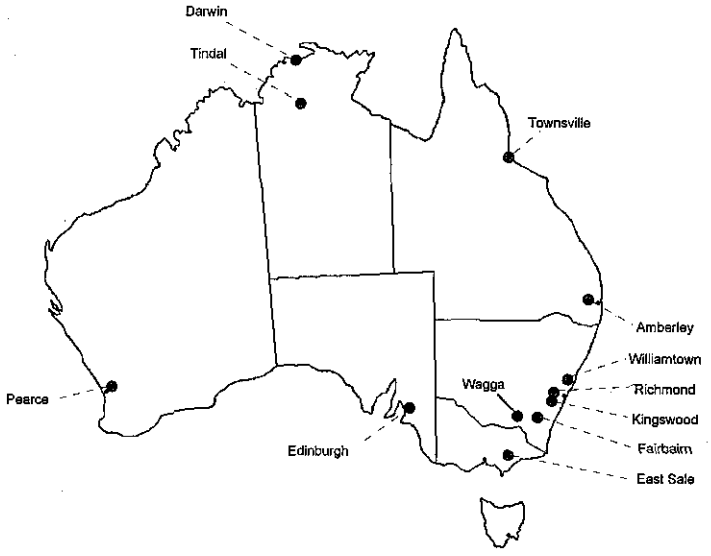

Figure 5.3 The location of RAAF Wagga and distribution of TDLFs.

Technician Entry

Technician entrants, upon completion of recruit training, are posted to RAAFSTT where they complete the mechanic course. However, instead of being posted to operational units on completion of this course, as is the case for a mechanic entrant, they remain at RAAFSTT to complete their generic fitter training before being posted to a unit. Actual course duration for the combined mechanic/fitter course is 38 weeks, 20 for mechanic training and 18 for fitter training (the same as mechanic entrants).

The original intention of the Technical Trade Restructure Team was that the technician entry stream would be the primary method of entry to the aircraft technical workforce with mechanic entry to be used only when necessary. The technician entry stream was intended to fast-track trainees; however, in the current climate, fast-tracking is not considered necessary and this stream has been suspended until the need arises.[30]

---

29 ibid.

30 HTTRT, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 4.

Technician Courses

By the time students reach this point they are considered equal, regardless of entry scheme. Both mechanics and technicians have completed almost identical generic and application training at the mechanic and fitter level; further, mechanics will have overcome any educational shortcomings assessed early in their training to bring them up to technician level. But, because mechanic entrants do their fitter training at units interspersed with on-the-job training, they will have considerably greater hands-on experience than their technician counter-parts.

Up to this point training is broadly based, covering all aspects of the chosen trade group, aircraft or avionic. With the commencement of technician training students finally gain an intricate understanding of a particular aspect of aircraft systems, known as a trade specialisation. In the case of the aircraft trade the specialisations are airframes, gas turbine engines and piston engines. The likelihood of receiving training in both airframes and one of the engine specialisations is inversely proportional to the complexity of the system on which the individual is employed. It is unlikely that the individual would be required to multi-skill across the two engine streams, piston and gas turbine, given that the technical trade restructure also introduced weapon system employment, thereby limiting the scope for employment on both piston and gas turbine driven aircraft. The avionic trade group has many more career options and courses than the aircraft trade group, with some courses being pre-requisite to technician courses and others providing them with a specialisation. Avionic generic courses include the following:

- technician electronics,
- synchro systems and servomechanisms,
- electrical gyroscopic principles,
- radio frequency communications principles,
- electrical systems specialist,
- control systems specialist,
- flight instrument and measuring specialist,
- navigation system specialist,
- radar system specialist,
- communications system specialist, and
- opto-electronic system specialist.

Beyond Technician

Up until the completion of the technician course, trade progression and course completion are mandatory. Failure to meet certain deadlines can lead to dismissal. However, once these goals have been achieved there is no compulsion to continue with career advancement. However, there are a number of courses available beyond technician specialist leading to employment in various streams and musterings for those who wish to do so. These courses are offered strictly in accordance with service requirements and in competition with all other eligible personnel. They include advanced certificate (avionic only), non-destructive inspection, associate diploma of engineering, and the systems technician course.

Advanced Certificate

This course is a 25 week, two semester course, with the first semester completed by distance mode and the second by more traditional classroom education at RAAFSTT. Upon successful completion of this course graduates are posted to units where they receive specialised application training before commencing work in a position requiring these advanced skills, such as aircraft simulators and instructional duties. Although it was originally intended that this training would be available to all technicians, it was soon realised that only small numbers of aircraft technicians needed the additional skills; consequently this training is currently only available to avionic trades.[31]

Non-Destructive Inspection

This 16 week course is available to aircraft, avionic and structures trades and is conducted at the Non-Destructive Inspection (NDI) standards laboratory at Amberley. Students acquire the skills and knowledge necessary for non-destructive inspection of aircraft and aircraft equipment. Graduates are employed as Non-Destructive Inspectors Level One for one year, during which time they consolidate their training. They are then upgraded to Level Two and remustered to ADATECH(NDI), ADASTTECH(NDI) or ADAVTECH(NDI) depending on their parent trade.[32]

Associate Diploma of Engineering (Aerospace Systems)

Personnel must successfully complete the associate diploma of engineering as a pre-requisite for systems technician selection. The RAAF therefore offers this to selected personnel in order to increase the systems technician pool. The para-professional course is conducted at RAAFSTT and focuses on the higher level cognitive skills of analysis and problem solving required for efficient maintenance of modern aircraft systems.[33]

Systems Technician

Systems Technician (SYSTECH) training is also conducted at RAAFSTT and provides training in the practical application of para-professional employment.[34]

Army and Navy Aircraft Technical Training

Since the early 1990s the Australian Army and Navy have training their aircraft maintenance personnel alongside their RAAF counterparts at RAAF Base Wagga. While there are many similarities between RAAF, Army and Navy training systems, the differences are more interesting, from an analytical perspective. Pre-eminent among these differences are the Army and Navy's choice of training schedule, their students receive training straight though from mechanic to technician at RAAFSTT.

---

31 DI (AF) AAP 2320.101-1, Sects 2 and 3, Chap 2, p 3.
32 ibid.
33 ibid.
34 ibid.

More recent indications are that the Army and Navy would like to change the order of training, from mechanic, fitter and then technician to fitter, technician and then mechanic training.

Unfortunately, there was insufficient time available during the preperation of this book to conduct the amount of research required to fully appreciate the issues involved in these decisions. However, there is much to be gained from understanding why other services choose to train differently from the RAAF. Serious analysis of the similarities and differences with other countries armed forces or civilian organisations with similar processes to our own could generate significant benefits.

Courseware Development

The established of the technical trade courseware development team (TTCDT)[35] at RAAF Wagga was one of the first tasks completed by the Technical Trade Restructure Team. The courseware development team's function was vital to the success of the technical trade restructure as the team was tasked with developing, virtually from scratch, all the training materials required for the new system. It was initially envisaged that 60 per cent of the training modules would eventually be computer based, with the balance being either print based or reliant on other media such as video.[36] However, as the team began work on this enormous task it became evident that the production of computer based lessons was extremely time consuming and expensive. It was therefore decided that only lessons which would gain significant value from being computer based would be produced as such, with the bulk of the remainder being completed in paper form only.[37] This effectively reduced the ratio of computer based lessons from 60 per cent to 10 per cent.

When the team started, they were directed to provide courseware specific to the RAAF's requirements and, wherever possible, in alignment with the national curriculum. It was not necessary to meet all the national requirements, just those which could be accommodated. Students wishing to complete modules required for national accreditation, and thus civil qualification, could do so in their own time. However, a meeting between the major aircraft technical training providers - NSW TAFE, Vic TAFE, RAAF, Qantas and Australian Airlines - in late 1992 led to a memorandum of agreement under which all parties would contribute to the production of training material. The effect of this collaborative approach was to significantly alter the emphasis of the technical trade courseware development team's training development. Whereas in the past they incorporated national curriculum material as it suited them, they were now effectively tied to it. This had an enormous impact on all aspects of their training material design, particularly testing.

Other critical decisions which affected the courseware development team's production of materials were, firstly, the amalgamation/consolidation of the three services aircraft primary trade training at Wagga; and then, the alignment with the new National

---

35 Originally known as the Technical Trade Restructure Training Design Team (TTRTDT).

36 Minutes of the Second Meeting of the Technical Trades Restructure Steering Committee Held at Air Force Office on 21 May 1991, p 5.

37 HTTCDT, TDLF Conference Synopsis, 1996, p 1.

Aerospace Curriculum - NAC95. This second change required the team to perform a tremendous amount of reworking, including redesigning the fitter material to incorporate NAC95 learning outcomes, remove information from the technician specialist courses and then reworking the remaining material in the technician courseware.

Chapter Six

Employment

> The employment of a poor class of tradesman will result in loss of life and materiel and eventually ruin the morale of the Force.[1]

Introduction

All changes implemented as a result of the technical trade restructure, be they to recruiting, training, or management of the workforce, must eventually either directly or indirectly affect the performance of the workforce. And in these times of demanding resource constraints the RAAF needs an aircraft technical workforce which is both efficient and effective, not one at the expense of the other. It is here then that the litmus test for the technical trade restructure rests.

Mechanic Entry

Trainees entering via the mechanic stream complete a 20 week mechanic course and are posted upon graduation to a unit. They must then complete six months of on-the-job training before commencing fitter training at a technical distance learning facility. Fitter training consists of approximately 18 weeks of self paced training which is interspersed with employment. Upon completion of the fitter course and 18 months of on-the-job training, mechanics are eligible for remuster to fitter grade one, at which point they merge with the technician entrants for technician training.

The mechanics then, are the first to arrive on the hangar floor, some 18 weeks before their technician counter-parts, and by this time they have received training in a wide range of basic aircraft maintenance tasks. Mechanics are employed in the unit two weeks out of three, under 100 per cent supervision, on duties which include:[2]

- aircraft flight line handling and replenishment;
- aircraft oxygen replenishment;
- inspection and removal of unserviceable Line Replacement Units (LRUs)/Maintenance Supply Items (MSIs);
- installation of serviceable items under supervision;[3]

---

1 Williams, R., *These Are Facts: the autobiography of Air Marhsal Sir Richard Williams, KBE, CB, DSO,* Australian War Memorial, Canberra, 1977, Appendix VII, p 398.

2 DI (AF) AAP 2320.101-1, Annex A to Sect 2, Chap 1, para 1.

3 But not rigging, adjustment or alignment where progressive serviceability assessment may be required (Aircraft) or electronic adjustment or alignment (Avionics).

- overhaul of LRUs/MSIs, including disassembly and reassembly, but excluding functional testing where system fault diagnosis techniques are required;
- preparation and use of Ground Servicing Equipment (GSE);
- identification and demanding of aircraft spares;
- preparation and packaging of technical equipment for transportation;
- employment in Maintnenace Control Sections (MCSs); and
- amendment and maintenance of technical publications.

Additionally, avionic mechanics are capable of:

- employment in battery shops;
- manufacture and repair of electrical looms and antenna cables;
- performing 240 volt testing; and
- servicing aircraft earthing systems.[4]

The Trade Specifications Aircraft Engineering Trade Group also advises that mechanics may be employed on tasks for which they have been trained, either formally or informally, assessed as proficient, and authorised to perform.[5]

Contrary to the seemingly appropriate and well-coordinated nature of mechanic employment, their employability in units has been plagued by misunderstanding and misinformation since the introduction of the new trade structure. In contrast to the comprehensive menu of tasks listed, the actual employment of mechanics has generally been of a much more mundane nature. It appears the basis of the problem lies in a disconnect between unit management and the architects of the mechanic employment profile. Unit managers - the people responsible for allocating tasks - really had no clear idea of what to do with their new style workforce.[6] Because it is highly unlikely that they would deliberately underemploy their mechanics, the explanation for the underemployment of the mechanics must be that the managers were either provided with little or inaccurate information. The extent of this misunderstanding was highlighted at the 1996 Air Force Engineers conference, when the final HTTRT, Wing Commander M. Shaw, responded to wide-spread anger over the employment of mechanics by asking how many of those in attendance had read the related trade specification, which outlined the mechanic employment profile. Of the 100 or so engineers present, only about six raised their hands.[7]

Technician Entry

The technician stream entrants are given approximately 38 weeks to complete the combined mechanic/fitter course at RAAF Wagga. Upon completion, they are posted to a unit where they are required to complete the necessary application specific training before being remustered to fitter grade one four weeks after arrival at their unit.

---

4 DI (AF) AAP 2320.101-1, Annex A to Sect 3, Chap 1, para 1.
5 DI (AF) AAP 2320.101-1, Annex A to Sect 3, Chap 1, para 2.
6 Jones, W, *Survey of the Aircraft Technical Workforce,* 1996, p 3.
7 Conversation, Wing Commander M. Shaw and Corporal W. Jones, October 1996.

Technician entrants arrive at units with a level of generic aircraft knowledge equal to the mechanic entrants who have completed fitter training. There is a significant difference in the amount of workplace experience, however, and this factor needs to be taken into account by supervisors. Although technician entry was intended to be the primary form of recruitment, it was suspended in late 1995 in favour of purely mechanic entry.

Mechanic or Technician Entry?

The Technical Trade Restructure Steering Committee (TTRSC) chose a single entry scheme because they felt that two schemes running in parallel were too difficult to administer. The mechanic scheme was preferred to the technician scheme because of a severe glut of personnel at the technician level at that time. Separation rates were very low (four to five per cent) and the majority of personnel in the existing workforce had recently been transferred from the old structure to the new at technician level. Thus, many technicians were employed on fitter and mechanic level tasks. The technician scheme progressed recruits to full trade standard more quickly than required, thereby contributing to the glut in the workforce.

Additional reasons provided for the RAAF's decision to opt for mechanic entrants over technicians included:

- feedback on the value of the new tradespersons from the weapons systems employment streamers which indicated that the mechanic entry was preferable; and
- the regular need for technician entrants to undertake the bridging training intended for mechanic trainees only, due to lower than anticipated levels of knowledge in maths and physics.[8]

Although the decision to suspend technician entry appeared to meet RAAF needs and was based on sound logic given the information available at that time, it may no longer be the best direction for the aircraft technical workforce. It is possible to consider the advantages and disadvantages of the two streams, and to arrive at a different conclusion. Considerable anecdotal evidence and numerous comments from survey returns, from both supervisors and post-technical trade restrucuture tradespeople, suggests that there is a strong case for reintroducing the technician entry.[9] Interviews with squadron commanders have indicated that mechanics in squadrons are less effective than fitters.[10] Mechanics require a significant amount of supervision, are not considered deployable by many managers because of their need for constant supervision, and their schedule of training is severely disruptive to squadron maintenance planning. In both interviews and survey returns, mechanics themselves have emphasised their preference for a greater understanding of aircraft systems prior to their employment in units.[11]

---

8 Minutes of the Eleventh Technical Trades Restructure Committee Meeting, Held at Russell Offices, 11 Dec 95, Enclosure 1, Department of Defence file AF 95-35697 Pt 1 (16), Department of Defence, Russell Offices.

9 Jones, W, *Survey of the Aircraft Technical Workforce,* 1996, p 3.

10 ibid.

11 ibid.

Finally, one of the primary aims of the technical trade restructure was to improve the efficiency of the RAAF's aircraft technical training system, thereby making it more cost effective. The RAAF chose to overcome the over-establishment of technicians by slowing down the entrants' progression to full trade qualification. What has happened, in effect, is that the RAAF has chosen to keep personnel in the training system for a longer period so that the total salary of the aircraft technical workforce is kept to a minimum. But whilst an excessive number of technicians is costing the RAAF more than has been budgeted for, at least they are fully employable. The chosen alternative has ensured that it takes longer than necessary before entrants are fully trained, thereby deliberately limiting their employability. Ostensibly, what has occurred is a trade-off of effectiveness for perceived efficiency. Perhaps with the application of closer analysis there could be an improvement in both.

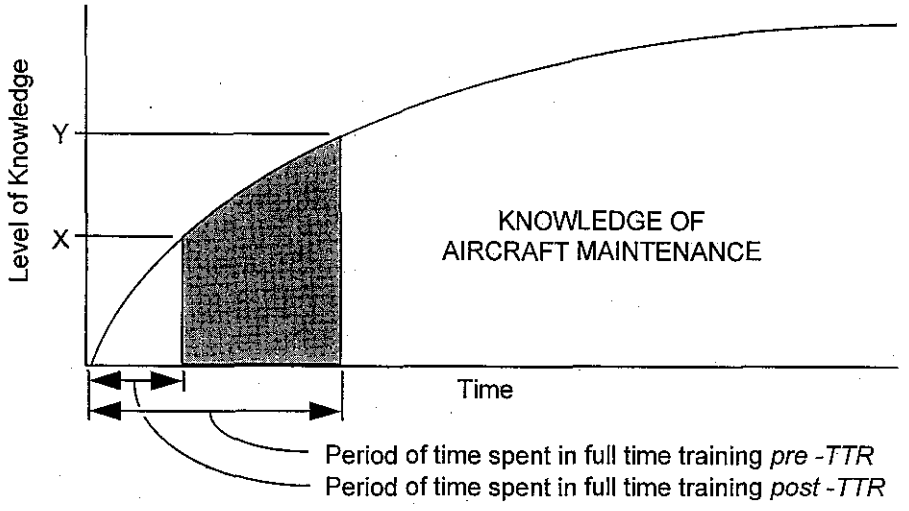

Figure 6.1 **Diagrammatical representation of amount and rate of knowledge attained during aircraft technical employment and training.**

As Figure 6.1 demonstrates, prior to the technical trade restructure, students remained in the full time training environment until they attained knowledge level Y. Students are now posted to units once they reach knowledge level X, increasing to level Y in the operational environment; that is, at a unit. The situation prompts numerous questions, some of which the RAAF has not had to deal with in the past and some of which are as old the RAAF itself. For example: At what point should an operational unit become responsible for training? Is it fair to place entrants in operational units before they feel they have enough training to feel confident? Is it fair to expect existing unit personnel to provide on-the-job training to these people without giving them training on how best to train on-the-job? Where do operational units draw the line between their responsibility for the defence of Australia and their responsibility to provide operational training to new personnel? Whilst it is generally agreed that training is one of the ADF's prime roles in peace, what training burden will operational units be expected to shoulder in times of conflict?

Results of the workforce survey and interviews with unit members, ranging from aircraftmen to group captain, indicate that these are very important issues and deserve more attention from those responsible for planning the workforce's employment and training profiles.

On-Time Promotion

If there is one issue which has galvanised the members of the aircraft technical workforce against restructure, it is on-time promotion.[12] From the outset, the concept of on-time promotion to corporal caused a considerable degree of resentment from all levels of the workforce. But the technical trade restrucuture team saw the practice as an integral part of the proposed trade progression system and insisted on its retention. The benefits foreseen in the provision of on-time-promotion were that it would:

a. improve retention by raising promotion prospects shortly before re-engagement;
b. increase the selection pool of personnel for ADAVTECH and SST;
c. improve unit flexibility by increasing the number of available supervisors;
d. remove the need to move personnel to new work areas simply as a result of promotion to corporal, thus maximising type and work area experience; and
e. provided de facto recognition of multi-skilling.[13]

It was also expected to alleviate the element of disharmony, and wide variations in experience levels, caused by major differences in promotion times between trades.

Initially, the restructuring team proposed that progression to corporal would be automatic for all leading aircraftsman with three years seniority, provided that either the corporal's promotion examination or promotion course had been successfully completed and an individual had been assessed fit for promotion.[14] This linking of promotion to skill level, the team noted, was the practice in a number of other air forces[15] and was also an element in the adoption of the domestic airline Licensed Aircraft Maintenance Engineer type approach to maintenance in the RAAF.[16] Prior to the restructure, promotion to corporal was tied to existing vacancies. An individual had to have served a minimum number of years as a leading aircraftman and then be selected for promotion in competition with other eligible leading aircraftmen. These competitive criteria gave corporal rank status and holders were generally respected for their years of experience and ability. The widely held perception of the on-time corporals (so called 'plastic corporals') is that they have received their rank automatically and are not worthy of the privilege.

---

12 Jones, W, *Survey of the Aircraft Technical Workforce,* 1996, p 4.

13 Final Report of the Technical Trade Restructure Implementation Project, under cover of Minute, HTTRT-AF to DGLOG-AF, 22 May 96, p 8, Department of Defence file AF 94-23202 Pt 1 (17), Department of Defence, Russell Offices.

14 DI (AF) AAP, 2320.101-1, Sect 2, Chap 3, para 306.

15 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure,* 1990, p 46.

16 ibid., p 46.

Resentment against the scheme grew stronger after its implementation. Rather than discontinuing the scheme, the Technical Trade Restructure Team addressed the issue by reiterating the need for strict adherence to reporting accuracy when assessing members for promotion.[17] Despite this, to date, only a very few (about 5 per cent) have not been promoted on the minimum time.[18] The perception, therefore, has persisted within the workforce that promotion is automatic and not earned.

More recent moves to overcome this now long-held perception include advice from Directorate of Personnel - Airmen to commanders reminding them of their importance in the time promotion concept. Additional caveats have been stipulated, such as 'Personnel should only be considered fit for promotion if they are judged to have the ability to be employed on trade supervision duties within the next 12 months'.[19]

As time progresses, conditional on-time promotion will become the norm and resistance will abate, leaving only the philosophical question: should promotion to corporal be to vacancy, ensuring that only a limited number of individuals are promoted; or should it be granted on-time as long as certain qualifying conditions are met?

Jack of all Trades

The concept of multi-skilling is not new to the RAAF, but it took the technical trade restructure to introduce the idea as standard practice across the entire workforce. The form of multi-skilling introduced by the technical trade restructure was intended to be inversely proportional to the complexity of the system upon which an individual is employed. Tradespeople working on a relatively simple aircraft type can be trained and employed across a broad range of duties, while those employed on a more sophisticated system may be specialised quite narrowly, albeit to a greater depth.[20] The beauty of this multi-skilling approach is that, if employed correctly, it can benefit both the organisation and the individual. The organisation benefits from a cost effective means of developing and utilising the skills of the workforce which blurs the lines of demarcation between specialisations and maximises employment potential. The individuals benefit from the opportunity for skills progression in accordance with their diverse talents, so that the majority constantly find their employment challenging and rewarding.

Still, while the benefits of multi-skilling can be great, supervisors must remain aware of its limitations. For example, not everyone needs to be multi-skilled to meet employment requirements. The Technical Trade Restucture Team suggested that for aircraft of low complexity, or where maintenance is restricted to the operating level, multi-skilling across the full avionic or mechanical spectrum may be highly desirable

---

17 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 3.

18 ibid., p 3.

19 DI (AF) AAP 2320.101-1, Sect 2, Chap 3, para 306.

20 RAAF Technical Trade Restructure - Multi-skilling Aspects, Minute, TTRT2 to WSESs, 24 Jun 94, p 1, Department of Defence file No. AF 92-21573 Pt 1 (12), Department of Defence, Russell Offices.

and achievable, but for the more complex aircraft or those with highly complex systems, it may not be feasible or even desirable to multi-skill all, or any, maintenance personnel.[21]

Furthermore, managers must ensure the individuals working within these environments realise their multi-skilling potential but do not exceed it. Just as under-stimulation can lead to inefficiency, over-stimulation can lead to anxiety, and whilst the former wastes money, the latter can waste lives.

The perception that the RAAF's workforce has been excessively multi-skilled is, in fact, quite widespread according to a survey of the aircraft technical workforce conducted in late 1996.[22] A typical sentiment expressed by RAAF tradespeople is that they have changed from knowing 'a lot about a little' to knowing 'a little about a lot', with many referring to themselves as 'a jack of all trades but master of none'. This situation, although not universal, is disturbingly wide-spread across the Force Element Groups.[23]

Self-supervision

Employment within the RAAF's aircraft technical workforce has long been different from that in civil aviation in one fundamental aspect - signatory responsibility. The RAAF requires its leading aircraftmen to sign for the maintenance they have performed, with a trade non-commissioned officer to supervise and counter-sign for that maintenance. Additionally, if the maintenance is of a critical nature a second inspection and an extra signature is required from an authorised independent inspector, who is generally a senior non-commissioned officer. Civil aviation organisations on the other hand typically employ a number of unlicensed Aircraft Maintenance Engineers (AMEs), equivalent to the RAAF's aircraftman and leading aircraftman, and a small number of Licensed Aircraft Maintenance Engineers (LAMEs), equivalent to the RAAF's trade non-commissioned officers. Aircraft Maintenance Engineers do most of the hands-on work but they do not sign or accept responsibility for the maintenance tasks they complete. Their work is supervised and certified by the LAME and, as with the RAAF, in cases where the maintenance is critical, an additional inspection and signature is provided. Significantly though, LAMEs can complete maintenance tasks themselves and sign off that work. Thus efficiency is greatly improved by halving the number of personnel required for the task.[24]

Noting this practice, the Trade Structure Review Working Party (TSRWP) decided to assess the viability of some form of self-supervision in the RAAF's aircraft technical workforce. When they canvassed the concept around the bases, they were stunned by

---

21 RAAF Technical Trade Restructure - Multi-skilling Aspects, TTRT2 to WSESs, 24 Jun 94, p 2.

22 Jones, W, *Survey of the Aircraft Technical Workforce,* 1996, p 4.

23 ibid.

24 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure,* 1990, p 47.

the level of opposition to the proposal. In particular, the working party's attention was continually drawn to the limited manpower and low experience levels available in units at the time.[25]

Officers and senior non-commissioned officers alike pointed out that few corporals were capable of carrying out the required duties, and that using senior non-commissioned officers in this way would probably create a conflict between their self-signing duties and their supervisory role. In particular, the non-commissioned officers and unit managers at 486SQN argued strongly that self-supervision would be unwise during late shift, where the greatest benefits were expected to arise. They pointed out an inherent contradiction in the scheme. It would be during late shift, when tradespeople often are under pressure to complete maintenance so that aircraft will be ready for the next day's tasks, that unit efficiency is most likely to benefit from self-supervision. However, late shift is also the time when, because of tiredness or the pressure to get aircraft ready quickly, mistakes are most likely to happen, and consequently the quality assurance of trade supervision is most needed.[26] This opinion was supported by unit managers who pointed out that most maintenance incidents are caused by more experienced personnel who are given more difficult and urgent jobs and 'get caught', often through cutting corners to save time.[27] This compelling consensus led the trade structure review working party to note in their report to the Air Commander Australia (ACAUST) that:

> ...at the outset [we] tended to believe that some form of self-supervision was desirable, but were persuaded to the contrary by overwhelming opposition, most of which was based on sound logic and experience.[28] ... In view of the foregoing we conclude that the RAAF concept of maintenance supervision is well founded and effective, and there would be little gain from the introduction of self-supervision.

Instead, they rationalised the existing trade supervision system by issuing 'Air Force Technical Instruction - Technical 3/90 Supervision Inspection of Maintenance', which provided unit managers with amended guidance on the appointment of maintenance supervisors, with an emphasis on competence rather than rank. It was intended that the provision of this instruction would at least remove some unnecessary barriers to efficient employment, resulting in a more productive workforce.

Remarkably though, when the working party released their report on the review of the trade structure, they recommended introducing self-supervision, just one month after they had argued against the proposal.[29] Whilst highlighting the likely productivity

---

25 Report on Technical Work Practices, under cover of Minute, DGLOG-AF to ACAUST, 19 Jun 90, p 8, Department of Defence file AF/87/37299 Pt 1 (87), Department of Defence, Russell Offices.

26 Report on Technical Work Practices, DGLOG-AF to ACAUST, 19 Jun 90, p 8.

27 Report on Technical Work Practices, under cover of Minute, DGLOG-AF to ACAUST, 19 Jun 90, p 8, Department of Defence file AF/87/37299 Pt 1 (87), Department of Defence, Russell Offices.

28 ibid.

29 Trade Structure Review - Agendum Paper, A/ACMAT-AF to CAS, 20 Sep 90, p 3.

gains of self-supervision, the working party also warned that it would deny junior trade personnel on-the-job training opportunities. To guard against this the working party suggested that corporals should only perform and sign for maintenance in situations where there was a significant productivity gain. Similarly, the team proposed that sergeants should normally be employed managing maintenance teams and performing and signing for independent maintenance, and self-supervise only rarely.

The trade structure review working party also found that the majority of personnel employed in workshops were either technicians or advanced technicians, so that a much higher degree of self-supervision was possible there. However, in recognition of the increased level of responsibility, they recommended that before approval to self-supervise was given, an individual should be a corporal technician with at least three years experience on the aircraft type. As a significant number of corporals and sergeants already met these criteria, early implementation was not difficult.

Consequently the technical trade restructure agendum presented to CASAC in October 1990 included a proposal for self-supervision, just four months after the concept had been rejected. The most likely explanation for this otherwise extraordinary reversal of opinion is that full achievement of the team's calculated (and highly desirable) manpower savings depended on introducing the concept.[30]

The restructure was approved and Air Force Organisational Directive 15/92 was issued directing DTTRT-AF and DPA to proceed with the selection of sergeant and corporal self-supervisors. By late 1992 a set of tutorial guides had been obtained from Qantas and an agreement reached between the RAAF and the Civil Aviation Authority (CAA) to use the latter's Category Technical Competency (CTC) examination system for the qualification of RAAF Self-supervising Technicians (SSTs).

When the criteria were released about 50 RAAF personnel already met the standard.[31] By mid-1993 some 460 self-supervising technician posts had been identified by the Technical Trade Restructure Team but, following a surprisingly low number of applications for these posts, the take-up figure was considered likely to be less than 150 by end 1993. At that rate, all the identified self-supervising technician posts would not be fully manned until the end of the decade.[32]

This disappointing take-up rate prompted Group Captain K. Drover, a member of the technical trade restructure steering group with recent operational unit experience, to express his concern . He suggested that there were real and valid reasons why the

---

30 Sixth Meeting of the TTR Steering Group Agenda Brief, undated, p 1, Department of Defence file AF 91-13301 Pt 1 (17), Department of Defence, Russell Offices.

31 Minutes of the Seventh Meeting of the Technical Trade Restructure Steering Group, Held at Air Force Office, 2 Jul 93, p 4, Department of Defence file AF 91-13301 Pt 1 (22), Department of Defence, Russell Offices.

32 ibid., p 4.

rate was not higher - namely, the inadequate level of the financial rewards, and the uncertainty surrounding the responsibilities of self-supervising technicians.[33]

Interestingly, the number of applications for self-supervising technicians began to rise by late 1994 and individuals approached the exams with greater confidence.[34] Nevertheless, examination results showed a pass rate of just over 50 per cent, and unit management remained concerned that using sergeants as self-supervising technicians placed too great a restriction on workforce flexibility.

As a consequence of the on-going difficulties with the scheme a discussion paper was produced in mid-1995 which identified issues and made recommendations. There were three main issues:

- self-supervising technician manning;
- employment of self-supervising technicians in the workforce; and
- outcomes of the implementation.[35]

Self-supervising technician manning continued to be dogged by an inability to fill established positions, the reason for which included a smaller selection pool than originally envisaged, examination pass rates lower than anticipated, and an excessive lead time from the identification of an employment need in a squadron to the employment of a self-supervising technician to meet this need.

However, the primary issue relating to the employment of self-supervising technicians was the reluctance of SENGOs to utilise this new management tool to its greatest advantage. A survey of unit SENGOs identified that, with few exceptions, there was little support for the employment of self-supervising technicians to their full capability, especially sergeants.[36] The reason was that self-supervising technician employment placed unwanted restrictions on the way the workforce was managed, and that sergeants were using their licences only infrequently.

Finally, the paper noted that whilst the original intent of self-supervision was sound, it did not appear to have succeeded in practice. While the flexibility and efficiency of the general workforce had been enhanced, there had been no 'tangible benefits in productivity'. Also, the scheme was more costly than anticipated.

In conclusion, the paper recommended that serious consideration be given to replacing the scheme with one more suited to the RAAF's needs. As a result of this recommendation, self-supervising technician selection was suspended indefinitely, sergeant positions within squadrons were no longer identified by a self-supervising

---

33 ibid., p 1.

34 Minutes of the Ninth Technical Trades Restructure Steering Group Meeting, Held at Russell Offices, 14 Nov 94, p 4, Department of Defence file AF 91-13301 Pt 1 (35), Department of Defence, Russell Offices.

35 Minutes of the Tenth Technical Trades Restructure Steering Group Meeting, Held at Russell Offices, 2 Jun 95, p 8 to Enclosure 3, Department of Defence file AF 91-13301 Pt 1 (40), Department of Defence, Russell Offices.

36 ibid., p 8.

technician qualification, all self-supervising technicians were advised of the change to employment conditions, and a review was proposed to identify future directions for the concept.[37]

No review results have been released to date, and as a result of on-going concerns, it was proposed in May 1996 that the entire scheme should be suspended indefinitely.

The Degradation of Skills

The changes implemented as a result of the technical trade restructure were extremely comprehensive, with often complex interrelationships in which the success of one facet depended on the existence of several others. The implications of that interdependent dynamic appear not to have always been fully appreciated by RAAF project teams. The loss of deeper level maintenance positions is one example of this.

There are two approaches to developing the knowledge and skills required for operational level maintenance. One school believes that if technical personnel are to function effectively at the operational level, they require training up to and including that level. Alternatively, the other school believes that if the operational level is to function effectively, it needs a core of personnel with in-depth diagnostic skills, which are obtainable only from experience at a deeper level of maintenance.

At present there are several high profile projects examining the reduction or elimination of Air Force aircraft maintenance personnel from deeper level maintenance positions and replacing them with civilian staff.[38] If the latter school of thought is right, and if the outcome of these projects is that Air Force personnel are removed from deeper maintenance, there will inevitably be a significant reduction in the RAAF's ability to maintain Minimum Level of Capability (MLOC). There is a need for more research in this area, as there are no definitive data currently available indicating the flow-on effect deeper level maintenance experience has on operational level maintenance. Furthermore, that research is required as a matter of urgency because once the RAAF has lost this competence it will be extremely difficult to retrieve.

---

37 ibid., p 8.

38 Notably the Commercial Support Program (CSP) and Defence Reform Program (DRP).

CHAPTER SEVEN

Change

> It must be considered that there is nothing more difficult to carry out, nor more doubtful to succeed, nor more dangerous to handle, than to initiate a new order of things.[1]

Introduction

Change is constant, inevitable, accelerating and necessary. The technical trade restructure was implemented as a consequence of change: change to the skills required by aircraft maintenance personnel as a result of change in the complexity of aircraft systems; change because of the blurring of demarcation lines between trades; and change due to declining recruiting figures. However, many have argued that the most tumultuous changes experienced by the RAAF's aircraft technical workforce in the last ten years were those imposed by technical trade restructure itself.[2] Ironically, one of the aims of technical trade restructure was to alleviate the difficulties arising from external changes.

It is the combination of the size and range of the changes desired, and the variation in the success rate, which makes the technical trade restructure such an important case study, both for what was done well and what could have been done better.

There were virtually no aspects of aircraft technical recruitment, education and training which were not affected in some way as a result of the technical trade restructure. The Technical Trade Restructure Team necessarily, and sometimes reluctantly, became involved in an extraordinarily wide spectrum of activities, ranging from liaison with other services on the changes to trade structure and training, to drafting revised defence instructions, to liaison with design teams to develop distance learning strategies.[3]

In order to better understand the technical trade restructure, it is useful to first provide an overview of general change theory against which the restructure can be analysed.

There are many ways organisations can be changed to make them more efficient and effective. For the purposes of explanation, those ways have been grouped under the following headings: technology, power, workforce and structures.

---

1 Machiavelli.
2 Jones, W, *Survey of the Aircraft Technical Workforce,* 1996, p 4.
3 Air Force Logistics Directive 4/90.

Technology. From the beginning of the Industrial Revolution employees were the unpredictable element in the production process. In an attempt to minimise the workers' hindrance to production and maximise their efficiency, managers turned to models such as 'scientific management'. These focused on such things as improved supervision, reduced production flows, and the development of suitable maintenance layouts. The most profoundly influential scientific management model was Taylor's time and motion study, which timed the functions performed by groups of skilled tradesmen and established the most efficient as the standard which all others had to meet.[4]

Power. The power model addresses the importance of differential power relations in the working environment. The European experience is known as industrial democracy. This collaborative approach to industrial relations was established after the Second World War in order to rebuild ruined infrastructures, the extreme circumstances necessitating the collaboration of unions, employers and governments. Recent Australian experience of industrial democracy has included the wages accord, award restructuring and enterprise bargaining.[5]

Workforce. This model attempts to manage change by recognising and dealing with the human factor in the working environment. Typical examples are an emphasis on autonomous work groups, the modification or elimination of the supervisory role, and empowerment of workers through Total Quality Management (TQM).[6]

Structure. Also referred to as change by edict, structural change typically refers to redrawing organisational charts, changing processes, policies and procedures, and then promulgating the new version throughout the organisation. This form of change is typical of the traditional bureaucratic organisation.[7]

The Organisational Perspective

The RAAF, like most western militaries, is a classic bureaucracy. Max Weber, a primary contributor to our understanding of bureaucracies, identified six main features of a bureaucracy:

- a division of labour into highly specialised jobs;
- a proliferation of rules and procedures specifying operations and how authority is allocated;
- a set hierarchy of jobs and authority;
- selection and promotion dependent upon qualifications, experience and competence, to meet prescribed position specifications;
- rewards and penalties applied according to standardised procedures; and

---

4 Dunphy, Dexter C, *Organisational Change by Choice*, McGraw-Hill, Sydney, 1981, p 37.
5 Telstra Certificate of Management, *Change Management*, Course Notes, p 21.
6 Dunphy, *Organisational Change by Choice*, p 48.
7 Katarina Hackman, *Organisational Change*, presentation given at RAAFSC, July 97. Dunphy, *Organisational Change by Choice*, p 33.

- a well-defined career structure, with loyalty to the organisation resulting in long-term job security.[8]

While there are many advantages to a bureaucratic structure, particularly for military operations, they have long been considered resistant to change.[9] They develop formalised policies and procedures to govern daily activities which, once committed to paper, not only establish the behaviour specifically associated with them, but also tend to become models for later policies. To change behaviour which relies on rules, new rules must be developed. The process of developing those rules is also formalised, so that change in the way activities are conducted takes a great deal of time and effort. Further, bureaucratic structures typically require members to follow rigid communication channels, making it difficult for, say, a leading aircraftman in Tindal to submit a suggestion for change to a policy directorate in Canberra. Even if the change could be accomplished, the news that the opportunity or a need exists cannot be communicated.[10]

Effective Change Managers

The RAAF is a hierarchical bureaucracy, and typically, hierarchical bureaucracies manage change only by edict. This approach has several disadvantages:[11]

- by not involving employees in decision making or not consulting them, it fails to create commitment to change;
- by ignoring the realities of power in the organisation, it creates resistance, which delays, deflects, blocks or subverts action to change the organisation;
- by not drawing on resources of knowledge and expertise below management level, it leads to inappropriate decisions about directions for change and inadequate action plans to achieve change; and
- it creates distrust and conflict in the organisation, thereby making further change more difficult to implement.

A Telstra archetype study commissioned in 1993 indicates that management by edict tends to make people feel insecure in their identity and reduces their openness to new ideas, thus making it difficult to cope with change. A more appropriate style for managing change in Australian organisations, according to the study, would be the 'captain-coach' rather than the 'stern task master' - that is, a manager who leads by sharing and participating with the team.[12] The key activities for captain-coach managers are to:

---

8 J. Stoner, *et al*, 'Management', (Second Edition), Prentice Hall Australia, Sydney, 1994, p 39, in, Williams, Gary, *The Power of Many*, Air Power Studies Centre, Canberra, 1996.

9 Connor, Patrick E and Lake, Linda K, *Managing Organisational Change*, Praeger, New York, 1988, p 23.

10 ibid., p 24.

11 Dunphy, *Organisational Change By Choice*, pp 36-37.

12 Telstra Certificate of Management, *Managing Change*, Course Notes, 1994, p 83.

- defuse any crisis mentality,
- give clear instructions, and
- help create a map, a goal, a cause.[13]

Argyris and Schon have identified two set of values which are commonly used to guide their encounters, labelled Models One and Two (see Table 7.1). Model One behaviour typically belongs to the hierarchical style of management, where managing is about control and the need to win. Argyris and Schon suggest that this style of leadership was appropriate in the stable organisations of the past, but is no longer so. They prescribe a more collaborative style, which they refer to as Model Two. The Model Two approach, they suggest, is less defensive, more collaborative and more likely to lead to effective relationships and learning.

Model 1

Governing Values	Action Strategy	Relationship Consequences	Learning Consequences
pursue own goals	control the environment	perceived defensiveness	self-fulfilling processes
play to win in win/lose style	control the task	defensive relationships	single-loop learning
minimise negative feelings	unilaterally protect self	defensive norms	attributions are untested
rationality, *not* emotionality	*unilaterally protect* others	*low choice* commitment	*single-loop* learning

Model 2

Governing Values	Action Strategy	Relationship Consequences	Learning Consequences
valid information	create environment which allows *personal freedom*	minimise defensiveness	disconfirmable processes
free & informed choice	joint control of the task	non-defensive relationships	double-loop learning
people responsible for own behaviour	joint protection of self	learning-oriented norms	public testing of attributions
openness	bilateral protection of others	high choice commitment	double-loop learning

Table 7.1 Personal Values of Effective Change Mangers[14]

13 ibid., p 83.

14 Argyris, and Schon, in Telstra Certificate of Management, *Managing Change*, Course Notes, 1994, p 78.

Cultural Issues

> When our lives are disrupted by changes which involve some redefinition of who we are or how we are going to live, the tension is correspondingly greater.[15]

Before proceeding to the analysis of the actual change process as approached by the Technical Trade Restructure Team, it might first be useful to briefly define the concept of organisational culture as this is at the heart of the organisational change predicament. Stace and Dunphy believe that culture is one of the more significant elements of the change process and if handled well is likely to make the change more effective.[16]

Firstly, what is organisational culture? Stace and Dunphy provide the following definition:

> Organisational culture consists of core assumptions, values, beliefs, norms and ideologies shared by those in the organisation. It also consists of the cultural forms which express these values, for example, unique language codes used by those in the organisation, distinctive language content such as corporate myths and stories, distinctive patterns of repetitive behaviour such as rituals and ceremonies, and other symbols and artefacts which carry emotional meaning for organisational members.[17]

Stace and Dunphy believe that culture is concerned with meaning. It provides organisational members with the rationale for what they do. It enshrines the purposes of the activities pursued by the members of the organisation. Culture therefore exercises strong control over the actions of those in the organisation by setting the boundaries of what is acceptable behaviour and by defining ideal behaviour.[18]

But what is actually meant by abstract terms such as 'values' and 'norms'? Connor and Lake provide the following definitions:

Values. Values are ideas, either explicit or implicit, that guide or affect the choices we make. They can be performance-oriented (strive for excellence) or people-oriented (one team).

Norms. Norms are rules or codes that indicate proper or improper action; they provide guides for playing the organisational game. Connor and Lake break these into four categories: task support, task innovation, social relationship and personal freedom norms. Task support norms refer to people's behaviour towards each other,

---

15 MacKay, 1993, p 16.

16 Stace, Doug and Dunphy, Dexter, *Beyond the Boundaries: Leading and Recreating the Successful Enterprise*, McGraw-Hill, Sydney, 1994, p 133.

17 ibid., p 131.

18 Stace and Dunphy, *Beyond the Boundaries*, p 131.

competitive or collaborative, sharing or withholding. Task innovation norms are of a technical nature and are used to describe the level of creativity and experimentation expected. A high level of encouragement of experimentation or creativity generally incorporates a tolerance of failure. Connor and Lake suggest that social relationship norms guide people's interpersonal behaviour - how they relate to each other, how much they socialise in their own time. Finally, personal freedom norms govern individuals' personal autonomy within the organisation.[19]

The indicators which identify an organisation's culture are stories, rites, language and symbols. Again, Connor and Lake provide the definitions:

Stories. Organisational stories are usually narratives about how people reacted at a particular time to a particular set of circumstances.

Rites. Rites indicate what is really important - the order in which agenda items are placed, for example.

Language. Language is vocabulary which contains meaning only within that environment. This is particularly evident with technical organisations such as the aircraft technical workforce.

Symbols. Symbols include slogans, mascots, tail flashes and squadron, section and mustering badges.

Dunphy and Stace suggest that existing organisational cultures develop a momentum of their own, so changing organisational direction, particularly in an institution with a great tradition like the RAAF, can be like trying to turn around an ocean liner which is travelling at full speed.[20]

Organisational change, then, permeates to the deepest levels of an organisation's existence. Change can force us redraw the definition of who we are or how we are going to live, it can affect the stories we tell in the smoko room, it can affect the language we use, it can change the symbols we use to identify ourselves. Any change in the workplace has the potential to affect its culture, but when the change is profound and the recipients are forced to comply, then the struggle between the desire to remain with the existing culture and the urge to conform to the new requirements can cause extreme anxiety. For a manger to restructure an organisation, he/she merely has to rewrite organisational flow charts and amend policies and procedures. But for the recipients to change, they may have to completely reinterpretate themselves. According to Dunphy and Dick:

---

19 Connor and Lake, *Managing Organisational Change*, pp 42-48.

20 Dunphy and Stace, *Under New Management*, p 151.

> Our self-concept and our self-awareness is the cherished part of ourselves and through it we structure our personnel view of who we are and how we relate to the world. If we see change as threatening our symbolic world, we react defensively, opposing and resisting the challenge.[21]

Stages in the Change Process

For the purposes of this discussion, the change process implemented by technical trade restructure will be compared to a logical sequence of processes, each necessary for effective change management. Those stages are:

- planning the change,
- grieving and celebrating the past,
- managing the transition, and then
- stabilising the new state.

Although for ease of clarification those stages appear discrete, in reality they are often overlapped and repeated as necessary.

Planning the Change

It took years from the time the need for change in the aircraft technical workforce was first mooted until the restructure was approved by CASAC. Even then, the Technical Trade Restructure Team felt that to model the implementation and post-implementation processes would take an additional year, during which no savings could be achieved and moves toward accreditation of trade training would be delayed.[22] Consequently no definitive plan for the introduction of the technical trade restructure changes was ever formulated; the implementation process was endorsed piecemeal; and there was no real understanding of the ramifications of the implementation actions.[23]

During the planning phase of the restructure, the architects of the restructure, the trade structure review working party and the Technical Trade Restructure Team, did most of their planning within the walls of Russell Offices in Canberra. But planning a major change involves more than redrawing organisational flow charts. It involves constant consultation with the people who will be affected by the change, it involves seeking the advice of people who know what happens on the shop floor, and it involves the formation of meaningful partnerships with these people. This is not to say that the team did not consult unit personnel. They did at various stages; but the question is: was it enough; and was it with all the people who deserved a say?

---

21 Dunphy, D, and Dick, B, *Organisational Change by Choice*, McGraw Hill, Sydney, 1981, p 95.

22 Trade Structure Proposals - Consideration by CASAC, 20 Sep 90, p 3.

23 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 1.

The planning stage of a change project, if done well, can achieve two objectives. Firstly, it provides a map of what is to be achieved and when. Secondly, it can help allay the fears of the target group by giving them the impression that they contributed to the change. This does not mean that every member of the target group has to be heard and their suggestions incorporated. The important issue is that the members of the target group have a general perception that they have been consulted and their needs addressed. Additionally, the target group will be more willing to 'follow the leader' if they are confident the leader can provide them with a successful outcome.

From the returns of a survey conducted in 1996, the planning of the technical trade restructure was deficient in this second aspect.[24] The RAAF's technical workforce do not feel they have been suitably consulted, and they are not confident that the changes they have been asked to accept and implement will lead to a successful outcome. There were far too many comments from members of the workforce concerned with this issue to present in detail here, but the following cross-section provides some idea of the depth of feeling. These comments are typical of the sentiments expressed by every FEG, every mustering, and every rank level surveyed.

> How things work in the real world are vastly different from the impressions that the hierarchy in Canberra have. Greater lead-in time and more consultation with those 'at the coal face' may have solved some problems.

> When not less than five other air forces tried this new system, and could not make it work as well as they originally had, why in God's name can't we see the writing on the wall and learn from other people's mistakes?

> More consultation with the squadrons and going on with the results of the consultations, not ignoring them.

> The first most of us knew about TTR was when the hierarchy lobbed up and said, 'we have this wonderful new system and this is how it will work and this is when it will work by', end of consultation.

Fortunately, things already appear to be improving in this area of change management. A recent major change project known as the Defence Efficiency Review (DER)[25] actively sought suggestions and comments from all interested parties. The Defence Efficiency Review team were impressed with the contributions and submissions they received and appreciated the willingness for innovation and change from the respondents.[26] The contrast here is startling, from a lose/lose situation with the technical trade restructure to a win/win situation with Defence Efficiency Review merely because of the amount of consultation during the planning phase.

---

24 Jones, W, *Survey of the Aircraft Technical Workforce,* 1996, p 4.

25 Subsequently referred to as the Defence Reform Program (DRP).

26 Defence Efficiency Review Team, *Future Directions for Defence,* DPUBS, 1997.

Celebrating and Grieving the Past

> Change can only begin when one thing ends and something new starts. For this to happen we have to let go of the old, even though there can be no guarantee of what the new will bring... Like abseiling, you actually have to loosen your hold on the rope before you can start to move...[27]

Once the change has been planned and approved, we are ready to plunge headlong into implementing the new system. Or are we? According to Burke, we must first prepare the target group for the transition, a process which helps celebrate what has been but shows that it can no longer continue.[28]

This stage of the change process has several important aspects. Firstly, the change manager must assist the workforce to celebrate the glory of the old structure. Second, the workforce must be convinced that the old structure is inappropriate for the future and take time out to grieve its passing. Finally, the change management must create the new, powerful and compelling vision of the future which will be needed by the workforce before they are willing to relinquish their grip on the past in favour of the future.

This sentiment, frequently espoused by change management writers, is supported by the findings of the Archetype study commissioned by Telecom in 1993. The purpose of the study was to build a better understanding of Australia's unique cultural characteristics.[29] The study shows that for Australians to feel happy they need to know that others recognise and value who they are and what they do; they need a clear vision of where they are going and why. The study also found that Australians prefer a structured approach which recognises them and their past achievements, and builds on those things to create the future.[30]

The evidence is that the Technical Trade Restructure Team failed to convince the workforce that the pre-TTR structure was no longer appropriate, and that it failed to convince them that the future under the new structure would be more attractive.

Celebrating the Past

According to Burke celebrating the past is necessary in order to disengage from it. As an event he believes it should take the essential nature of a wake leading to rebirth. When a group of individuals have emotional unfinished business they can spend a lot of time and effort bemoaning the change and romanticising the past. The members of the aircraft technical workforce are guilty on both counts but perhaps not without reason.[31] By and large the members of the aircraft technical workforce have a strong sense of pride in their work and properly need to have their achievements

---

27 Clarke, L, *The Essence of Change*, Prentice Hall, Hertfordshire, UK, 1994, p 52.

28 Burke, W, *Organisational Development: a Normative View*, Addition Wesley, Massachusetts, 1987, p 118.

29 Telstra Certificate of Management, *Managing Change*, Course Notes, 1994, p 41.

30 ibid., p 41.

31 Jones, W, *Survey of the Aircraft Technical Workforce*, 1996, p 4.

recognised.[32] Burke suggests that the greater the sense of pride in a job well done, the greater the need to acknowledge and celebrate this before moving on to a new system. The workforce are more likely then to accept the new system, rather than seeing its introduction as an implicit criticism of the old ways.[33]

Inappropriate for the Future

For change to be a success we must celebrate what has been but show that it cannot continue.[34] This perhaps is one of the primary failings of many change programs. The target group must be convinced right up-front that the change is absolutely necessary; if not, at the first sign of its faltering the workforce is likely to reach for the old adages for support. Statements such as 'there must be change for change's sake' and 'they're fixing something that isn't broken' can roll off the tongue very easily and do great damage to the chances of an expedient and effective implementation. While these statements may have merely been made in frustration or ignorance, they have a habit of sticking. Once a project has terms like these associated with it, it can be an up-hill battle to get the workforce back on side.

The Technical Trade Restructure Team were in fact aware, perhaps too late, that not enough had been done to convince the workforce that the existing structure was inappropriate for the future. The HTTRT noted in his final report that:

> ...in many units, there remains a perception that the old trade structure is sufficient to meet future needs and there is no awareness of the reality that RAAF were unable, in good times, to recruit, train and man to constrained establishments (CE) (particularly RADTECHA and RADTECHG where the achievement against the recruiting target for 1988/89 was only 74 per cent). This attitude, at all levels of unit management, has been a significant impediment to the implementation process.[35]

The technical trade restructure's failure to convince the workforce that the existing system was not viable into the future has left hundreds of members of the aircraft technical workforce believing that the techncial trade restructure fixed something which was not broken. Consequently, when individuals are faced with an aspect of training or employment which appears inadequate, they long for the past and bemoan the restructure, rather than face the challenge and look to the future. Statements contained in the survey conducted for this fellowship paper vary from simple expressions of displeasure to many which are unprintable. Again, the following comments are not unusual, but are in fact typical:

Why did we need TTR again? Was it like the recession we had to have? Greater lead-in time and perhaps not putting so many trades into the basket may have been a better way to implement a scheme that nobody wanted.

32 ibid., p 4.
33 Burke, W, *Organisational Development*, 1987, p 94.
34 ibid., p 94.
35 HTTRT-AF, *Final Report on the Technical Trade Restructure Implementation Project*, 1996, p 4.

> We already had a system that produced superior quality technicians. TTR is the result of political posturing by someone in Canberra with nothing better to do than to try and fix a system that was working!

Future Vision

Unfortunately, visionary leadership is not a competency possessed by most traditional bureaucratic and technocratic managers. Dunphy and Stace suggest they are instead conditioned into caution and circumscribed by rational objectivity.[36] Again, the head of the technical trade restructure team in his final report declared that:

> ...the failure to effect culture change was a direct result of the poor selling of the technical trade restructure, and the poor support given to the technical trade restructure by higher authority in the initial stages. As a result, workforce acceptance of what had seemed to be 'good ideas' quickly fell into either apathy or rejection of the technical trade restructures initiatives.[37]

Managing the Transition

During the 40 or so years preceding the technical trade restructure, changes were made in relatively small adjustments through the fine-tuning of a system which largely fitted the RAAF's requirements. In early correspondence related to the technical trade restructure, the same philosophy was evident. Initially the architect of the restructure, Wing Commander L. Watts, and the then-ACENG-AF, Air Vice-Marshal Sutherland, both suggested that the implementation should be phased in gradually over a period of about 10 years so as not to cause undue concern.[38] However, this did not turn out to be the case. In the few years between the conception of the idea and the actual implementation of the restructure, the pressure to alter the workforce increased and, notably, the impetus for the restructuring also changed. When the restructure was conceived the intention was merely to integrate the SYSTECH mustering into the existing workforce and to alleviate demarcation problems in advanced electronics areas. By the time it was actually implemented these considerations appeared to have become secondary to the pursuit of cost savings.[39] As the internal and external pressures for savings increased so did the tempo of change. By the time the trade restructure was presented to CASAC in 1990, the trade structure review working party considered that the implementation should be 'fast-tracked' as productivity gains could not be realised until the workforce was completely restructured.[40]

Following CASAC's approval of the restructure proposal, the head of the Technical Trade Restructure Team recommended that the project team's responsibilities should include coordination of publicity and liaison with command units. In order to sell the

---

36 Dunphy, Dexter, and Stace Doug, *Under New Management*, pp 154-155.

37 HTTRT, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 3.

38 'Trade Structure Review - Overview', undated, p 1, Department of Defence file AF/87/37299 Pt 1 (3), Department of Defence, Russell Offices.

39 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 1.

40 'Trade Structure Proposals - Consideration by CASAC', 20 Sep 90, p 3.

concept in the field the team itself went on several excursions to bases. Additionally, in order for queries to be satisfied at a local level, HTTRT suggested that trade structure liaison cells be established at each Command headquarters and base. This, it was hoped, would overcome one of the major deterrents to effective implementation; namely, misinformation. These liaison cells were staffed by representatives of all affected musterings and received in-depth briefs on the overall implementation project, thereby enabling them to provide answers to most queries at the local level. As the liaison cells were in contact with the team, additional information could be sought and obtained quickly, reducing the likelihood of misinformation.[41]

The Technical Trade Restructure Team was particularly good at changing the aircraft technical workforce by changing its structures; in fact, it is unlikely that the restructure would even have gotten off the ground without the exceptional energy and drive displayed by the team in this area.

However, this ordered approach to implementation had its disadvantages. As Dunphy says:

> ... these actions [structural changes] are undertaken in a naive belief that changing an organisation is as simple as redrawing some lines on paper. This assumption can result in confusion, conflict and low morale rather than more effective performance. Proponents of this view usually place a strong value on loyalty, authority, obedience and discipline.[42]

Dunphy could have been referring to HTTRT, who in drafting his implementation strategy wrote: '...the single-minded approach taken during the implementation can be viewed as necessary to the maintenance of overall harmony'.[43]

Resistance

Anecdotal and survey evidence suggests that most members of the aircraft technical workforce believe the concept of the technical trade restructure to be a good one.[44] Why then, after many years and much anxiety, is this system still not fully implemented; and why is a compliance audit team needed to ensure that the task is successfully completed? It might appear to the casual observer that the people with a vested interest in the workforce are not very good at coping with change. But on closer investigation it appears that the technical trade restructure grossly under-estimated the level of resistance they were likely to encounter when they directed the workforce to change their employment structures, without first ensuring sufficient consultation with those affected.

---

41 'Trade Structure Review - Agendum Paper', A/ACMAT-AF to CAS, 20 Sep 90, p 8.

42 Dunphy, C. Dexter, *Organisational Change By Choice*, p 34.

43 The Trade Structure Review Working Party, *Report on the RAAF Technical Trade Structure*, 1990, p 12.

44 Jones, W, *Survey of the Aircraft Technical Workforce*, 1996, p 3.

Significantly, the main resistance to change came from the very group the Technical Trade Restructure Team were counting on to effectively implement the new system. The team were relying on the unit middle managers, particularly at wing commander/squadron leader and warrant officer/flight sergeant levels, to manage the transition but, after a period of time, they found that this group was the one with the greatest desire to cling to the status quo, with many blatantly rejecting attempts to restructure the workforce. Others appeared to believe that the technical trade restructure would just happen and that no effort was required on their part. This active and passive resistance to change forced higher authorities to drive the implementation.[45]

The team observed that units quickly realised the team was unable to impose the requirements of the various AFLDs and AFODs, as a consequence of which the techncial trade restructure lost credibility.[46] Numerous general and specific examples can be cited of the workforce resisting these directives. The HTTRT cited the following examples as being indicative of an unwillingness to comply with CAS-endorsed directives:

- Placement of 'quotas' on trade supervisor numbers at Amberley.[47]
- Maintenance of discrete pre-TTR trade streams at Edinburgh.[48]
- Dismantling of the revised structure for the Communication Electronic Trade before any of the initiatives were trialed.[49]
- 75SQN SENGO's refusal to utilise some of the RAAF's first Self-supervising Technicians, even though the appointed personnel and their immediate supervisors were ready to implement the change.
- Internal shifting of personnel in contravention of posting orders at Edinburgh.
- Initial employment of mechanics on only mundane cleaning tasks in many units contrary to their training and respective Trade Specification requirements.
- Sections referred to by their old names, and old trade references used for maintenance problems.
- 6SQN SENGO's comment to a CPL AVTECH, employed on avionic and EO related tasks, that he could be an AVTECH or 'gunnie', but not both.[50]
- Units' refusal to employ personnel in the broader skills concept, insisting on retaining the old structure in their particular organisation.

Further, the Techncial Trade Restructure Team observed that this desire by many senior airmen to retain the status quo encouraged the rejection of the technical trade restructure to filter down through the ranks where personnel were strongly influenced by their superior's opinions. To date, it is only the visible evidence of post-TTR

---

45 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, pp 15-16. HTTRT, *Problems and Solutions to Complaints on the Technical Trade Structure*, 1996, p 3.

46 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 3.

47 ibid., p 3.

48 ibid., p 16.

49 ibid., p 16.

50 ibid., p 2.

tradespeople being employed in the field which has resulted in a slow shift of ideas within some restructured trades. Others have 'dug in' to a sufficient degree to make the validation of the technical trade restructure concepts impossible.[51]

Wing Commander Watts believed that the greatest difficulty was the Air Force's own unwillingness to be ruthless in dealing with dissent. Even though the system had the ultimate power to direct compliance, he pointed out, the system was reluctant to use it. This allowed entrenched interests, such as the armament empire, to resist and slow things down.[52]

The explanation for such a significant amount of resistance from all levels of the workforce may be that people are rarely eager to participate in change which is driven by compliance as opposed to commitment.

Uncertainties During the Restructure

It must be acknowledged, though, that the restructure was not operating in isolation. In addition to the resistance of the members of the workforce, many other influences altered the priorities of the review and the implementation of the restructure. It is difficult to say whether the trade structure review working party and the resultant Technical Trade Restructure Team should have better anticipated the impact of concurrent projects and the nation's changing economic climate. But one thing is certain: projects such as the Commercial Support Program, Force Structure Review and Members Required in Uniform, coupled with increasing recruit attainment rates and a declining wastage rate, had a profound effect on the outcome of the technical trade restructure.

Commercial Support Program

The Commercial Support Program (CSP) created significant uncertainties for the Technical Trade Restructure Team throughout the implementation process in terms of its overall impact on establishment and strength, and on the balance of skill levels.[53] The loss of Base Calibration Centres (BCCs) to contract, for example, had a major impact on the Advanced Avionic Technician (ADAVTECH) establishment by reducing the number of positions available and consequent employment options. Further losses of ADAVTECH are likely in future as a result of more comprehensive Commerical Support Program testing in the wake of the Defence Reform Program. The possible loss of a number of skill levels would also have an impact on the skill level balance.[54]

---

51 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 16.

52 Information of Watts, 20 March 1997, in C.D. Coultard-Clark, *From the Ground Up*, unpublished manuscript, 1997, p 193.

53 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 2.

54 ibid., p 2.

The continuing degradation of the skills of the aircraft technical workforce as a result of CSP may not become fully apparent for many years to come. With 7,000 military positions currently subject to market testing as a result of the Defence Reform Program, the future size and composition of the workforce is still very much in question.

Force Structure Review

Force structure reviews have also had an impact on the technical trade restructure in terms of changes in establishments and the balance between the skill levels. The closure of some units has had a significant impact in the balance of skill levels.[55]

Members Required in Uniform

Unfortunately, many units determined their establishment for Members Required in Uniform (MRU) without a full understanding of the progressive impact of TTR on manpower requirements for deployed operations.[56] The final establishment of the technical workforce should have been completed prior to MRU deliberations, but once the MRU has been set, MRU requirements should have been factored into future reviews of establishment. Since the demise of the TTRT, this responsibility now falls to the Maintenance Processes Re-engineering Project (MPRP) and the Technical Trade Structure Compliance Audit Team (TTSCAT).

A recent study carried out at the Strike/Reconnaissance Group (SRG) indicated a significant reduction in the number of MRU in their rotation pool because of their forecast tasking.[57] CAFAC has accepted the findings of the study and has directed the team to apply the principles to the remaining Force Element Groups. The likely outcome is for large reductions in establishments here also. The final strength of the technical workforce will therefore not be clear for some time.

Wastage Rate

A decline in the national economic situation in the early 1990s resulted in a major reduction in manpower wastage over the period of the TTR, with the annual wastage rate of technical personnel falling from 10 per cent per annum to four or five per cent. Large manpower surpluses were created as establishment numbers were reduced, thus impacting on the time to fully implement the restructure. With a 10 per cent wastage rate, the technical trade restructure was estimated to be fully in place by December 1996, but with the rate around four or five per cent, it could take until 2000 to complete the task.[58] Anecdotal evidence at the time of writing indicates that wastage rates are beginning to increase as a result of an improving national and international employment market.

---

55 ibid., p 2.

56 ibid., p 2.

57 Rotation Pool refers to the group of people who have been tagged for deployment to the area of operations some time after the IDF (Initial Deployment Force). The concept of the Rotation Pool is currently under review.

58 HTTRT-AF, *Final Report of the Technical Trade Restructure Implementation Project*, 1996, p 2.

The Human Factor

In addition to accommodating the impact of external influences, project managers must also be aware of how concurrent projects affect the commitment and priorities of the target workforce. Whilst implementation of the project at hand is the top priority for the manager, it may not have the same import for the target workforce. There are often a number of concurrent projects affecting any given population, and when this is coupled with the normal unit activities which occupy much of the target audience's time, the project may not get the prompt attention its manager believes it deserves. The following statements from members of the RAAF's technical workforce amply demonstrate this point:

> The introduction of TTR was at a time for me personally when too many major issues were going on. First of all was the amalgamation of intermediate level maintenance with depot level maintenance (482SQN & 3AD). Second was the biggest decision we all had to make: DFRDB/MSBS.[59] Third was CSP at 3AD EMF which seriously affected my decision about which super scheme to choose. Fourth was redundancy. With all this going on the introduction of TTR seemed least important.

> Enforce the restructure, whether you fall back in production or not. Don't go back to the old ways just to get the work done, ie. aircraft on-line or what ever component being worked on. Fall behind and cop it on the chin.

Connor and Lake suggest that one way of overcoming this problem is to take time off from normal activities. This has two benefits: firstly, it allows time to perform all the necessary functions to establish the new order, which in the case of the restructure could include reorganising the working environment and changing section signs. Secondly, it can give people time to come to terms with the new situation, by holding informal functions to officially bid farewell the old order and usher in the new.[60]

As stated earlier, the majority of the aircraft technical workforce believes in most of the changes imposed by the technical trade restructure; however they do have a problem with the implementation. This point was highlighted in a survey conducted in late 1996,[61] in which respondents reserved some of their strongest and most passionate answers for questions regarding the implementation of the technical trade restructure. Thirty-five per cent of respondents across the four force element groups disagreed, and 42 per cent disagreed strongly, that the restructure was carried out in the most efficient and effective way possible. A mere two per cent believed the restructure had been implemented efficiently (see Figure 7.1).

---

59 New and old (respectively) ADF superannuation scheme.

60 Connor and Lake, *Managing Organisational Change*, p 111.

61 Jones, W, *Survey of the Aircraft Technical Workforce*, 1996.

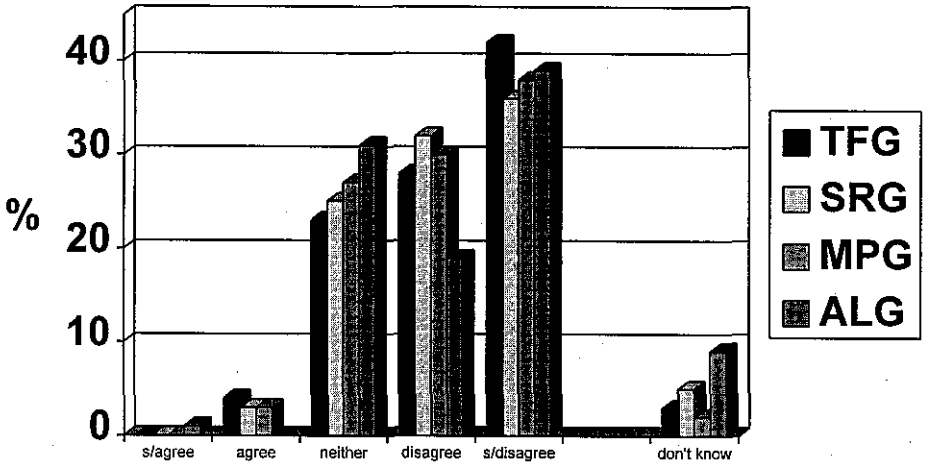

Figure 7.1 **The percentage of the aircraft technical workforce who believe the restructure was implemented the best way possible.**[62]

The other question which attracted an unequivocally negative response concerned the level of consultation with unit personnel. As can be seen in Figure 7.2, a significant percentage of the workforce believes there was insufficient consultation.

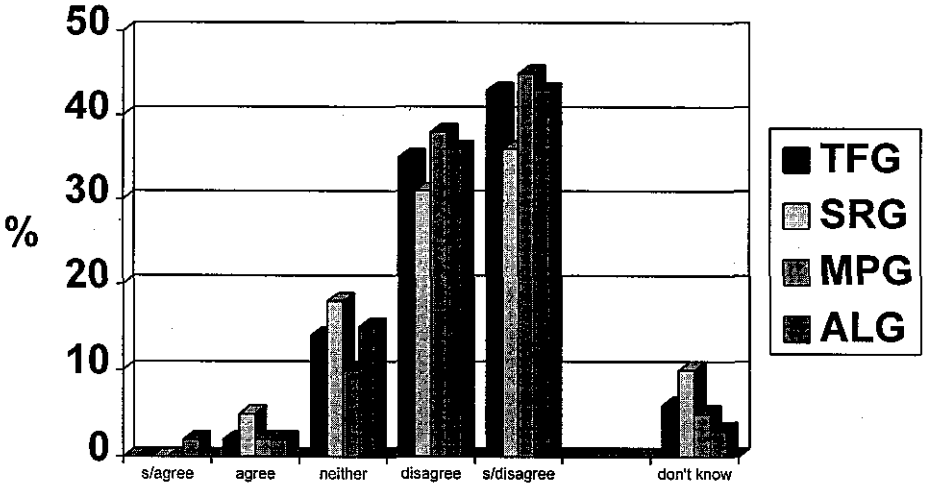

Figure 7.2 **The percentage of the aircraft technical workforce who believe that there was sufficient consultation.**[63]

62 ibid., p 3.
63 ibid., p 3.

Furthermore, many survey respondents indicated that although they had a great deal to say about the state of the aircraft technical workforce post-TTR, they felt it was not worth saying again as they had voiced their opinion on several occasions without success. This feeling of isolation from the decision-makers can create greater anger and frustration.

Tradition

All of the technical trades lost their traditional identities and gained new identities as a result of the technical trade restructure. Some lost more of their links with their past than others and for them the transition was more difficult. The radio trade, for example, can trace it roots back to the 1930s and has always had its own training facilities. The armament fitters (gunnies) also have a long and illustrious history, including their own annual day, St Barbara's Day. The gunnies were the only group to have their entire trade disbanded.

When the trades of the aircraft technical workforce were directed either to merge or disband they had to abandon many of the traditions which helped to define who they are. People tend to cling to traditions for emotional support. Traditions provide familiarity, confidence, and assurance that we are right; that we are safe within our capabilities. When an individual or group is asked to move beyond their comfort zone they must believe that the reward is worth the risk. The risk to many is the fear of failure. If people feel that they have emotional and psychological support, thereby reducing the potential damage resulting from failure, they may being willing to try to extend their experience beyond their existing comfort zone. One way of supporting the transition to a position outside the comfort zone is to enable individuals to take with them the items which represent familiarity, such as traditional icons.

This sentiment was noted by the then-CAFTS, Air Vice-Marshal I.T. Sutherland, very early in the restructure's development:

> I would suggest a useful approach might be to recognise the value in the traditions and history of existing groups. The radio trades, for example, can trace their traditions back to the early days of telegraph and wireless and it would certainly be counter-productive if the integrated structure lost its association with these traditions. There would seem to me no reason why an integrated trade structure should not be able to share its varied historical roots.[64]

The natural desire to remain with what is comfortable led to much of the workforce, particularly the ex-armament fitters, resisting the technical trade restructure in the hope that the decision might be reversed and things could get back to 'normal'. The members of the defunct armament mustering argued long and hard for the retention/reinstate of their trade, to no avail. The contradiction they faced was that the only avenue left open to them to argue their case was rational, factual argument,

---

[64] Trade Structure Review, minute, CAFTS to DGTP-AF, 28 Oct 87, p 2, Department of Defence file AF/87/37299 Pt 1 (4), Department of Defence, Russell Offices (written when the concept of alterations to the TTS included only Inst and Radio trades).

while their essential justification for preserving their autonomy was emotionally based. Emotion seems to carry little weight in a technocratic organisation. Yet as one analyst has observed, successful organisational change is rarely effected by rational planning alone.[65]

In addition, Robert Waldersee has argued that that when attempting to convince people to change, it is more effective to focus on the members' perceptions of the change, rather than the activities required. People will be motivated to change if they believe they are capable of performing the activity required, and if they believe that the performance of that activity is likely to lead to a successful outcome. Figure 7.3 illustrates this point.

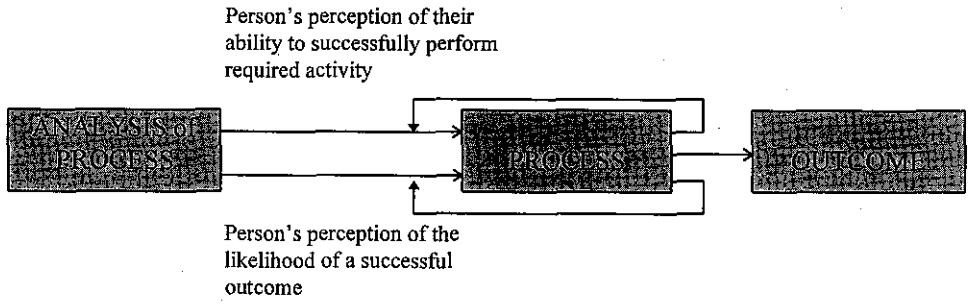

Figure 7.3 Perceptions of Change[66]

Stabilising the New State

The final stage in the managed change process is to stabilise the new state. According to Burke this process begins at the beginning. As well as telling people what will change, they need to be told what will not change. The most important aspect of this stage is modifying the organisational reward system to reflect the new behaviour and direction. In reality, it is unlikely that there would be a definite point at which change could be considered complete, or that one change would be completed before another starts. But as the Telstra Archetype study shows, the perception of a certain degree of stability can be beneficial to people's emotional well-being.

Future Directions

The RAAF has learnt from its past change experiences, and it is clear that change management is being taken very seriously at the most senior levels. For example, in early comments on the Defence Reform Program process, CAF stated that those responsible for it implementation should reflect on the lessons learned about change

---

65 Harrison, R, in Dunphy and Stace, *Under New Management*, 1992, p 160.

66 Adapted from, Waldersee, Robert, *Organisational Change*, presentation given at RAAFSC, July 97.

implementation from previous Air Force reform activities. The Defence Reform Program espoused the following change management basics:

- Foster the correct culture within your organisation.
- Lead by example.
- Open the communication lines up and down the command chain.

It is also encouraging to see that for the next major change which will affect the aircraft technical workforce, CAMM2 (Computer Aided Maintenance Management Series Two), 50 per cent of resources have been allocated to change management, in the hope of making the change as unstressful as possible and therefore facilitating an effective implementation.

CHAPTER EIGHT

Conclusions & Recommendations

Conclusions

The aircraft technical workforce has been around in one form or another since the establishment of the RAAF in 1921. Regardless of whether the RAAF has been operating Boxkites, Demons, P40s, F86s, or F18s, it has depended totally on the skills of that workforce for its ability to generate air power.

During the period between the end of World War II and the 1980s, the RAAF's aircraft technical workforce evolved at about the same pace as Australia at large. Because the world was not changing all that quickly, the workforce did not have to alter radically to keep up. When change occurred during this period it tended to be relatively small and planned, and executed comparatively slowly.

The technical trade restructure was developed and implemented at a time when the world was shrinking rapidly because of the information revolution. This indirectly but definitely altered *how* the workforce change was implemented and the *speed* at which things happened. The period was unprecedented in that, on the global scale, large, fast organisational restructure was the norm. It almost appears as if TTR got caught up in this phenomenon by chance, as the original ambitions for the scheme were much more modest than its final form. As the external pressure for reform grew, so too did the restructure's ambit.

While some of the changes introduced by the technical trade restructure were unpopular with the workforce, most were necessary. Firstly, the civilian aerospace industry was rapidly changing and if the RAAF's aircraft technical workforce wanted to maintain its credibility and civilian alignment it had to develop or risk becoming isolated. Secondly, as external pressure on the RAAF to reduce costs increased so did the imperative to find ways to improve the efficiency of the workforce.

Unfortunately though, while the Technical Trade Restructure Team and the RAAF's senior executive may have been convinced that enormous changes to the workforce were necessary, they never managed to convince the majority of that workforce. Their failure to sell the technical trade restructure to those most affected has led to constant criticism of the restructure since its implementation. Many members of the workforce felt disenfranchised by the technical trade restructure. They were given no ownership of the change and therefore had no intrinsic motivation to encourage its success. This disconnect between management and the workforce appears to be the

result of the restructure's unfortunate timing. In the past, if a bureaucratic organisation such as the RAAF wanted something changed, it merely issued a decree and demanded compliance. That approach, which was used by the TTRT, was inappropriate for the circumstances. The RAAF's technical workforce wanted meaningful communication, consultation and cooperation.

It is difficult to assess accurately whether the changes implemented as a result of TTR have been a success or not, because they are still to be fully applied in many locations. To some degree, this failure can probably be attributed to a combination of a deliberate 'go slow' by unit personnel; the effects of forces external to the restructure; and the downturn in the Australian economic situation.

There is no doubt that some of the changes implemented by the technical trade restructure have not worked as well as first envisaged, and others have required many modifications to become useful. But regardless how many changes are required to make the new trade structure work effectively, there can be no turning back. The new structure is here to stay, and rather than long for the stable environment of the past we must move forward to make the best of what we have.

Recommendations

As a result of the research conducted for this paper the following recommendations are made:

1. The RAAF should continue to provide civilian recognised trade training and enhance its alignment with the Australian aerospace industry wherever possible.

2. An accredited workplace competency assessment system should be introduced.

3. All potential members of the aircraft technical workforce should be informed of the provision of civilian trade recognition.

4. Benchmarking should be conducted against the Australian Army and Navy, and other military and non-military organisations, particularly with respect to requirements for training.

5. A comparative analysis should be carried out between mechanic and technician entry to establish the current and future preferred method of entry and training for the aircraft technical workforce.

6. An analysis should be carried out to determine the effect of the reduction in deeper level maintenance positions as a result of CSP on the skills of the aircraft technical workforce.

7. A cost/benefit analysis of the Weapons System approach to posting should be carried out.

8. The RAAF should indicate a closure to the Technical Trade Restructure.

9. All RAAF personnel involved in change programs should remain informed about the general principles of change management.

ANNEX A

Technical Training and Employment System Survey

Survey Methodology

One of the major aims of this fellowship was to establish whether or not the aims of the aircraft technical trades restructure were achieved. However, several of the aims involved subjective judgments by the recipients of the change process and therefore could only be judged by them. Listed below are the primary aims of the TTR as indicated by the research. An asterisk is placed beside any aim which could be either fully or partly addressed by the survey.

a. * be broadly based to provide employment efficiency and flexibility,
b. * contain sufficient skill levels to permit an efficient match of training with employment and to broaden the recruiting base,
c. * provide an early career below SNCQ level on each aircraft type,
d. create an opportunity to recruit straight to trade,
e. provide the greatest possible match with equivalent civilian trades, and
f. provide the shortest possible period of initial trade training.[1]

The first step in the investigation was to identify the simplest yet most effective method of obtaining the data. Due to the relatively simple information required and the vastly dispersed nature of the population, a survey sheet was decided upon. Because information was required on both pre- and post-TTR trained personnel, it was decided that a survey of both recipients and supervisors of the post-TTR system would be most likely to elicit useful information. Any questions arising from the analysis of these results were answered by focus groups with selected personnel where necessary.

After choosing to use a survey, the next and most difficult step was to construct appropriate questions in order to obtain the maximum benefit from the survey. The questions were designed in consultation with the following parties:

- Defence Psychology Department (DPSYCH),
- Russell Offices authority on surveying, and
- former members of the TTRT.

---

1 Trade Structure Review - Agendum Paper, A/ACMAT-AF to CAS, 20 Sep 90, p 2.

Both DPSYCH and the surveying authority agreed that the survey form, questions and layout were appropriate. The former members of the TTR agreed that the identified aims of the TTR were accurate. However, they added that the aims of TTR changed to suit the changing conditions over time, and therefore the original aims of TTR might not be identical to those closer to the completion of the project. After closely examining the TTR files this was not found to be the case; the wording of the aims had changed over time but the underlying intention had remained constant. A copy of each survey form is enclosed as Annexes B and C.

Survey Sample

Accurate information on the numbers of personnel graduating from the new system was not readily available at the time of survey distribution. The closest estimates were obtained from HQTC figures identifying the units these individuals were posted to upon successful completion of the off-the-job training component at RAAF Wagga. Calculations from these figures indicated that from the commencement of training under the new system to the time of the survey release in December 1996, some 848 individuals had graduated from RAAF Wagga and been posted to various RAAF units. It was therefore surmised that an approximately equal number of persons would be found in those locations, allowing for small variations as a result of subsequent posting or discharge. However, discussions with DPA staff indicated that this number was far short of the actual number of personnel in units who had received training under the new system, by as much as 300 individuals. It was with this knowledge of the approximate numbers at individual bases that the survey sample size was determined. Using information from HQTC on numbers and locations, and the additional anecdotal information provided by DPA staff, the number of survey forms to be distributed was calculated as follows:

Amberley	300
Williamtown	250
Richmond	200
Edinburgh	150
Total	900

It can be seen that the number of surveys distributed is greater than the figures provided by HQTC, and less than that estimated by DPA staff. Regardless, as long as a large percentage of the surveys was returned, the sample size would be comprehensive - approximately 90 to 100 per cent of the subjects. Not all members provided with post-TTR training were posted from Wagga to one of the four major bases shown above or are now employed at one of these. However, since the vast majority are at one of those four, the decision was made to survey only those bases in order to minimise administration. The small number of individuals employed outside those bases would have little effect on the outcome of the survey.

Surveying the members who have undergone post-TTR training provides only part of the answer. An equally important ingredient is the body of knowledge contained in the existing aircraft technical workforce - those who were pre-TTR trained. In order to give the group ownership of the research and to gather useful input to the inquiry, an

aligned survey was designed and distributed to the immediate supervisors of the graduates of the new training and employment system. It was considered that an approximately equal number of supervisors to recipients was required in order to establish an adequately clear picture of the post-TTR working environment. Accordingly, 900 surveys were distributed to supervisors.

Distribution/Administration

Surveys of this size and complex distribution are inherently difficult to control. Past experience by experienced persons in the field of research indicates that significantly higher return rates can be achieved by an on-site survey. The critical group here was the Weapon System Employment Streamer (WSES). Consequently, the Director of the Air Power Studies Centre (DAPSC), Group Captain J. Harvey, requested the assistance of DPA, Group Captain J. Clarkson, by:

a. writing to COs of units requesting that members be given the time to complete the survey, and
b. requesting the assistance of WSES to administer the survey.

Group Captain Clarkson arranged a meeting between the author and the WSES in Canberra on 21 January 1997. Attendees were advised of the request to assist.

Survey Security

Each of the surveys dispatched was stamped with a sequential number; survey numbers 2151001 to 2151999 for completion by the direct supervisors of the recipients of the TTR training, and survey numbers 2152001 to 2152996 for completion by the recipients of TTR training. Of these:

- 2151001 to 2151300 and 2152001 to 2152300 were sent to Amberley,
- 2151301 to 2151550 and 2152301 to 2152550 were sent to Williamtown,
- 2151551 to 2151700 and 2152551 to 2152700 were sent to Edinburgh, and
- 2151701 to 2151900 and 2152701 to 2152900 were sent to Richmond.

The remaining surveys, 2151901 to 2151999 and 2152901 to 2152996, were kept in reserve and were not used during this inquiry. The reasons for providing each survey form with an individual identification number were:

a. to increase the return rate due to the perception that each form was accountable,
b. to allow for determination of which location survey return rates were good and not so good, and
c. to reduce the likelihood of individuals with a vested interest in the outcome of the survey from substituting unfavourable returns.

ANNEX B

AN EVALUATION OF THE RAAF TECHNICAL EMPLOYMENT & TRAINING SYSTEM

THIS FORM FOR DIRECT SUPERVISORS OF TTR TRAINED AIRCRAFT MAINTENANCE PERSONNEL

This survey was designed to gather information about the technical trade restructure, in particular, the Aircraft and Avionics trades. It will form a component of the CAF Airman Fellowship being conducted by CPL Wayne Jones into the effectiveness of the technical trade restructure and the resultant employment and training system.

The survey is your chance to have your say about your feelings regarding any aspect of the structure which you feel strongly about. We want to know what you liked and disliked about the technical trade restructure, what's working well and what is not, and how it might be modified to make it work better.

It should take you about 15 minutes to complete, but please take your time and attempt each question because the information you provide may have a great effect on the future direction of the employment and training of the aircraft technical workforce.

Note : If there is insufficient space provided for your response, please use the reverse side of the sheet.

Mustering - Aircraft Technician ..... ☐
Avionic Technician ..... ☐
Self-supervising Technician ..... ☐
Advanced Avionic Technician ..... ☐
Aircraft Systems Technician ..... ☐
Avionic Systems Technician ..... ☐
Other ..... ☐

Rank - CPL ..... ☐
SGT ..... ☐
FSGT / WOFF ..... ☐
Officer ..... ☐

FEG - Tactical Fighter Group ..... ☐
Strike Reconnaissance Group ..... ☐
Maritime Patrol Group ..... ☐
Air Lift Group ..... ☐

Years & Months in the RAAF : _____

AN EVALUATION OF THE RAAF
TECHNICAL TRAINING & EMPLOYMENT SYSTEM

If possible, please complete all the items in this section. If you have any problems or are unsure of any item/items please make a note of it/them for discussion with CPL Jones when he visits your Unit.

For items 1 to 16, please rate the extent you agree with the particular feature in accordance with the following scale by ticking the corresponding box.

	Strongly Agree 1	Agree 2	Neither Agree or Disagree 3	Disagree 4	Strongly Disagree 5	Don't Know 6
With regard to the technical training system, to what extent do you agree that the:						
1. training your personnel receive matches their employment.	☐	☐	☐	☐	☐	☐
2. training matches the likely employment requirements during times of conflict.	☐	☐	☐	☐	☐	☐
3. system has provided your personnel with a wide range of basic skills.	☐	☐	☐	☐	☐	☐
4. system has provided a means of efficiently employing personnel.	☐	☐	☐	☐	☐	☐
With regard to the technical trade structure, to what extent do you agree that:						
5. it provides the greatest possible match with equivalent civilian trades and training.	☐	☐	☐	☐	☐	☐
6. mechanics are sufficiently skilled for efficient & flexible employment.	☐	☐	☐	☐	☐	☐
7. mechanics are employable on a wide range of basic tasks.	☐	☐	☐	☐	☐	☐
8. all personnel are employed in a way which utilises the training they have been provided.	☐	☐	☐	☐	☐	☐

Please tick the box to indicate your choice

9. all personnel are sufficiently trained for the tasks which they perform. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

With regard to the Weapon System Posting concept, to what extent do you agree that:

10. technical personnel want the locational stability provided by this concept. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

11. technical personnel become better technicians through employment on only one aircraft type during their career. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

12. technical personnel become better technicians through employment on a variety of aircraft types during their career. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

13. employment on only one aircraft type as part of career management generally helps improve Squadron morale. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

14. employment on a variety of aircraft types as part of career management generally helps improve Squadron morale. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

With regard to the implementation of Technician Trade Restructure, to what extent do you agree that:

15. it was conducted in the most efficient and effective way possible. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

16. there was sufficient consultation with Squadron personnel. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

17. To what extent are your mechanics immediately employable when they arrive at the unit, upon completion of the compulsory FTF courses? ☐ 0% ☐ 20% ☐ 40% ☐ 60% ☐ 80% ☐ 100%

18. If you answer 40% or less please provide details as to how you overcome this problem.

19. If you have rated any of the items 1 to 16 as **DISAGREE** or **STRONGLY DISAGREE** please provide details as to why.

20. How might the implementation of the Technical Trade Restructure have been improved?

21. If you have any strong feelings about any other aspects of the Technical Trade Restructure/Structure please provide details here.

Thank you for your time in completing this survey. Please ensure that it is submitted to your Weapon System Employment Stream for collection.

ANNEX C

AN EVALUATION OF THE RAAF TECHNICAL EMPLOYMENT & TRAINING SYSTEM

THIS FORM FOR TTR TRAINED AIRCRAFT MAINTENANCE PERSONNEL

This survey was designed to gather information about the technical trade restructure, particularly, the Aircraft and Avionics trades, from AC to WOFF. It will form a component of the CAF Airman Fellowship being conducted by CPL Wayne Jones into the effectiveness of the technical trade restructure and the resultant employment and training system.

The survey is your chance to have your say about your feelings regarding any issues of the structure which you feel strongly about. We want to know what you liked and disliked about the technical trade restructure, what's working well and what is not, and how it might be modified to make it work better.

The survey should take you about 15 minutes to complete, but please take your time and attempt each question, because the information you provide may have a great effect on the future direction of the employment and training of the aircraft technical workforce.

Please provide the following general biographical details by ticking the corresponding box:

Mustering - Aircraft Mechanic ..... ☐
Avionic Mechanic..... ☐
Aircraft Fitter ..... ☐
Avionic Fitter..... ☐
Aircraft Technician ..... ☐
Avionic Technician ..... ☐

Rank - AC / ACW ..... ☐
LAC / LACW ..... ☐
CPL ..... ☐

FEG - Tactical Fighter Group ..... ☐
Strike Reconnaissance Group ..... ☐
Maritime Patrol Group ..... ☐
Air Lift Group ..... ☐

Years & Months in the RAAF : _____

AN EVALUATION OF THE RAAF
TECHNICAL TRAINING & EMPLOYMENT SYSTEM

If possible, please complete all the items in this section. If you have any problems or are unsure of any item/items please make a note of it/them for discussion with CPL Jones when he visits your Unit.

For items 1 to 14, please rate the extent you agree with the particular feature in accordance with the following scale by ticking the corresponding box.

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Don't Know
	1	2	3	4	5	6

With regard to the technical training system, to what extent do you agree that:

1. the system provides/provided you with the skills you require to be employed on a wide range of basic tasks. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

2. your training at Wagga provided you with appropriate skills for your current employment. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

3. your training at TDLF provided you with appropriate knowledge for your current employment. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

With regard to the technical trade structure, to what extent do you agree that:

4. you have had the opportunity to fully utilises the skills you received at Wagga. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

5. the structure provides a fulfilling early career below the SNCO level. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

6. the structure has provided you with a fulfilling career so far. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

7. the structure provides employment flexibility. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

Please tick the box to indicate your choice

8. it is important that RAAF technical training provide the greatest possible match with equivalent civilian trades and training. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

9. your employment has been sufficiently challenging over the last 12 months. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

With regard to the Weapon System Posting concept , to what extent do you agree that:

10. technical personnel want the locational stability provided by this concept. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

11. technical personnel become better technicians through employment on only one aircraft type during their career. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

12. technical personnel become better technicians through employment on a variety of aircraft types during their career. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

13. employment on only one aircraft type as part of career management generally helps improve Squadron morale. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

14. employment on a variety of aircraft type as part of career management generally helps improve Squadron morale. ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

15. If you have rated any of the items 1 to 14 as **DISAGREE** or **STRONGLY DISAGREE** please provide details as to why.

16. Were you aware, before joining, of the RAAF's offer to provide civilian accredited trade training? Y ☐ 1 N ☐ 2

17. Would/did this make a difference? Y ☐ 1 N ☐ 2

18. How do you perceive your opportunities for career advancement?

Very Good 1 ☐
Good 2 ☐
Uncertain 3 ☐
Bad 4 ☐
Very Bad 5 ☐

19. If you have strong feelings about any other aspects of the Technical Trade System please provide details here.

Thank you for your time in completing this survey. Please ensure that it is submitted to your Weapon System Employment Stream for collection.

Air Forces around the world have always relied totally on the skill of their ground-crew for the application of air power. The Royal Australian Air Force is no exception.

In order to operate modern military aircraft successfully, air forces require a workforce whose training and skills reflect the highly sophisticated nature of the systems they maintain. But as military budgets continue to shrink and workforce numbers continue to fall, the provision of the necessarily comprehensive training and employment system which supports this infrastructure is becoming increasingly difficult to maintain.

This book analyses the post-World War II development of the RAAF's aircraft technical workforce. Written by a serving corporal, it provides a unique perspective from the shop floor.

Regardless of the shape and size of future air forces, as long as they continue to operate aircraft they will need capable, efficient and effective ground crews. The development of the workforce is on-going, as is the debate over its future management. This book is intended both to record past events and to contribute to that debate.

Defence Publishing and Visual Communications
Canberra
DPUBS: 29086/98